

Economic Impact Assessment

Modification of the Barangaroo
Concept Plan – Central
Barangaroo (MOD 9)

Infrastructure NSW

15 November 2021

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Acknowledgement of Country

We acknowledge the Gadigal People who are the Traditional Custodians of this land. We also pay our respect to the Elders, both past and present, of the Eora Nation and extend that respect to all Aboriginal people.

Executive Summary

The ongoing development of Central Barangaroo presents a significant opportunity to enable the realisation of benefits across the entire Barangaroo site. The application to modify the Barangaroo Concept Plan, Modification 9 (MOD 9) aims to maximise these benefits by creating a framework to develop a world-class mixed-use precinct.

MOD 9 provides a flexible approach to the future mix of land uses at Central Barangaroo comprised of commercial office, retail, residential, community uses and public open space. Specifically, MOD 9 proposes:

- 1) An increase in total permissible gross floor area (GFA) from 602,354 m² to 708,041 m², with the following within Central Barangaroo and Barangaroo Reserve:
 - a) up to 116,189 m² of above ground GFA within Blocks 5, 6 and 7
 - b) up to 28,166 m² of below ground GFA within Blocks 5, 6 and 7
 - c) a minimum of 2800 m² of Community uses GFA within Blocks 5, 6 and 7
 - d) a minimum of 6000 m² and up to 18,000 m² of Community uses GFA within the RE1 Zone of Barangaroo Reserve, to allow for future community/cultural facilities located in the Cutaway.
- 2) An increase in the overall provision of new public open space/public domain, including three new publicly accessible spaces within the development blocks and a new pedestrian bridge over Hickson Road.
- 3) Modifications to the Central Barangaroo building envelope that allow for greater variation in building heights across Blocks 5, 6 and 7 to enable building form, massing and modulation that is responsive to context and adjusts the development boundary for Block 5.
- 4) Introduction of Design Guidelines for Central Barangaroo.
- 5) Consequential amendments to the State Significant Precincts State Environmental Planning Policy (SEPP).
- 6) Revisions to the Barangaroo Concept Plan Statement of Commitments.

As the final piece of Barangaroo, this development of Central Barangaroo provides the opportunity to develop a new precinct linking the commercial areas of Barangaroo South to the dedicated naturalistic public spaces of Barangaroo Reserve and ensure the necessary design and development principles are imbedded.

The result of MOD 9 is the creation of a new precinct that provides:

- a new gateway to the CBD through the Sydney Metro' Barangaroo Station. This opens up Central Barangaroo as an entry into the CBD for people travelling from the North, and enables easy access to Central Barangaroo from people using the Metro in the CBD.
- a new mixed-use centre serving:
 - the residents, workers and visitors to Barangaroo
 - people from the adjacent Millers Point and Walsh Bay areas, who have been relatively underserved by existing local retail offerings.
- increased public domain/open space, providing large areas designed to suit a variety of potential users with enhanced connectivity of public spaces. For example:
 - at its core, Central Barangaroo's Harbour Park will create a major western harbour public open space that seamlessly integrates with the Wulugul Walk along the entire Barangaroo waterfront
 - to the south, Central Barangaroo will shape and activate Hickson Park as a city park.

In so doing, in concert with the new Barangaroo Station for the Sydney Metro, MOD 9 generates a range of positive economic benefits associated with the creation of a new precinct. This includes:

- additional construction-led activity during the development of Central Barangaroo (i.e. 2022 to 2029)
- an enhanced tourism and leisure precinct for domestic and international visitors.

To quantify the additional economic impacts created by the MOD 9 development, consistent with our terms of engagement, we undertook computable general equilibrium (CGE) modelling to estimate the economic impacts of the most recent approved Concept Plan (MOD 10) and then the MOD 9 development to assess the impacts:

- during the eight year construction phase (2022 to 2029)
- once the development is complete, focusing on the net change in international tourist driven benefits (2030 on).¹

Construction phase

The total construction-generated gross state product (GSP) based on the approved Barangaroo Concept Plan is estimated to be \$411 m. The changes proposed in MOD 9 are expected to increase this by \$1012.9 m to \$1423.9 m.²

Estimated economic impacts of MOD 9 have been split by the construction (2022-2029) and operational (2030-2039) phases due to the distinct nature of investment and activity during each period.

As shown in Table 1, relative to the approved Concept Plan, the additional investment associated with the construction of MOD 9 is expected to:

- generate an additional \$188.7 m of GSP in the New South Wales economy, on average each year over the period 2022 to 2029
- support an additional 1143 full-time equivalent (FTE) jobs in the New South Wales economy over the same period, on average each year.

Table 1: Average annual economic impacts during construction (2022-2029)

	Approved Concept Plan	Proposed MOD 9	Net impact of MOD 9
Value Added (\$m)	\$76.7	\$265.4	\$188.7
Employment (jobs)	504	1647	1143

Operational phase

Relative to the approved Concept Plan, the proposed MOD 9 is expected to increase the ongoing operational economic benefits of Barangaroo, specifically:

- generate an additional \$327.4 m of GSP in the New South Wales economy, on average from 2030-2039, attributable to visitor expenditures, operational activities and employment
- support an additional 1176 jobs in the New South Wales economy over the same period, on average each year.

¹ We do consider domestic tourists as it is assumed that this is a diversion from activities that would have otherwise taken place somewhere else in Sydney.

² All construction values, gross state product (GSP) and gross value added (GVA) figures are given in terms of 2021 dollars.

Construction, Business Services, Trade and Accommodation and Food services are consistently among the sectors which benefit most from MOD 9 in terms of both GVA and employment.

The estimated economic impact of the approved Concept Plan (MOD 10) and for MOD 9 are summarised in Table 2. The increase is driven by increased GVA and the mix of activities on the expanded development.

Table 2: Average annual economic impacts post-construction (2030-2039)

	Approved Concept Plan	Proposed MOD 9	Net impact of MOD 9
Value Added (\$m)	\$96.0	\$423.4	\$327.4
Employment (jobs)	317	1493	1176

Source: PwC

The estimates of economic activity above focus on the marginal benefit that MOD 9 brings that is additional to the community because of the nature of the Central Barangaroo precinct in attracting international tourists. This is something that just building shops, offices or apartments would not normally do; this is the real unique value generated by MOD 9.

However, there is also benefit in understanding the gross economic activity supported by the development in Central Barangaroo. On this basis we expect, in terms of:

- total annual jobs supported by Central Barangaroo:
 - 7062 direct jobs in Central Barangaroo
 - 3355 jobs supporting businesses in Central Barangaroo
 - 3814 jobs due to higher wages in the community.
- total annual GVA supported by Central Barangaroo:
 - \$835 million to in direct GVA in Central Barangaroo – this is a conservative estimate given that we have assumed average GVA for quality office spaces, but that there is a chance that Central Barangaroo may attract even higher value tenants given the concentration of financial and professional services in Barangaroo. If these ‘more valuable’ tenants are the core then this could see direct GVA in the vicinity of \$2,359 million
 - \$540 million GVA from businesses supporting Central Barangaroo
 - \$656 million in additional GVA from activity triggered by higher wages in the community.

While we have reported consumption effects here, there is a risk of some double-counting and so the headline impact should be reported net of consumption effects. Hence, the total annual economic activity supported by a completed Central Barangaroo is in the order of:

- 10,417 jobs
- \$1.375 billion in GVA, but potentially up to \$2.899 billion if ‘top tier’ office tenants are attracted to Central Barangaroo.

1 Introduction

1.1 Purpose of report

As the final stage of the Barangaroo urban renewal project, Infrastructure NSW (INSW) has identified the potential for significant unrealised economic, social and placemaking benefits that are achievable both within Central Barangaroo precinct and Barangaroo Reserve.

Modification 9 (MOD 9) for Central Barangaroo proposes to amend the Barangaroo Concept Plan to enable these benefits to be realised. Further detail on the proposed scope of MOD 9 is provided in section 3.

This Economic Impact Assessment (EIA) forms part of INSW's MOD 9 proposal to the NSW Department of Planning, Industry and Environment (DPIE).

1.2 Approach

This is one of two reports, which together provide a holistic assessment of the economic and social impacts associated with MOD 9.³ The approach taken, as per our engagement letter, is outlined in Table 3.

Table 3: Our approach

Economic Impact Assessment (EIA)	Social Impact Assessment (SIA)
<p>MOD 9's contribution to the NSW economy has been estimated using the Victoria University Regional Model (VURM).⁴ The VURM is a multi-regional CGE model.</p> <p>CGE models such as VURM simulate the effects on the economy in each year caused by a policy change or new development – known as an economic shock. The model takes into account indirect and substitution effects for example, the impact a development or activity might have on prices or resource constraints.</p> <p>Relative to more simplistic input-output modelling, this type of model is generally preferred by governments and treasuries because they have been peer reviewed, meaning the inputs and assumptions are fully and publicly documented.</p>	<p>We have assessed the social impact of MOD 9 against criteria drawn from the international literature on social impact assessment which are used elsewhere by the NSW DPIE.^{5 6}</p> <p>We have described how the proposal has been designed to maximise social benefits and minimise social dis-benefits in terms of peoples:⁷</p> <ul style="list-style-type: none">• <i>Way of life</i>: factors such as residential housing, employees' working conditions, access to employment and recreation activities.• <i>Community</i>: including its composition, cohesion, character, how it functions and sense of place.

³ Also see PwC (2021) *Social Impact Assessment Modification of the Barangaroo Concept Plan – Central Barangaroo (Modification 9)*.

⁴ VRUM is regularly used by Treasuries to analyse the impacts of significant changes. The most recent example where NSW Treasury has used VURM is Nick Wood, Maddy Beuman & Philip Adams (2021), 'An indicative assessment of four key areas of climate risk for the 2021 NSW Intergenerational Report' *2021 Intergenerational Report Treasury Technical Research Paper Series*, TTRP 21-05, available at https://www.treasury.nsw.gov.au/sites/default/files/2021-04/2021_igr_trp_-_an_indicative_assessment_of_four_key_areas_of_climate_risk_for_the_2021_nsw_intergenerational_report.pdf

⁵ NSW Department of Planning and Environment (2017) *Social Impact Assessment Guideline (2017) for extractive industries* – in place for use in respect of State significant mining, petroleum production and extractive industry development. These guidelines were created to improve the quality and utility of social impact assessments for major mining, petroleum and extractive projects. They draw from internationally recognised principles – see Vanclay, F, 'International Principles for Social Impact Assessment' *Impact Assessment & Project Appraisal* 21(1): 5-11 (2003), which have also been adopted in other Australian jurisdictions.

⁶ Subsequent to the analysis being prepared for the SIA report, in July 2021 DPIE released *Social Impact Assessment Guideline: For State Significant Projects*. The analysis of MOD 9 is considered a 'transition project' and hence this new Guideline has not been applied in this instance. Nevertheless, we consider the approach adopted to be broadly consistent with the new Guideline's spirit.

⁷ Some extractive-industry specific criteria have been adapted to better suit the Barangaroo development context.

Economic Impact Assessment (EIA)	Social Impact Assessment (SIA)
<p>The model simulated the economic impacts of MOD 9 in two distinct phases, during construction and operation. The modelling captured:</p> <ul style="list-style-type: none"> • <i>Direct effects</i>: as a result of MOD 9, largely driven by construction expenditure and increased employment. • <i>Indirect effects</i>: the flow-on impacts throughout NSW include the impact of a change in consumer spending in the economy from additional employees and additional spending by businesses that supply goods and services to MOD 9 inhabitants. • <i>Tax and visitation</i>: changes to tax contributions and visitation numbers to Barangaroo. 	<ul style="list-style-type: none"> • <i>Access to and use of infrastructure, services and facilities</i>: whether provided by government or other organisations, for example public transport. • <i>Culture</i>: including shared beliefs, customs, connections to land places and buildings (including Aboriginal culture). • <i>Health and wellbeing</i>⁸: including mental and physical health. • <i>Surroundings</i>: including access to and use of ecosystem services, public safety and security, access to and use of the natural and built environment, and its aesthetic value and/or amenity. • <i>Other impacts</i>: any other project specific social impacts.

