



Economic impact of Optus Stadium

VenuesWest

June 2019

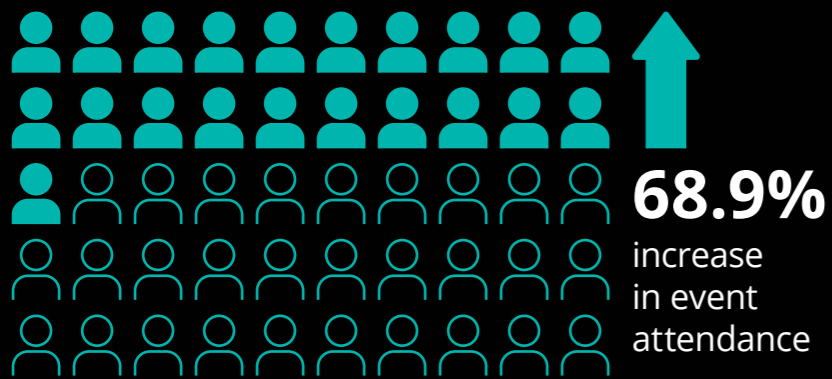
Economic impact of Optus Stadium

More Western Australians experiencing world-class events

1.97 million

event attendees in the first 12 months

including **805,000** people who would not have attended an event if Optus Stadium had not been built



25.6 million

additional attendees expected over the next 29 years

Attracting more visitors to Western Australia

First 12 months

23,700 additional visitors

\$47.1 million additional visitor spend

Expected over the next 29 years

38,000 additional visitors each year

\$75.4 million additional visitor spend each year

Supporting Western Australian businesses

In 2018

85.8% of all supplier spend went to Western Australian businesses

\$42.5 million to 278 local businesses

Creating jobs in Western Australia

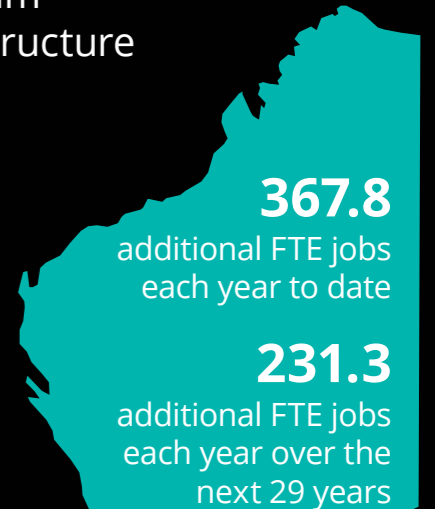
8,600

people employed during the construction of Optus Stadium and related transport infrastructure

3,300

people employed in operations at Optus Stadium each year

Optus Stadium also generates additional jobs in the broader Western Australian economy



Economic impact for Western Australia



\$129.7 million

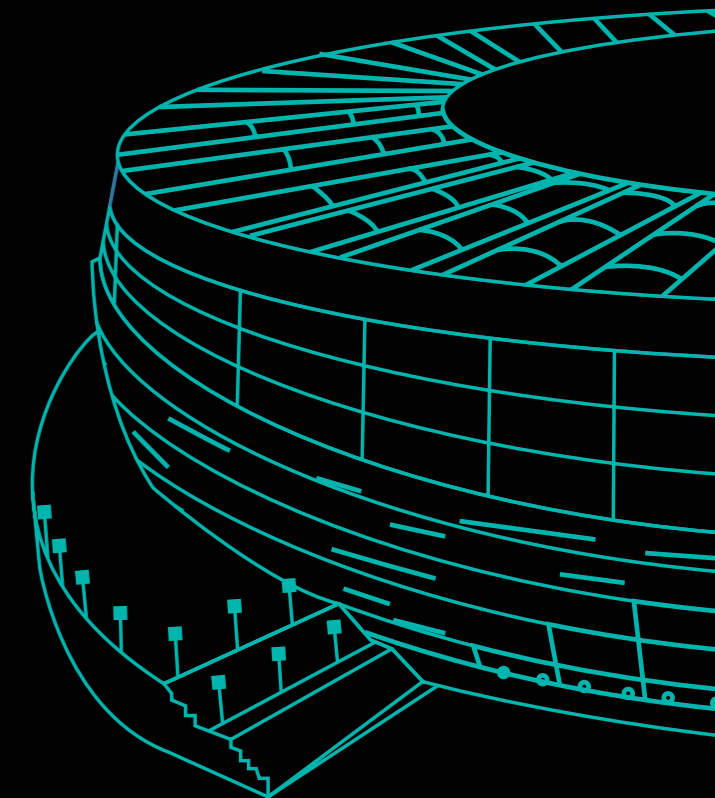
increase in the economic output of Western Australia to date

\$653.6 million

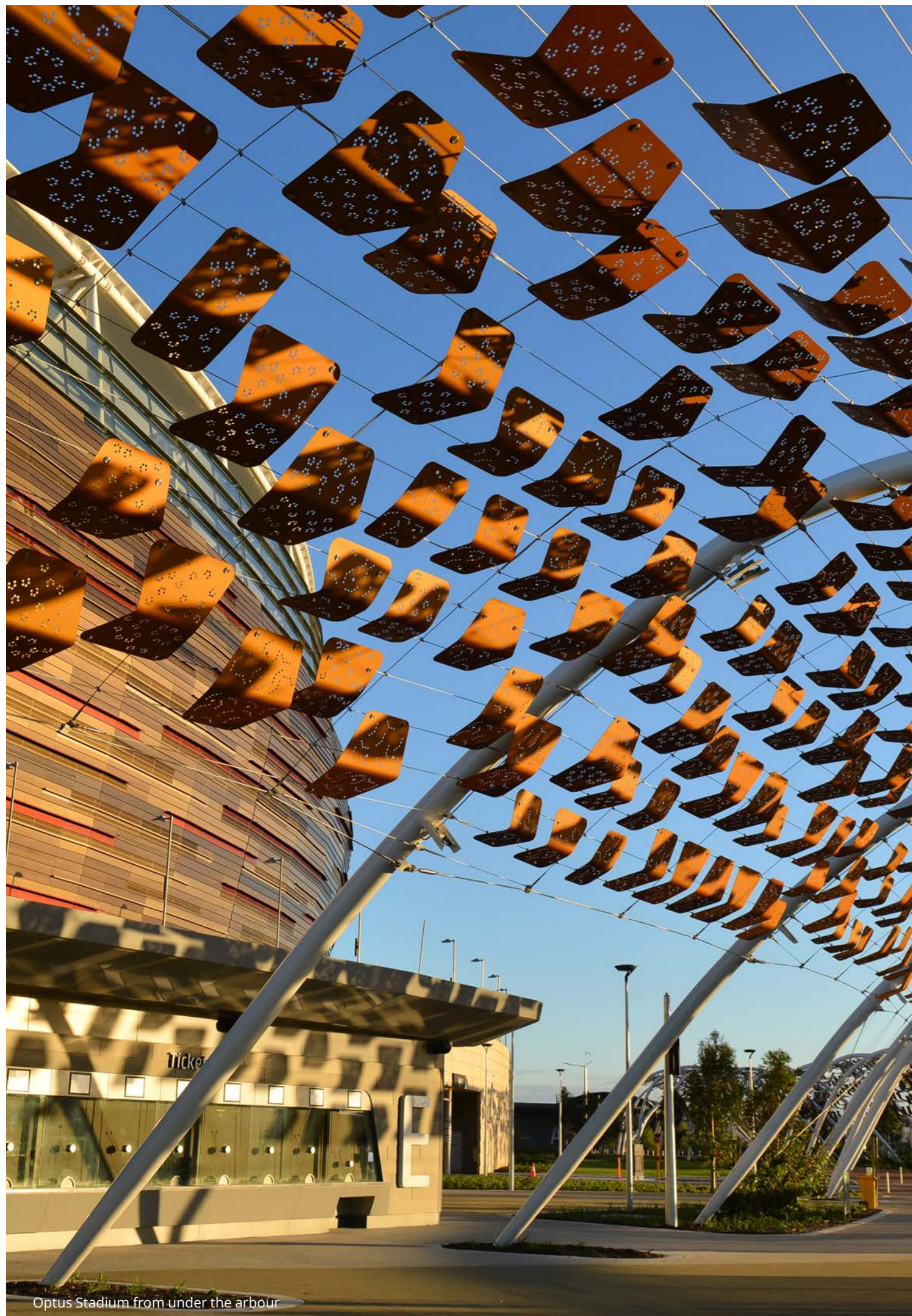
expected increase in economic output over the next 29 years