Note; The CGE modelling is done on a state-wide basis and so captures the net impacts of the Barangaroo development (i.e. the impact reported is net of any substitution impacts from surrounding retail and commercial areas).

It is worth noting that we have considered the potential impact of COVID-19 in our project but have not made any specific allowances in either the EIA or the SIA. This is because:

- construction has not generally been affected by social distancing obligations,⁹ and in any case is due to commence after all Australians have been provided access to a COVID-19 vaccine (i.e. 2022)
- while it is difficult to definitively say the degree to which flexible working will affect Australia's CBDs, the impact is most likely to be a financial one (i.e. lower rents) rather than an economic one (i.e. as activity will still be occurring in CBDs).¹⁰ Given that the construction is expected to be completed well after COVID-19 has been addressed by a vaccine (i.e. construction completing in 2029) we do not consider it likely to be a constraint on the projected operational benefits identified in this report
- while population growth is projected to slow due to restrictions on the international movement of people and lower fertility rates, we suspect that this will reduce population growth by two years over the next five years. We do not consider this a meaningful impact on the development of Barangaroo.

1.3 Scope

This economic impact assessment report was prepared by PwC in accordance with the agreed scope. This report built on and developed existing research and data provided by INSW and provided an economic impact assessment using Victoria University's multi regional computational general equilibrium model, VURM. The granularity of economic analysis was prepared as outlined in the scope of work and was informed by data availability. This report was designed to be one of a suite of MOD 9 reports provided to the NSW DPIE as part of INSW's application to amend the Barangaroo Concept Plan. As such, specific areas of

⁸ The World Health Organization (WHO) defines health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. For this guideline, wellbeing is a state in which people have their basic needs met, can realise their potential, can cope with the normal stresses of life, can work productively and fruitfully, and can participate in their community.

⁹ We note that the July 2021 lockdown has been extended to include construction activities.

¹⁰ See PwC (2021), *Changing Places: how hybrid working is reinventing the Australian CBD*, available at <https://www.pwc.com.au/important-problems/future-of-work-design-for-the-future/changing-places-australian-cbd.html>

analysis may be covered in greater detail in other reports. For example, the Environmental Impact Statement (EIS) should be referred to for detailed analysis of environmental impacts.

2 The Barangaroo Development

2.1 Background to Barangaroo

Barangaroo is a globally recognised 22 hectare urban renewal project located on the western harbour foreshore of Sydney's CBD.

As Australia's first carbon neutral urban precinct, Barangaroo showcases world-class sustainability, whilst delivering extensive new foreshore public spaces on Sydney Harbour, international design excellence, the implementation of leading technologies and public art and cultural programs.

The *Barangaroo Delivery Authority Act 2009* was established in March 2009 to ensure management and compliance of Barangaroo in achieving the following objectives:

- encourage the development of Barangaroo as an active, vibrant and sustainable community and as a location for national and global business
- create a high-quality commercial and mixed-use precinct connected to, and supporting, the economic development of Sydney
- facilitate the establishment of Barangaroo Reserve and public domain land
- promote the orderly and sustainable development of Barangaroo, balancing social, economic and environmental outcomes
- create in Barangaroo an opportunity for design excellence outcomes in architecture and public domain design.

INSW was established in July 2011 to assist the NSW Government in identifying and prioritising the delivery of critical public infrastructure for NSW.

On 1 July 2019, the *Barangaroo Act 2009* was transferred to INSW as the State Government agency responsible for the development of Barangaroo and management of its public spaces.

2.2 Barangaroo Concept Plan

The original environmental assessment requirements for the overall Barangaroo renewal project were issued in June 2006 (Ref MPO6_0162) and the original Concept Plan for the redevelopment of Barangaroo was approved in February 2007, by the then Minister for Planning.

The Barangaroo Concept Plan creates a development framework of streets and development blocks that can deliver a future mix of commercial, residential, tourist, retail and community uses, whilst dedicating approximately 50 per cent of the 22 hectare site for new public open space or public domain, on or close to the harbour foreshore. The approved Barangaroo Concept Plan has since been modified a number of times and the most recent approved modification is MOD 11.

The Barangaroo Concept Plan defines three distinct precincts referred to as Barangaroo South, Central Barangaroo and Barangaroo Reserve. These three precincts together form the overall mixed use development framework as currently approved under Modification 11 to the Barangaroo Concept Plan comprise the following:

- (1) A mixed use development involving a maximum of 602,354 m² gross floor area (GFA), comprised of:
 - (a) a maximum of 191,031 m² of residential GFA of which a maximum of 162,031 m² will be in Barangaroo South
 - (b) a maximum of 76,000 m² of GFA for tourist uses of which a maximum of 59,000 m² will be in Barangaroo South
 - (c) a maximum of 34,000 m² of GFA for retail uses of which a maximum of 30,000 m² will be in Barangaroo South

- (d) a maximum of 5000 m² of GFA for active uses in the Public Recreation zone of which 3500 will be in Barangaroo South
- (e) a minimum of 12,000 m² GFA for community uses.
- (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) Construction, operation and maintenance of a concrete batching plant to supply concrete for construction of future development under this Concept Plan at Barangaroo South.
- (7) No approval is granted or implied for the future use of a heliport and/or a helipad.

2.3 Master Planning of Central Barangaroo

Central Barangaroo is located between the Barangaroo Reserve, Barangaroo South and the nearby historic suburbs of Miller Point and Walsh Bay and adjacent to Barangaroo Station.

As Barangaroo's keystone project, Central Barangaroo will complete the sweep of city and foreshore experiences along the western waterfront of Sydney's CBD to become the vibrant civic and community heart of Barangaroo.

As a dynamic mixed-use foreshore precinct, Central Barangaroo will draw together and integrate high quality foreshore public spaces with city living, next generation workspace, community and cultural uses, a bustling shopping and dining precinct, all easily connected to Sydney's new metro network.

As a key part of Sydney Metro's city shaping network, Barangaroo Station will significantly improve access for visitors, residents, workers and shoppers alike and transform how people arrive in Sydney CBD and on the harbour foreshore. As part of this transformation, Central Barangaroo will connect seamlessly to the new metro station and create the new place to arrive in and experience the city.

Comprising the remaining development blocks 5, 6 and 7 of the approved Barangaroo Concept Plan, Central Barangaroo's built form will create an appropriately scaled visual transition between the natural setting and scale of Barangaroo Reserve and Nawi Cove in the north, to the bustling, high rise central business district scale of Barangaroo South.

The recently completed Wulugul Walk now extends along the entire Barangaroo waterfront as a vital section of the 14km Woolloomooloo to Glebe foreshore walk. Central Barangaroo's Harbour Park will create a major western harbour public open space that seamlessly integrates with Wulugul Walk, to diversify and enhance the city's waterfront experience. To the south, Central Barangaroo will shape and activate Hickson Park as a city park and to the north, help create Nawi Cove as the new place to arrive in the city.

In enabling the completion of Barangaroo as the world-class urban renewal precinct, MOD 9 for Central Barangaroo presents the opportunity to deliver the major social, economic and environmental outcomes envisaged from the outset.

Work on the master planning vision and framework for Central Barangaroo originally commenced in 2013 with the appointment of a world-renowned team of international and local professionals, Skidmore, Owings & Merrill LLP and Andersen Hunter Horne (SOM and AHH).

As part this early process, in 2013, several rounds of public consultation were undertaken to inform the master planning framework of Central Barangaroo. The consultation comprised a

public workshop, followed by a four-week, interactive, on-line conversation, in addition to direct engagement with key stakeholders.

Building from the then approved Concept Plan (MOD 6), in 2014, SOM and AHH finalised a draft Central Barangaroo Master Plan framework that explored opportunities to enhance the built form and public domain outcomes, as well as ensure connectivity and access across the whole Barangaroo precinct.

SOM's master planning work for Central Barangaroo recommenced in 2019 and reviewed the changed circumstances affecting the Central Barangaroo and the broader Barangaroo precinct. The objectives developed for Central Barangaroo were reviewed and largely re-affirmed, as well as the built form and public domain outcomes.

The overall objectives for Central Barangaroo are to:

- Deliver an innovative, creative and dynamic waterfront destination that is permeable and connected with the city
- ensure the delivery of design excellence in the planning and built form of the precinct, creating a diverse community of architectural expression within an overall coherent urban structure
- deliver diversity of products and uses integrating commercial, residential, retail, community, education, civic, cultural and entertainment activities which contribute to a vibrant and active identity
- create and deliver a public domain that is distinct, unique and innovative and allows for range of passive and active outdoor spaces and uses that together create a new iconic visitor attraction, consistent with INSW's Activation Framework
- deliver a balance of financial return and public benefit and amenity across the precinct
- deliver a culturally distinctive, locally relevant and internationally appealing canvas for appropriate facilities, experiences and public art
- ensure high levels of public attraction, operational serviceability, amenity and security across the precinct and during staging
- extend the principles and networks of the climate positive promise in line with current world's best practice to deliver a whole of Barangaroo outcome and create projects that respond visibly to the sustainable needs of people and the planet.

SOM's revised Master Plan Framework for Central Barangaroo gives effect to these objectives and provides a cohesive design identity for Central Barangaroo within the context of the Barangaroo precinct and the broader city. The core principles and key considerations of the Central Barangaroo Master Plan framework include:

- ensuring the 50 per cent public domain across the Barangaroo site, is maintained
- development to occur generally within existing development zones, footprints and with moderated height controls
- provision of alternate sites outside the development zone for the future delivery of a cultural venue
- connection and integration with Barangaroo South, Barangaroo Reserve, the Harbour and CBD precincts
- a high level of flexibility allowing the range of uses to evolve over time
- contribution to the existing Barangaroo sustainability targets
- design excellence in the Master Plan framework that provides opportunities for design excellence in development of built form and public domain outcomes
- ensuring appropriate commercial returns are delivered to the NSW Government across the Barangaroo project

- provision for staging of the development including consideration of effective staged opening and operation of completed development parcels.

2.4 Economic and demographic alignment

The Barangaroo development and the proposed changes under MOD 9 support the economic and demographic needs of Sydney by providing space for residential development, opportunities for employment, a retail shopping centre and a range of drawcards for tourism activities. The alignment of MOD 9 with the economic and demographic needs of Sydney are outlined below. (For further details on the economic and demographic profile of Sydney, see Appendix B).

Population

The population of the Sydney local government area (LGA) is projected to grow at approximately twice the rate of NSW as a whole. The Sydney-Haymarket-The Rocks SA2 (the Sydney CBD) in which Barangaroo is located has a relatively high proportion of residents between the ages of 15 and 34 years compared to the rest of NSW. This is reflective of a prominent young adult working population. Between 2016 and 2036 the age groups projected to have the highest amount of growth in the Sydney LGA are those above 75 years, reflecting the broader national trend of an ageing population.

MOD 9 proposes an increase in residential floor area in Central Barangaroo, providing more homes for the growing local population. The inclusion of community and cultural facilities will also assist in ensuring residents and visitors to the precinct can participate in new cultural programming.

Labour force

In 2016 the Sydney LGA had a labour force of 124,746 persons. 65 per cent of the workforce were full-time employees, 25 per cent part-time, 4 per cent away from work, and 6 per cent unemployed. Employment in the Sydney LGA is concentrated in the professional, scientific and technical services (17 per cent of total employment), accommodation and food services (12 per cent) and the financial and insurance sectors (9 per cent).

When compared to the NSW population, residents in the Sydney CBD are significantly more likely to have either income greater than \$3000 per week or no income at all. This indicates the area has relatively high income inequality and a demographic which may contain an above-average proportion of vulnerable individuals.

MOD 9 proposes an increase in commercial/office and retail floor area in Central Barangaroo. These increases can provide space for a broad range of businesses which could result in significant employment opportunities. These opportunities are likely to vary from business services to retail, which could assist low socioeconomic individuals and families and contribute to a reduction in local unemployment.

Tourism

Tourism represents a significant part of both the Sydney and NSW economies. In 2016-17 tourism contributed over \$40.5 billion to the NSW economy. Visitors to the Sydney Tourist Region formed a significant part of this contribution, with the city receiving approximately 34 m visitors out of a total of 94 m visitors to NSW in 2017. The number of visitors to Sydney has increased 3 per cent from 2016, and by 31 per cent since 2009.

An important segment of tourists to Sydney are those from overseas. International overnight tourists accounted for half of the total number of visitors to Sydney in 2017. The most common countries of origin of international overnight tourists to Sydney are China (20 per cent), the United States (11 per cent), New Zealand (9 per cent) and the United Kingdom (9 per cent).

MOD 9 can enhance the attractiveness of Central Barangaroo to tourists by significantly increasing cultural and retail space; while maintaining a large proportion of inclusive public realm accessible through an integrated public transport system. These cultural spaces are

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envisaged to play hosts to festivals and celebrations attracting visitors from Sydney and further afield.

3 *Modification 9 Proposed Changes*

Director General's Requirements (DGR's) were issued for draft MOD 9 to Barangaroo Concept Plan in March 2014. This request and the proposed Central Barangaroo modification (MOD 9) was informed by early design guidance in SOM's Central Barangaroo Master Plan Framework. Simultaneously, the NSW Government commenced a competitive bid process commenced for the development of Central Barangaroo and the draft Central Barangaroo Master Plan Framework supported this process.

In June 2015, as part of the Sydney Metro City & Southwest project, the NSW Government confirmed a strategic alignment option to build a new metro station at Barangaroo. In November 2015, the location of Barangaroo Station was confirmed as beneath the northern end of Hickson Road in Millers Point, with direct pedestrian access into Nawi Cove and Central Barangaroo. The station is currently being constructed beneath Hickson Road and is due to be operational in 2024 when the City & Southwest line opens.

When operational in 2024, Barangaroo Metro Station will be one of four key underground CBD stations on the Sydney Metro City and Southwest line and with easy access via Central Barangaroo and Nawi Cove. Barangaroo Metro Station will significantly improve public transport access to the Barangaroo precinct and adjacent areas and enhance development opportunities for Central Barangaroo.

SOM has refined the Central Barangaroo Master Plan Framework to reflect the enhanced opportunities created by the improved transit infrastructure. The integration of Barangaroo Metro station into Central Barangaroo underpins the requirement to modify the approved Barangaroo Concept Plan and refine the proposed framework to develop the precinct. SOM's Master Plan establishes a design and development framework for Central Barangaroo that enables an increase in density of mixed-use development that can ensure the precinct can create its own distinct identity, character and experiences. However, in doing so it is also seeking to ensure that it is integrated with Central Barangaroo and with the wider precinct. SOM's role in providing design guidance recommenced in 2019. Mod 9 incorporates significant further master planning work and public consultation to realise the delivery of the final stage of the Barangaroo renewal project.

The public benefits of a new metro station at Barangaroo and the opportunities identified in the Central Barangaroo Master Plan Framework are unable to be met within the existing Barangaroo Concept Plan approval, but can be realised in the proposed MOD 9 for Central Barangaroo.

To allow for development within the Central Barangaroo precinct and below Barangaroo Reserve, Modification 9 to the Barangaroo Concept Plan (MP06_0162 MOD 9) proposes:

- 1) An increase in total permissible GFA from 602,354 m² to 708,041 m², with the following within Central Barangaroo and Barangaroo Reserve:
 - a) up to 116,189 m² of above ground GFA within Blocks 5, 6 and 7
 - b) up to 28,166 m² of below ground GFA within Blocks 5, 6 and 7
 - c) a minimum of 2800 m² of Community uses GFA within Blocks 5, 6 and 7
 - d) a minimum of 6000 m² and up to 18,000 m² of Community uses GFA within the RE1 Zone of Barangaroo Reserve, to allow for future community/cultural facilities located in the Cutaway.
- 2) An increase in the overall provision of new public open space/public domain, including three new publicly accessible spaces within the development blocks and a new pedestrian bridge over Hickson Road.
- 3) Modifications to the Central Barangaroo building envelope that allow for greater variation in building heights across Blocks 5, 6 and 7 to enable building form, massing and modulation that is responsive to context and adjusts the development boundary for Block 5.

- 4) Introduction of Design Guidelines for Central Barangaroo.
- 5) Consequential amendments to the State Significant Precincts SEPP.
- 6) Revisions to the Barangaroo Concept Plan Statement of Commitments.

The proposed GFA and maximum building heights for each Central Barangaroo development blocks are shown in Table 4.

Table 4: MOD 9 GFA and building heights

Block	Total GFA (m ²)	Residential GFA (max) (m ²)	Height (m)
Blocks 5,6 & 7 (above ground)	116,189	28,000	Block 5 & 6: 42.0 Block 7: 71.2
Blocks 5,6 & 7 (below ground)	28,166	0	n/a
TOTAL	144,355	28,000	

MOD 9 for Central Barangaroo will enable the completion of Barangaroo as the world-class urban renewal precinct that had been envisaged from the outset, delivering major social, economic and environmental outcomes for the State of NSW.

4 *Approach to Economic Impact Assessment*

4.1 *CGE modelling*

Consistent with our terms of engagement, the total economic contribution of MOD 9, including both direct and indirect effects, were estimated using CGE modelling.

CGE Modelling

A computable general equilibrium (CGE) model uses actual economic data and economic theory to estimate how an economy might react to changes in external factors such as policy, technology, or in this case, construction. CGE models are an internally-consistent, interdependent representation of an entire economy with detailed sectoral and product structure. The model captures the relationships of key economic agents (including producers, households, investors, government and the foreign sector) and shows how each responds to an external change in the economy. In particular, the CGE model used was a recursive-dynamic model – which provides sequential outputs on an annual basis.

Specifically, the Victoria University Regional Model (VURM) was used. The VURM is a multi-regional CGE model that simulates the effects on the economy in each year, taking into account indirect and substitution effects; for example, the impact a development or activity might have on prices or resource constraints. It models the economic behaviour in the eight states/territories of Australia using a database of 79 industries producing 83 commodities. The database can be disaggregated to more industry/commodity pairs if required and each industry can produce a variety of commodities. Capital is industry and region specific.

In each region, there is a single household sector and a regional government. There is also a Federal government. Finally, there are foreigners, whose behaviour is summarised by demand curves for regional international exports and supply curves for regional international imports.

In recursive-dynamic mode, VURM produces sequences of annual solutions connected by dynamic relationships such as physical capital accumulation.

The VURM produces estimates of standard economic measures, which serve as indicators of changes in economic activity. These are:

- value added and GSP
- employment
- household and government consumption.

In order to assess the economic impact of MOD 9 on the NSW economy, the VURM was used to estimate the total economic impact associated with:

- the additional construction associated with MOD 9, measured as the average annual impact as construction takes place
- the additional operational activity associated with MOD 9, measured as average annual impact following the completion of construction (operational phase).

Impacts in the operational phase were estimated over the ten years succeeding the completion of construction (2027 – 2036). This provides a long term time horizon to capture estimated impacts. A ten year period was chosen due to the inherent uncertainty surrounding longer term forecasts.

4.2 Limitations and assumptions

Limitations

The economic impacts presented in the following sections exclude any impacts of existing uses of the development site. Since the majority of the site was unused wharf facilities, the effect of this exclusion is expected to be minor.

Relative to more simplistic input-output modelling (IO), CGE models are preferred by governments and treasuries because they have been peer reviewed, meaning the inputs and assumptions are fully and publicly documented. In addition, CGE models feature systematic price-guided behaviour and recognise the effects of economy wide constraints. Set in recursive-dynamic mode, the VURM is able to model the effects of economic shocks over a period of time, solving for industries and across regions each year. These assumptions may not hold if an economy is already at or near full capacity, or if particular labour categories face skill shortages. Wages and capital stocks can and do respond in the longer term.

It was also assumed that the national economy was not constrained by any current account balance constraints during the construction period. That is, foreign capital inflow and imports required for the construction can occur without any direct implications on the availability of capital or the national economy.

Assumptions: differentiating economic activity transfer and new economic activity

A common challenge of economic impact modelling is accurately identifying new economic activity net of existing economic activity that may have shifted from elsewhere within the economy. Economic activity can and does shift across jurisdictional borders, sectors or within sectors.

For example, the proposed retail shopping centre in MOD 9 is expected to increase retail activity and employment in Sydney. This view is consistent with one of the assumptions associated with the construction of the Metro - there will be enhanced density and retail offerings in and around the stations. Such growth provides a potential community benefit by reducing travel time associated with access to retail spaces by collocating retail with Metro stops.

Much of this economic activity and employment is likely to be new, reflecting the:

- population growth of Sydney by 2030 - the Australian Government's Centre for Population projects that by the time Central Barangaroo becomes operational (i.e. 2030), Sydney will have an additional 539,700 additional residents when compared to 2021.¹¹ That is, the relatively long construction time-period before Central Barangaroo becomes operation means that potential costs (i.e. competitive disbenefits) for existing competing retail regions will be mitigated by the population growth in Sydney.
- the additionality of international tourism.

A proportion of this could be existing activity transferred from other areas of NSW, but we consider this risk small given the additional population growth noted above that will need to have additional retail facilities constructed to meet this additional demand.

In any case, the VURM, and its underlying assumptions, control for these potential movements of activity to help isolate net impacts. The VURM does this in two ways:

- Under recursive-dynamic mode, the VURM models changes in output and input prices across industries in order to reflect changes in economic activity. This is why, during the construction phase of MOD 9, economic activity in the coal, metal products and forestry sectors is projected to decrease as a result of increased investment in the dwellings, trade,

¹¹ - see <https://population.gov.au/data-and-forecasts/data-and-forecasts-dashboard-statement-capital-city-ros.html>

business services, accommodation and food sectors. This is modelled for NSW as a whole and not just the Sydney region.

- When sectors are given positive investment shocks, it is reflected in time by increases in capital stock. Although the VURM does not differentiate capital stock in Barangaroo (such as a new shopping centre) against capital stock elsewhere in Sydney, it does model decreased returns to capital as the supply of capital expands. This goes some way to negating the effect of shifting economic activity within the economy.

In any case, CGE modelling is a conservative approach because it allows for resources to be drawn from other activities and areas.

Potential impacts of MOD 9's proposed retail floor space

MOD 9 proposes a significant expansion on floor space dedicated to retail services; an additional 36,494 m².

The economic impact of additional retail floor space is primarily reflected in the trade and accommodation and food services sectors (which contain shops and wholesale trade, and cafes, takeaways, bars and restaurants respectively). The net economic impact of MOD 9 is estimated to be an additional 256 jobs and 117.4 m in GVA each year during the operational phase across these sectors.

These impacts are modelled for NSW as a whole, and not just the Sydney region or Barangaroo's immediate surroundings. Economic modelling is less effective in predicting short term (re)distributional impacts at the scale of Barangaroo's immediate surroundings. At this more localised scale, the mix and quality of actual new retail offerings created will be more important in determining precise impacts. This mix and quality will presumably adapt through time in response to market forces, retail dynamics and trends.

The retail sector has seen substantial change in the last decade, driven by consumer demand and evolving technology. The retail sector has needed to adapt and innovate to remain competitive. The scale of the retail and hospitality activity proposed for Central Barangaroo is based upon development industry research projections of growth and change in the retail and hospitality industry. This growth is reflective of demand in the local Barangaroo area but also of growth in total market size, with an additional 539,700 residents in Sydney by the time of Central Barangaroo's opening – see Appendix B for more evidence of the fact that strong population growth is projected to continue in NSW and Sydney in particular, even if impacted by COVID-19 in the immediate short term.

Hence, the delivery of Barangaroo Station as one of four CBD stations and a key part of the growing Sydney Metro network will be a key driver of growth for Central Barangaroo. The combination of strong transport infrastructure and commercial floor space make Central Barangaroo a potential high transit point, where the catchment area for retailers could go well beyond their immediate surroundings. The CBD consumer, whether a visitor, resident or worker, is increasingly expecting variety, sophistication, a positive experience and importantly convenience in their retail experience.¹²

Broader benefits of creating retail GFA can include improved social outcomes for nearby residents. MOD 9 proposes a significant amount of commercial floor space, 64,146 m². Areas with high commercial floor space and low retail floor space can suffer from decreased footfall outside of office hours which results in vacant urban spaces. Increasing retail space could help alleviate this and result in positive social outcomes for visitors and residents.

The Greater Sydney Region Plan notes that Sydney continues to benefit from the historic policy of locating major trip generating activities (e.g. retail, hospitality, offices, health and education, community and administrative services) in centres with train stations. The Plan states that centres that continue to be a key organising element of the urban structure of Greater Sydney and play an important role in providing access to jobs, goods and services.

¹² Colliers International (2018) *Retail First Half 2018*.

As Sydney's population grows over the next 20 years, the Plan forecasts that there will be a need for over 5 million m² of additional retail floor space. To remain competitive, the market needs to be able to deliver this retail floor space in an efficient and timely manner, which means there will be a need to grow existing centres and develop new ones.

The proposed retail centre at Central Barangaroo is well located to serve the changing north west quarter of Sydney CBD and will have easy direct access to Barangaroo Station, as one of four new CBD metro stations. The proposed retail centre is considered wholly consistent with the NSW Government's long-standing policy of locating and consolidating investment, business and retail activity in centres and close to transit infrastructure.

As outlined in section 4.2, the method of CGE modelling chosen controls for movements of activity across the entire NSW economy. This goes some way to negating any effect of shifting economic activity and isolating net activity.

4.3 Structure

Section 5 outlines the economic impacts generated by the MOD 9 development. Impacts are split into construction and operational phases due to the distinct economic nature of these periods. The phases are further broken down into three sections:

- *Approach*: The specific process undertaken to estimate the economic impacts of each phase of MOD 9.
- *Inputs*: The assumptions and data used in order to estimate the effect of MOD 9 for each phase.
- *Results*: The outputs of the VURM indicating the estimated effect of MOD 9 in each phase based on the inputs used.

5 Economic Impact of MOD 9

This section presents estimates of the additional (direct and indirect) state economic impacts from MOD 9 of the Barangaroo development, during construction (section 5.1) and operational (section 5.2) phases.

5.1 Economic impact - construction

5.1.1 Approach

To simulate the economic impact of higher construction activity resulting from the changes proposed in MOD 9, the following scenarios were modelled:

- **Baseline scenario:** This scenario assumed that the approval of MOD 9 is not granted and construction proceeds as per the approved Concept Plan.
- **MOD 9 scenario:** This scenario assumes that the MOD 9 is approved and proceeds as proposed and models the economy with higher construction activity during construction years.

The estimated additional economic impacts were determined by calculating the differences in economic outcomes between the MOD 9 and baseline scenarios for the New South Wales economy.

The capital investment for the construction is expected to stimulate short-run construction activity and raise overall aggregate demand in the state economy. Scenarios were modelled by increasing the level of investment in the Trade, Accommodation and Food, Business Services and Dwellings sectors. These sectors were chosen because they are primarily comprised of:

- wholesale and retail trade (captures a broad range of goods including construction materials)
- hospitality sector including restaurants
- business services
- residential construction.

The estimation of the economic impact of construction was based on investment estimates provided by INSW. The estimated investment timeline associated with MOD 9 is outlined in Table 5.

Table 5: MOD 9 estimated construction values (\$ million)¹³

	2022	2023	2024	2025	2026	2027	2028	2029	Total
Residential	1.8	2.8	9.5	27.4	35.4	99.0	79.2	0.5	255.6
Retail	4.7	7.9	25.2	75.7	86.3	42.9	52.3	3.9	298.8
Office	16.5	23.4	67.0	161.6	181.8	197.6	218.1	3.6	869.5
Total	23.0	34.0	101.7	264.6	303.5	339.5	349.6	8.0	1423.9

Source: INSW

The changes proposed by MOD 9 are expected to increase the investment to build Central Barangaroo to \$1423.9 b. Construction activity is expected to be occur between 2022 and 2029 as per the development plans for Central Barangaroo.

An equivalent construction investment time series for the approved Concept Plan is not available as the approved Concept did not contemplate the construction value of Central

¹³ All construction values in 2021 dollars.

Barangaroo. Therefore, to estimate the base case scenario (where the approved Concept Plan proceeds), it is assumed the ratio of the existing Concept Plan and MOD 9's net economic impacts will be proportionate to the planned total GFA of each scenario (i.e. it is assumed construction costs per unit of total GFA are constant across both scenarios).

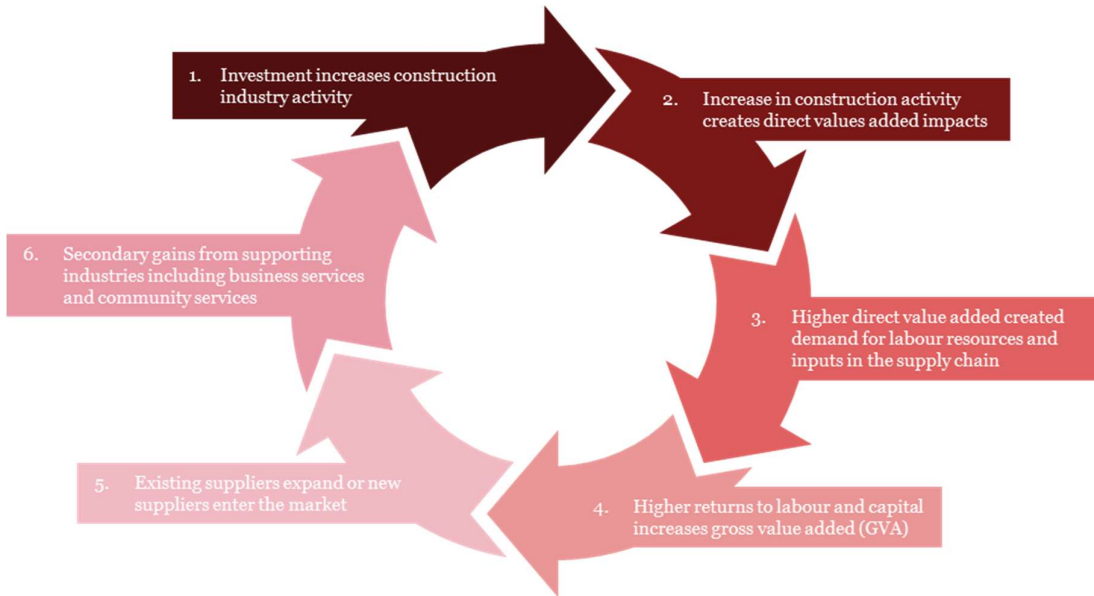
5.1.2 Results

The economic impacts associated with the construction activity for the approved Concept Plan and for MOD 9 are outlined below.

Gross Value Added impacts

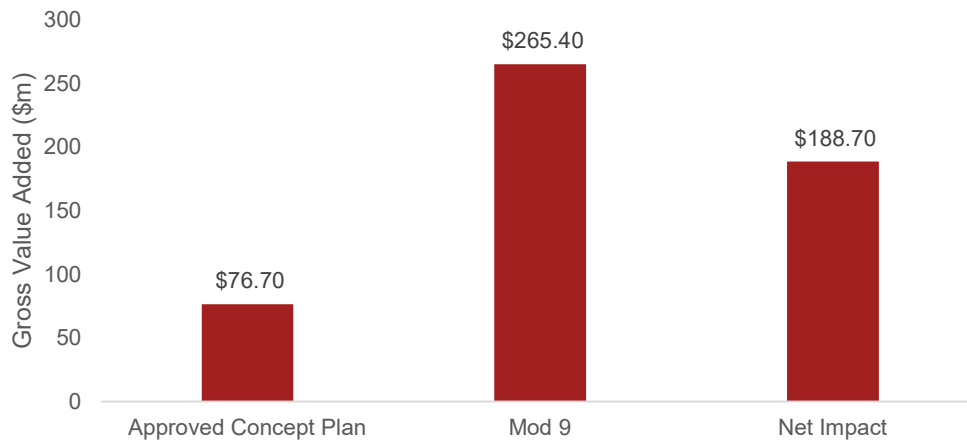
The additional construction associated with MOD 9 is estimated to have a positive impact on gross value added (GVA), the additional value to the economy in terms of wages and profit in each industry, of an additional \$199.3 m per year during construction relative to the approved Concept Plan. The mechanism by which investment in the development is expected to flow through the economy is illustrated in Figure 1.

Figure 1: Direct and indirect economic impacts



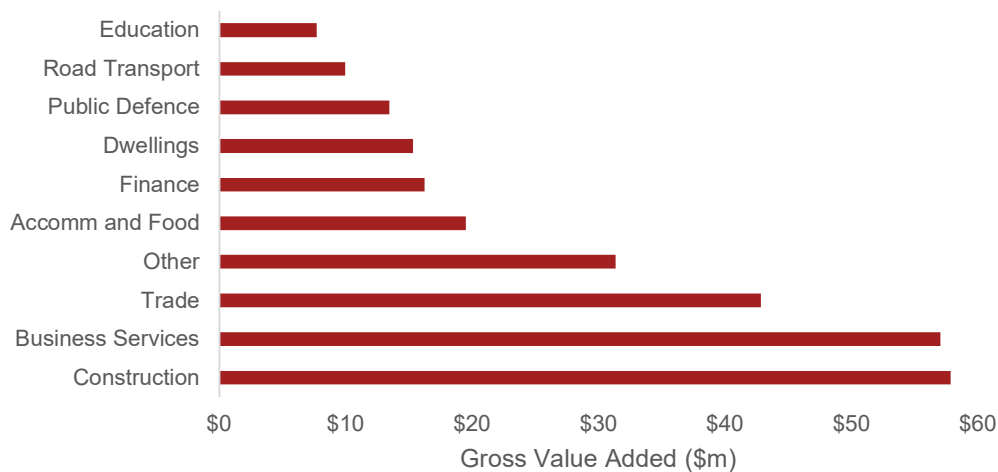
The average annual impact of the capital investment on the New South Wales economy of the approved Concept Plan and MOD 9 is illustrated in Figure 2.

Figure 2: Average annual impact on GVA during construction phase



The distribution of net economic impact across industry sectors is illustrated in Figure 3.

Figure 3: Average annual industry GVA by economic sector during construction phase (2022-2029)



The additional impact of MOD 9 is predominantly concentrated in the construction industry. Sectors that support the construction sector through its supply chain are also stimulated by additional demand. For example, the Business Services and Trade sectors are projected to grow by a combined \$99.8 m each year, due to an increase in demand for services, raising GVA.¹⁴

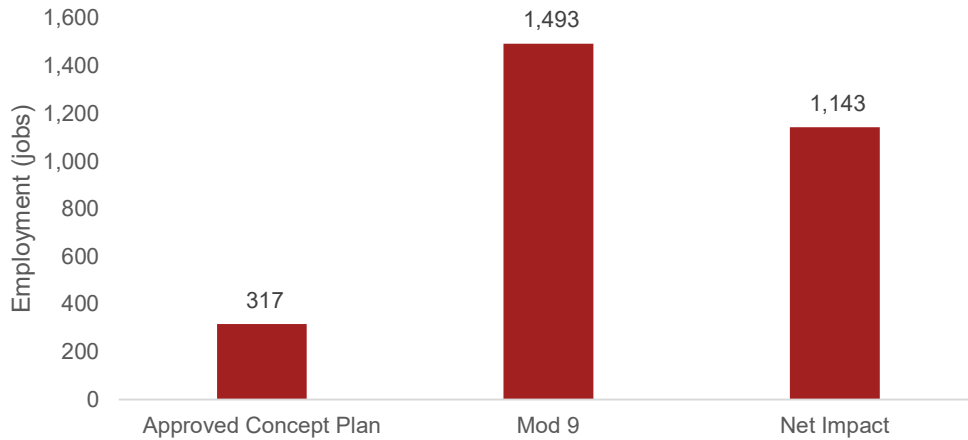
Employment impacts

In addition to boosting GVA, the additional construction activity associated with MOD 9 is expected to lead to an average increase in employment in the New South Wales economy.

¹⁴ The VURM models for 79 different industries as outlined in section 4. In the figure above, the nine industries which experience the largest economic impacts are listed individually, and 'Other' sector refers to the sum of economic impacts across the 70 remaining sectors. This is the case for all subsequent references to the 'Other' sector.

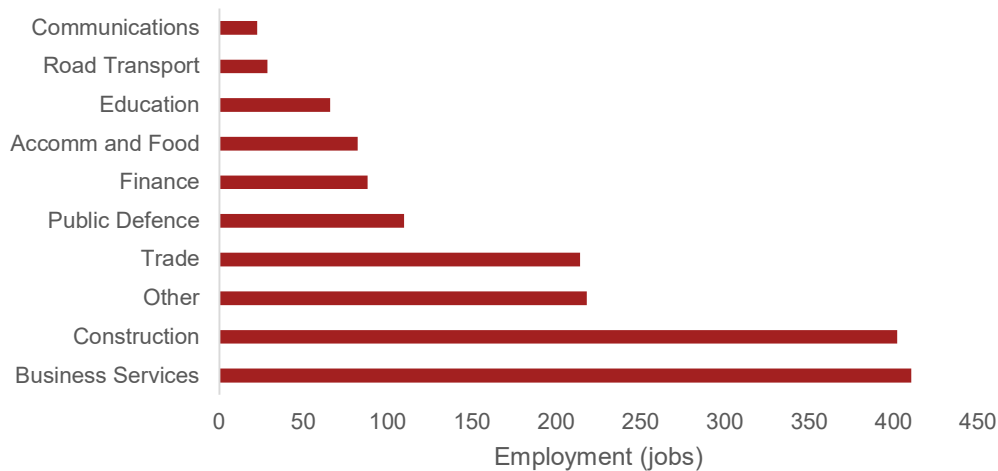
Total employment impacts associated with the approved Concept Plan and the proposed MOD 9 are illustrated in Figure 4.

Figure 4: Average annual employment impacts during construction phase



On average, construction related employment is expected to increase by an average of 1143 jobs per over the period 2022-2029 as a result of MOD 9 (compared to the approved Concept Plan). The industry distribution of employment impacts is illustrated in Figure 5.

Figure 5: Average employment impacts by sector during construction phase



Similar to the estimated GVA impacts, a large number of additional jobs are concentrated in the construction sector. However, other sectors upstream and downstream of the construction sector are also positively impacted by the additional capital expenditure. Consistent with the GVA estimates, sectors that support the construction sector through its supply chain are stimulated by additional demand from the construction industry which leads to job creation. For example, the Trade and Business Services sectors grow as a result of increased demand for its services, raising employment on average by 214 and 410 jobs each year respectively.

Potential adverse impacts of construction

Investment in construction directly increases employment and demand for inputs associated with investment (e.g. in the construction sector). Generally, the additional demand for labour and inputs raises local prices for resources, deteriorating the competitiveness of local industries. A reduction in competitiveness can result in negative impacts for trade-oriented

industries such as agriculture and mining (e.g. import competing industries). Modelling of MOD 9 projected incremental negative impacts of less than 1 per cent of current GVA in the Coal and Metal Products sectors.

5.2 Economic impact – operation

In this section we outline the estimated economic impact associated with the activity onsite following the completion of construction. The ongoing economic impact of Central Barangaroo in its operational phase involves a number of components including:

- additional residents living on site
- additional visitors to the site including, workers, local Sydney residents, and international and domestic tourists
- additional economic activity located on site including in commercial offices, hospitality services, retail stores and cultural attractions.

The core of this section focuses on the marginal benefit that MOD 9 brings that is additional to the community because of the nature of the precinct in attracting tourists. This is something that just building shops, offices or apartments would not normally do; this is the real unique value generated by MOD 9.

However, there is also benefit in understanding the gross economic activity supported by the MOD 9 development in Central Barangaroo - we do this in Box 1 at the end of this section.

5.2.1 Approach

The approach used to estimate the economic impacts of MOD 9 in construction phase is also applied to estimate economic impacts of the modification during operational phase.

In order to simulate the economic impact of higher levels of economic activity following the completion of the construction, the following scenarios were modelled:

- **Baseline scenario:** This scenario assumed that the construction of MOD 9 does not proceed and construction proceeds as per the approved Concept Plan. The scenario reflects the operation of the site based on the approved Concept Plan.
- **MOD 9 scenario:** This scenario assumed that MOD 9 is approved and developed, modelling economic activity once the site is fully operational.

The estimated economic impacts were determined by calculating the differences in economic outcomes between the MOD 9 and the baseline scenarios for the New South Wales economy.

5.2.2 Inputs

Operational economic impacts of MOD 9 were estimated based on the capital investment associated with construction and the resulting composition of additional capital across sectors once the site is fully operational. As outlined above, an investment timeline was applied to the model in the form of economic shocks to the Trade, Accommodation and Food, Business Services and Dwellings sectors, resulting in flow on effects throughout the economy (presented in section 5.1.2). As the VURM is a recursive-dynamic model, it takes into account sectoral growth based on the initial capital shock and provides estimates based on this. The flow on effects from construction which continue beyond the construction period are therefore taken into account when estimating the operational impact of MOD 9.

In addition to this, an uplift in state tourism activity (exports) was applied to the model to reflect increased visitation and tourism expenditure in NSW resulting from MOD 9 in the operational phase. The increase in tourism activity was estimated at 0.292 per cent across NSW and was distributed in the model across the Accommodation and Food, Road Transport, Air Transport and Other sectors (the tourism export sectors in the VURM).

This figure was estimated using a series of assumptions and data points including: the additional floor space included in MOD 9, average Sydney visitor data¹⁵ and assumptions provided by the Central Barangaroo developer (see Table 6). It is recognised that a large portion of tourism activity expected to occur at Central Barangaroo could have occurred elsewhere in Sydney. In order to avoid overstating new economic activity, only additional international tourism expenditure was estimated.

Table 6: Assumptions used to calculate additional tourism activity

Assumption	Occupancy (%)
Residential: 1 visitor per day per 10 residents	98
Residential: 1 resident per 50 m ²	98
Commercial: 1 visitor per working day per 4 workers	95
Commercial: 1 employee per 12 m ²	95
Retail: 1 visitor per 3 m ²	95
Cultural: 1 visitor per 14 m ²	85

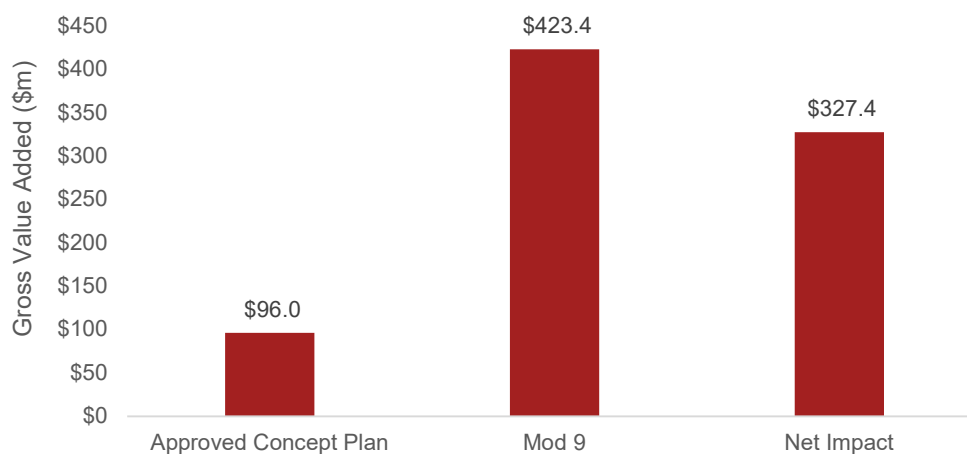
Source: INSW

5.2.3 Results

Gross Value Added impacts

The additional operational activity under the proposed MOD 9 is expected to increase annual GVA in the NSW economy by \$327.4 m relative to the operational impact of the approved Concept Plan. The value-added is associated with the operational employment and activity located on site and is illustrated in Figure 6.

Figure 6: Average annual impact on GVA during operational phase



The industry distribution of the net impact of MOD 9 is illustrated in Figure 7.

¹⁵ Destination NSW (2020) *Sydney Visitor Profile YE September 2019*. Available at <https://www.destinationnsw.com.au/wp-content/uploads/2020/02/travel-to-sydney-snapshot-sep-2019.pdf> (accessed on 27 March 2020). Fixr, (2020) *Hotel Service Cost Guide*.

Figure 7: Average annual impact on GVA by sector during operational phase



The greatest GVA impacts are expected to be concentrated in the Business Services and Trade sectors. This reflects the increase in retail and commercial space to 36,494 and 87,978 m² respectively and expenditure from businesses supported by employment and business activity due to MOD 9. The impact on value added is also significant in the Trade and Accommodation and Food Service sectors. Activity in these sectors reflects the additional residential, tourism and business demand associated with MOD 9.

Employment impacts

In addition to the GVA impacts, the operational activity associated with MOD 9 is also estimated to support ongoing employment of an additional of 1176 jobs in the NSW economy. Figure 8 illustrates the operational impact of the approved Concept Plan (MOD 10) and MOD 9 on employment.

Figure 8: Average annual employment impacts during operational phase

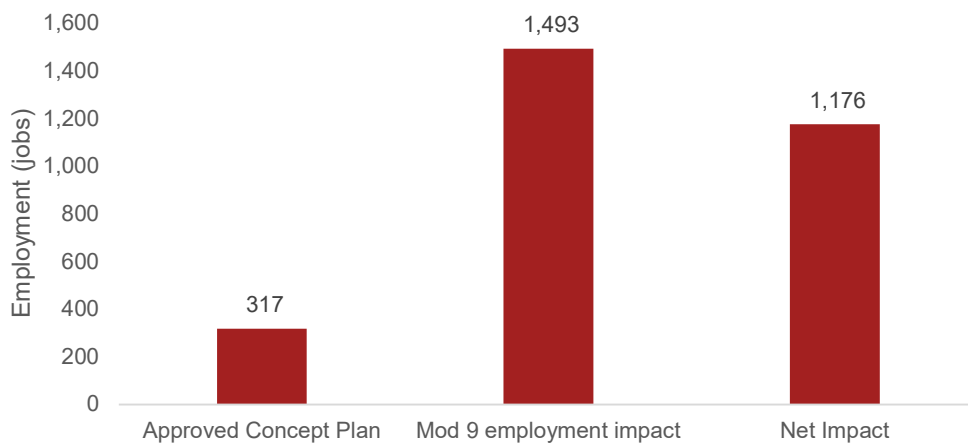
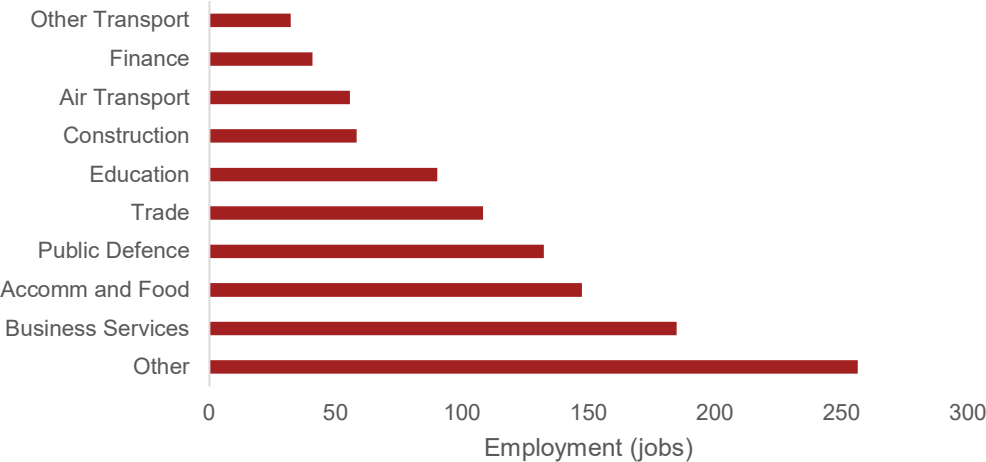


Figure 9 illustrates the distribution of operational employment impacts across industries.

Figure 9: Average annual employment impacts by economic sector during operational phase¹⁶



Similar to the GVA impacts, positive employment impacts are concentrated in the business services and other sectors. This is largely a result of the increased commercial and retail GFA which MOD 9 proposes; a key driver of this increase is the arrival of the Sydney Metro and the importance of capitalising upon this opportunity for broader economic benefits. Increased employment in these sectors, accommodation and food services and trade and a large number of others, is a result of upstream and downstream expenditure by businesses and households supported by MOD 9.

¹⁶ 'Other' includes all sectors of the economy not otherwise specified in the figure

Box 1 The Annual Gross Economic Impact of MOD 9

The CGE analysis presented in this report is conservative in that it focuses on the marginal benefit created by the Central Barangaroo development. That is, it is the true value add created by the development of a world-class precinct that is attractive to international tourists.

An alternative approach is to focus on the gross economic activity occurring in Central Barangaroo.

To do this we estimated activity by first identifying the gross floor area (GFA) associated with different end uses. MOD 9 provides for construction of:

- office space – 87,978 m²
- retail space – 36,494 m²
- residential space – 11,720 m²
- active use space – 2005 m²
- cultural space – 3400 m².

To these specific GVAs we applied economic multipliers in respect of jobs and gross value add (GVA) to develop estimates in terms of:

- the number of jobs we can expect given standard employment per square metre assumptions
- the average GVA we can expect per square metre.¹⁷

To these values we applied a series of multipliers (derived from input-output tables) and GVA per activity estimates to calculate jobs and GVA in terms of:

- direct effects – these are the changes in economic activity (jobs and GVA) during the first round of spending in Central Barangaroo
- industrial effects – these are the business-to-business impacts (i.e. the increase in activity generated by businesses that supply business operating in Central Barangaroo)
- consumption effects – these are the values stemming from increased spending by employees who work in Central Barangaroo or who supply goods and services to businesses supplying goods and services into Central Barangaroo businesses.

On this basis we expect, in terms of:

- total annual jobs supported by Central Barangaroo:
 - 7062 direct jobs in Central Barangaroo
 - 3355 jobs supporting businesses in Central Barangaroo
 - 3814 jobs due to higher wages in the community.
- total annual GVA supported by Central Barangaroo:
 - \$835 million to in direct GVA in Central Barangaroo – this is a conservative estimate given that we have assumed average GVA for quality office spaces, but that there is a chance that Central Barangaroo may attract even higher value tenants given the concentration of financial and professional services in Barangaroo. If these ‘more valuable’ tenants as the core then this could be in the vicinity of \$2,359 million
 - \$540 million GVA from businesses supporting Central Barangaroo
 - \$656 million in additional GVA from activity triggered by higher wages in the community.

While we have reported consumption effects here, there is a risk of some double-counting and so the headline impact should be reported net of consumption effects. Hence, once completed, the annual economic activity supported by the MOD 9 development of Central Barangaroo is in the order of:

- 10,417 jobs
- \$1.375 billion in GVA, but potentially up to \$2.899 billion if ‘top tier’ office tenants are attracted to Central Barangaroo.

¹⁷ There are no employment GVA multipliers for residential spaces

Appendix A: Strategic Alignment

The Barangaroo development fits within the greater agenda of the New South Wales Government to promote a variety of social and economic planning objectives. These occur at both a state and local government level, seeking to boost business activity, living standards and accessibility of Sydney's CBD. Barangaroo offers the NSW Government and the City of Sydney an opportunity to foster development to meet social and economic objectives.

As outlined below, the Barangaroo development and MOD 9 specifically aligns with and supports achievement of the objectives of a number of plans and strategies for Sydney and New South Wales, including:

Table 7: Strategic alignment of MOD 9

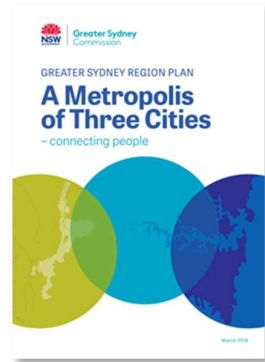
NSW Premier's Priorities



The Barangaroo development and MOD 9 support a number of the priorities and strategies of the NSW Premier:

- delivering public transport infrastructure to enable the community to move around the city with greater ease
- creating jobs, at both the construction and operational stages
- building facilities that could encourage broad cultural participation.

Greater Sydney Regional Plan – A Metropolis of Three Cities

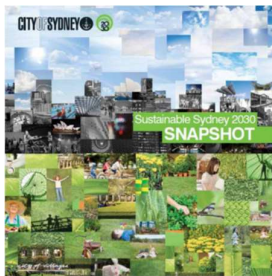


The Barangaroo development and MOD 9 supports a number of the objectives of the *Greater Sydney Region Plan*:

- providing services and infrastructure that meet communities' changing needs
- delivering spaces that support healthy, resilient and socially connected communities such as parks, boardwalks and bikeways
- the inclusion of facilities for the arts and creative industries
- providing public open space that is accessible, protected and enhanced.

These objectives are duplicated in the District Plan.

Sustainable Sydney 2030



The Barangaroo development and MOD 9 support a sustainable Sydney as per *Sustainable Sydney 2030*:

- providing new commercial space to support the development of financial services industries as an 'Asia Pacific Hub'
- stringent environmental controls and building design standards
- integration with new and additional public transport services
- a pedestrian link and shoreline promenade to encourage active transport
- use of open space to encourage activity and vibrancy.

Appendix B: Community Profile and Social Baseline

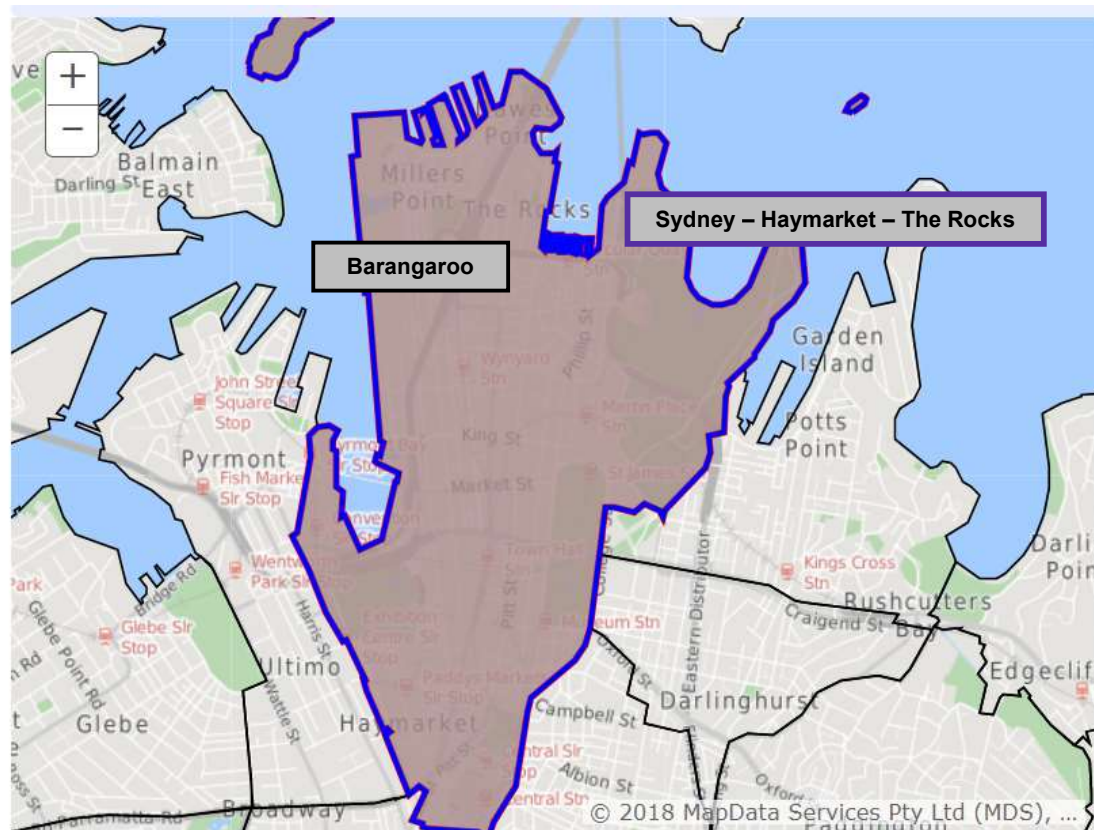
Population

The population of the Sydney – Haymarket – The Rocks region (SA2) was 27,405 at the time of the 2016 Census and was projected to have increased to 32,961 as of 30 June 2019.¹⁸

The most recent detailed profile of the community, drawn from the 2016 Census, shows that females represent a slightly larger proportion of the population than males (50.4 per cent). The median age was 30 years and 75 per cent of the resident population were between 15 and 44 years of age (see Figure 10). As shown, children under the age of 15 represented only 5 per cent of residents, and people aged 45 or above represented 20 per cent of the resident population.

Over 57.2 per cent of residents had never married and 33.9 per cent of residents were married. The remaining population were either separated (1.9 per cent), divorced (5.6 per cent) or widowed (1.3 per cent).

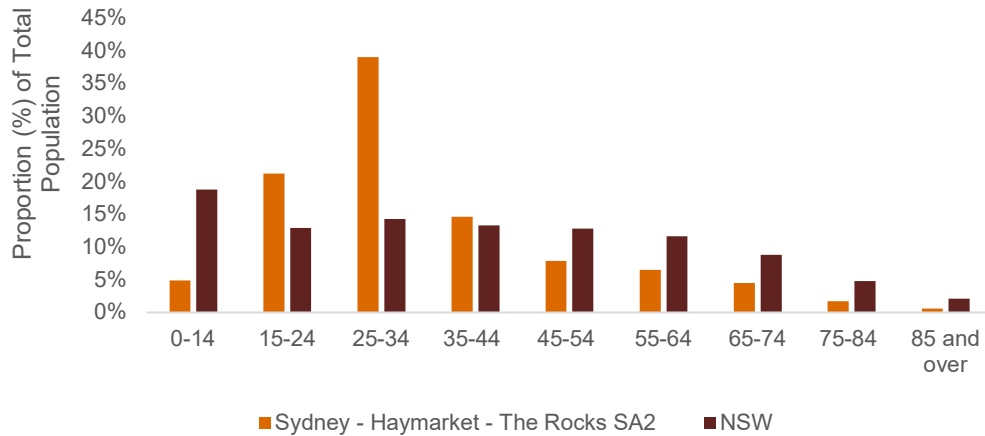
Figure 10: Sydney – Haymarket – The Rocks SA2 map¹⁹



¹⁸ See projections available at <https://profile.id.com.au/sydney/population-header?WebID=290>

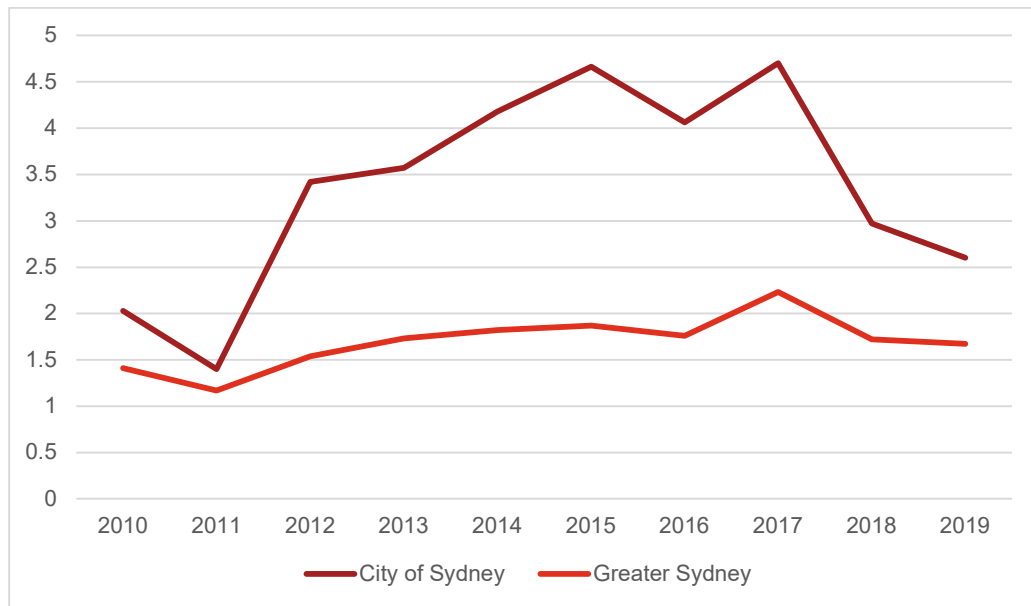
¹⁹ Australian Bureau of Statistics, Sydney - Haymarket - The Rocks (SA2) (117031337). Available at: http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=117031337&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_NRP_LGA®ionLGA=REGION®ionASGS=REGION (accessed on 1 December 2018).

Figure 11: Sydney – Haymarket – The Rocks SA2 population distribution 2016²⁰



The population of Sydney (LGA) has grown faster than that of Greater Sydney, and is expected to continue to do so, but is expected to be more volatile.

Figure 12: Annual population growth (%) in city of Sydney and Greater Sydney²¹



The Sydney LGA average household size is two, and is expected to remain relatively constant through 2041 (declining to 1.95). The AAGR for households is projected to decline from 1.2 per cent (2016-21 period) to 0.4 per cent in the 2036-2041 period.²²

Figure 13 shows the projected increase in each respective age group within the Sydney LGA area between 2016 and 2041. Consistent with the national trend of an aging population and increased urbanisation, the 75+ age group is expected to experience the greatest increase

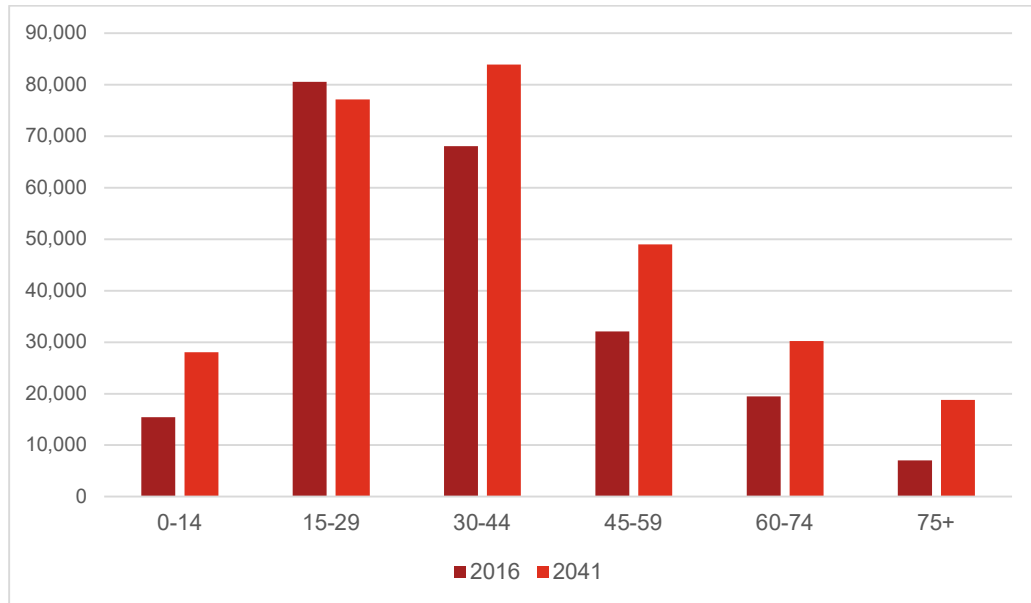
²⁰ ABS, cat. no. 2001.0 General Community Profiles: NSW and Sydney-Haymarket-The Rocks.

²¹ See <https://profile.id.com.au/sydney/population-estimate?WebID=10>.

²² NSW Government (2020), *City of Sydney Council 2019 NSW Population Projections*.

over the projection period, but all age profiles will grow except 15-29. This will likely shift the Sydney LGA age profile, and will inevitably affect consumer preferences within the community.

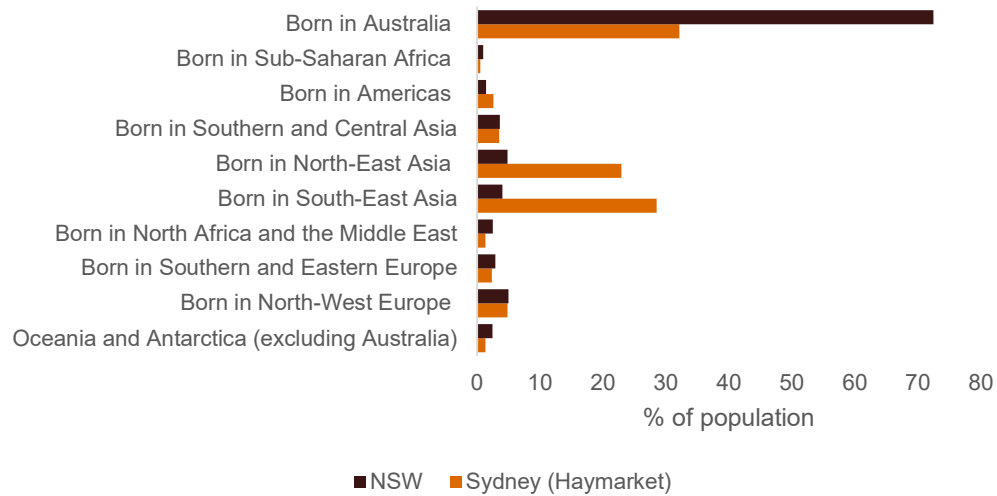
Figure 13: Projected age cohort increases 2016-2036 Sydney LGA²³



Culture and Ethnicity

The Sydney – Haymarket – The Rocks SA2 region is culturally diverse, with a wide variety of ethnicities and backgrounds residing in the precinct. Figure 14 provides a detailed breakdown of this. The most common regions of birth (excluding Australia (32.1 per cent)) for Haymarket residents were South East Asia (28.5 per cent) and North East Asia (22.9 per cent).

²³ NSW Government (2020), *City of Sydney Council 2019 NSW Population Projections*.

Figure 14: Sydney – Haymarket – The Rocks SA2 region of birth²⁴

Religious Affiliations

As expected with a culturally diverse region, the Sydney – Haymarket – The Rocks SA2 precinct contains a variety of religious denominations. As of 2016, Christianity was the most common religious belief and have several designated churches in the immediate Haymarket area. Hindu and Islam followers are also prevalent in the area, however even when combined represent 17.8 per cent of the registered Christian when comparing the two beliefs on a person-by-person basis²⁴.

Wealth and employment

The Sydney LGA region had a reported labour force of 124,746 as of 2016.²⁵ Of this workforce:

- 65.3 per cent were full-time employees
- 24.6 per cent were part-time employees
- 4.1 per cent were away from work
- 6 per cent were unemployed.

Sydney LGA had a higher recorded level of full-time employees when compared to NSW (59.2 per cent) which had higher levels of part-time employees (29.7 per cent), people away from work (4.8 per cent) and unemployed residents (6.3 per cent).²⁶

²⁴ ABS, cat. no. 2001.0 General Community Profiles: NSW and Sydney-Haymarket-The Rocks.

²⁵ ABS, cat. no. 1379.0. Regional profile: Sydney LGA.

²⁶ 2016 Census quick-facts available at http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA17200?opendocument (accessed on 1 December 2018).

Table 8: Sydney LGA labour force 2016²⁷

Employment status	(persons)
Full-time Employment	81,454
Part-time Employment	30,695
Away from work	5,104
Unemployed	7,493
Total Labour Force	124,746

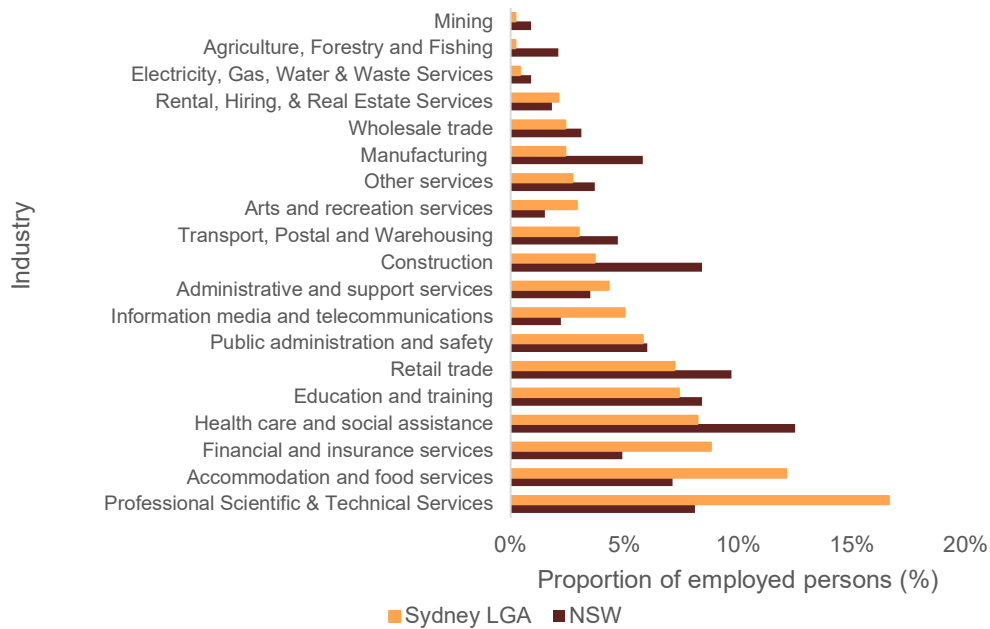
The majority of employed residents in the Sydney LGA region worked more than 35 hours a week (69.5 per cent) which is similar to wider NSW trends. 77.6 per cent of parents in couple families had at least one person employed. Under this, 39.4 per cent of couples had both members working full-time, 15.9 per cent had one employed full-time and one part time, 5.1 per cent had both employed part-time.²⁸

Within the Sydney LGA region, the largest sectors which contributed to employment were Professional Technical and scientific services (17 per cent of total employment), accommodation and food services (12 per cent), and the financial and insurance sector (9 per cent). The region's employment by sector distribution differs from NSW which has higher levels of employment in the Health Care and social assistance (13 per cent) and Retail Sectors (10 per cent).

²⁷ ABS, cat. no. 1379.0. Regional profile: Sydney LGA.

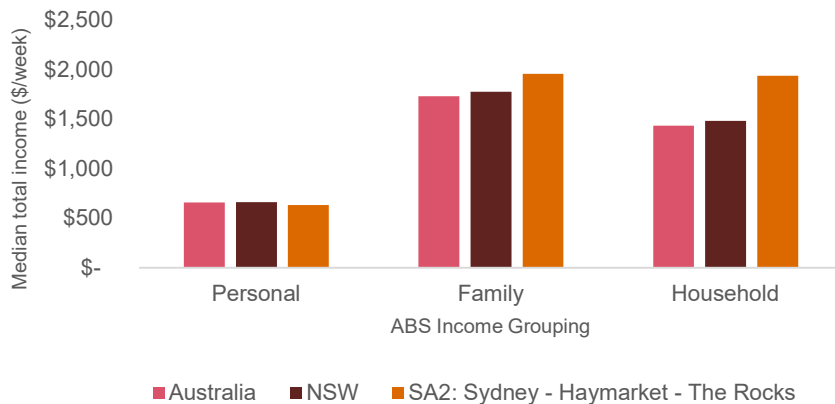
²⁸ 2016 Census quick-facts available at http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA17200?opendocument (accessed on 1 December 2018).

Figure 15: Employment by sector Sydney LGA and NSW 2016²⁹



The Professional Scientific & Technical services sector contributed \$46.5 billion on a GVA basis to the New South Wales economy; which represented 8.1 per cent of total economic output. While the Financial and Insurance services sector contributed \$68.1 billion on a GVA basis to the NSW economy, which represented 11.8 per cent of economic output. The Health care and social assistance sector contributed \$33.7 billion on a GVA basis to NSW, and this represented 5.8 per cent of economic output.³⁰ These are the three most significant sectors, on an expenditure basis, within Sydney LGA employment that contribute to the NSW economy.

Figure 16: Median total income distribution 2016³¹



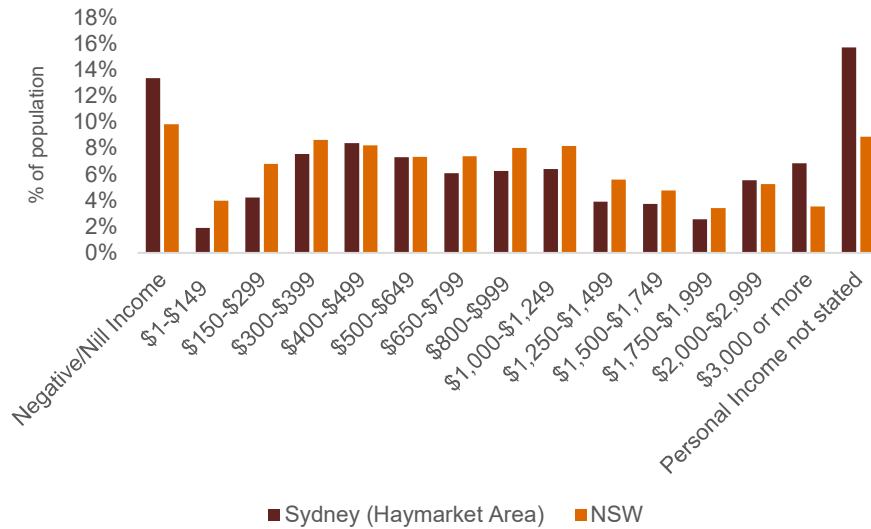
²⁹ ABS, cat. no. 1379.o. Regional profile: Sydney LGA.

³⁰ ABS 5220.o Australian National Accounts: State Accounts.

³¹ ABS, cat. no. 2001.o General Community Profiles: Australia, NSW and Sydney-Haymarket-The Rocks.

Figure 16 indicates that the median income levels families and households in the Sydney – Haymarket – The Rocks SA2 area exceed those of wider geographic regions. A lower median income at the personal level is representative of a high number of very low income earners within the area, as depicted.

Figure 17: Income distribution Sydney – Haymarket – The Rocks SA2³²



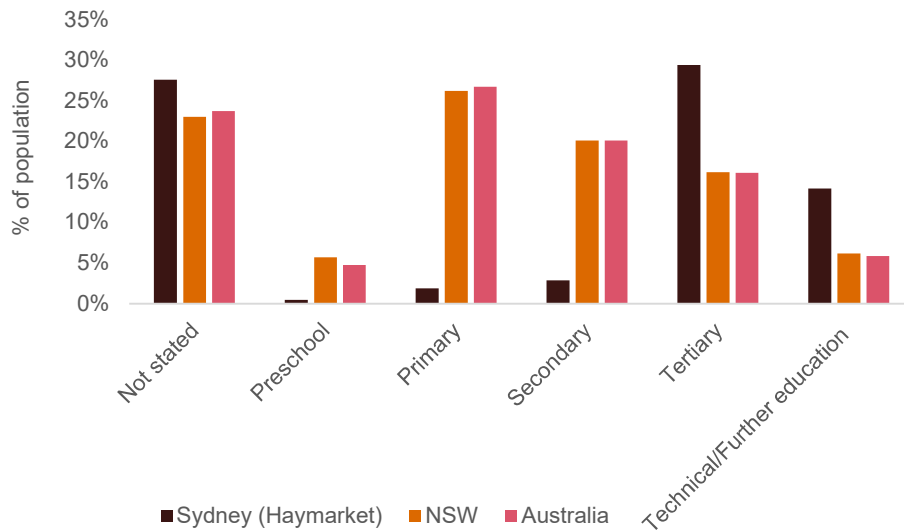
The Sydney-Haymarket-The Rocks SA2 has a distinctly greater proportion of higher income earners (\$3000 or more) than NSW. Additionally, there is a higher proportion of the population with negative or no incomes compared to NSW. This suggests the Haymarket region contains relatively high income inequality and a demographic which contains an above-average proportion of vulnerable individuals.

Education levels

In extension to the age demographics of the area, the Sydney – Haymarket – The Rocks SA2 region exhibits a greater proportion of Tertiary students as well as people undertaking Technical/Further education. As Figure 18 shows, the Haymarket region does not contain many children attending pre, primary or secondary education. Additional data also suggests that people residing within the immediate catchment area exhibit a higher educational attainment level in comparison with NSW and indeed the wider Australian population.

³² ABS, cat. no. 2001.0 General Community Profiles: Australia, NSW and Sydney-Haymarket-The Rocks.

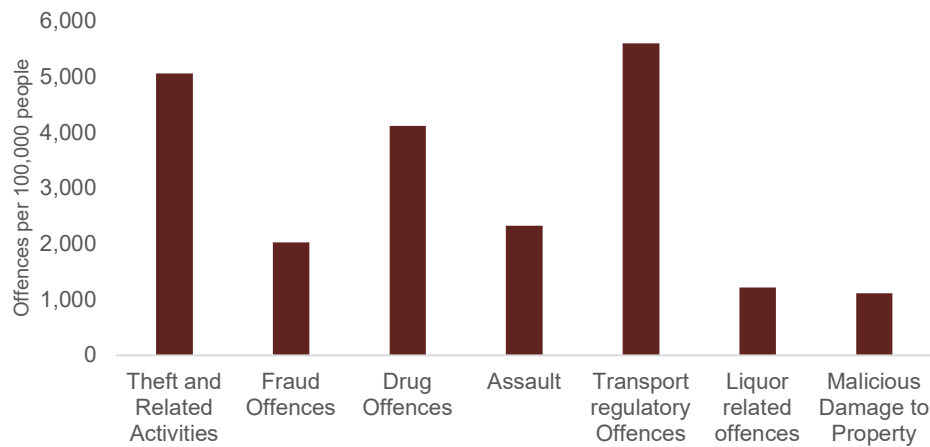
Figure 18: Percentage of population by education level³³



Community safety

The crime rates as of 2017 within the Sydney LGA area are outlined in Figure 19. Data has been exhibited as offences per 100,000 people. There were 59,124 total recorded crimes and a total crime rate of 26,369 per 100,000 people. These numbers exceed the NSW averages for the year, which is somewhat expected given the urban location of the Sydney LGA. Of particular note are drug related and transport regulatory offences, both of which have risen considerably over a 24 month and 60 month basis.³⁴

Figure 19: Crime rates in the Sydney LGA (2017)³⁴



³³ ABS, cat. no. 2001.0 General Community Profiles: Australia, NSW and Sydney-Haymarket-The Rocks.

³⁴ Bureau of Crime Statistics and Research. Available at: http://www.bocsar.nsw.gov.au/Pages/bocsar_crime_stats/bocsar_lgaexceltables.aspx (accessed on 1 December 2018).

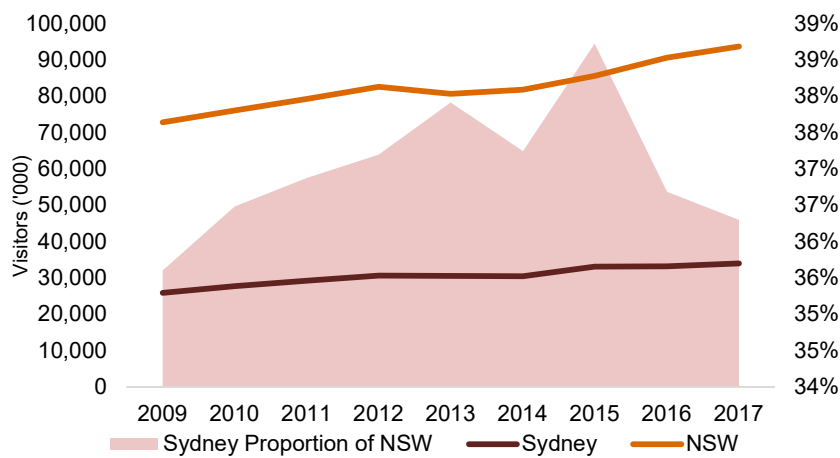
Tourism

Tourism represents a significant part of the Sydney and NSW economy. A total of \$34.2 billion was contributed to the NSW GSP in 2016-17.³⁵ Sydney by extension is an extremely popular tourist location with over 34.0 m domestic and international visitors in 2017. This was a 2.6 per cent increase from 2016, and a 31.2 per cent increase from 2009.

Figure 20 depicts the increasing trend in visitors. Visitors in 2017 spent over 106 million nights (7.5 per cent increase from 2016) and spent over \$18.8 m (9 per cent increase from 2016). Although slightly more volatile, tourism trends in Sydney largely follow NSW.

Although Sydney tourism has increased, the contribution to NSW tourism (total number basis) has fallen to 36.3 per cent from its peak in 2015 of 38.7 per cent. This is despite a 3.4 per cent increase in tourism numbers (domestic and international combined) for NSW – indicating travellers are expanding their horizons.

Figure 20: International and domestic visitors to Sydney and NSW³⁶



³⁵ Destination NSW, “Economic contribution of tourism to NSW (2016-17)”, Available at: <https://www.destinationnsw.com.au/wp-content/uploads/2018/04/economic-contribution-of-tourism-to-nsw-2016-2017.pdf> (accessed on 1 December 2018).

³⁶ Destination NSW, “Travel to Sydney Time Series – YE Sept 2017”. Available at: <https://www.destinationnsw.com.au/wp-content/uploads/2018/01/travel-to-sydney-time-series-ye-sept17.pdf> (accessed on 1 December 2018).

Housing

High levels of demand, both domestic and foreign, have contributed to an extremely competitive Sydney housing market. While the Sydney (and Melbourne) property markets have seen some pull back in recent months as lending restrictions have tightened for investors in particular, Sydney's residential prices and rent values continue to far exceed state and national averages.

Given its location, these trends are particularly relevant for the Barangaroo development. The local residential prices and rent values must be considered as they directly impact the residential development associated with the project. These relevant prices in relation to NSW and Australia are listed in Table 9. Given high levels of demand for Sydney property, median prices are much higher in comparison to NSW and Australia.

Table 9: Median cost of living³⁷

Employment status	Sydney LGA	NSW	Australia
Median Mortgage Repayment (\$/monthly)	\$2,499	\$1,986	\$1,755
Median Rent (\$/weekly)	\$565	\$380	\$335
Average Household Size	2.00	2.61	2.55

³⁷ ABS, cat. no. 1379.0. Regional profile: Australia, NSW, Sydney LGA.

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