\$19.8 million

average annual increase in economic output over the next 29 years



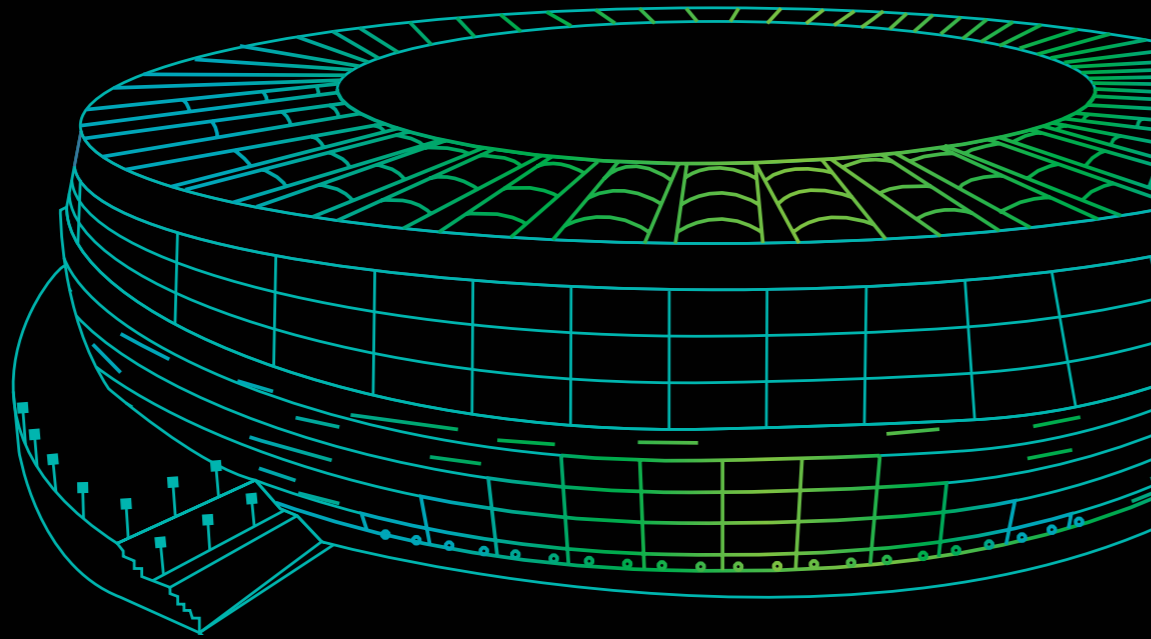
Note: Additional attendees and visitors refer to people who would not have attended an event or who would not have visited Western Australia if Optus Stadium had not been built.



Optus Stadium from under the arbour

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Executive summary

A new home for all Western Australian fans

Optus Stadium is a world-class, multipurpose facility capable of hosting football, cricket, soccer, rugby league, rugby union and live entertainment events. Officially opened on Sunday, 21 January 2018, Optus Stadium is the culmination of three years of construction and over a decade of planning and design. The stadium is the third largest in Australia, with seating for 60,000 patrons in the main stadium and a further 18 specially designed function spaces.

In 2018 alone, more than 2 million people attended events at Optus Stadium. This included 1.97 million attendees at major live entertainment and sporting events and nearly 58,000 attendees at functions and other special events hosted at the venue. Optus Stadium has quickly become a home for Western Australian fans to come together and celebrate.

Optus Stadium is owned by VenuesWest on behalf of the WA Government. With the opening of Optus Stadium, VenuesWest now owns and manages a portfolio of 13 venues across Perth, which are valued in excess of \$2 billion. The addition of Optus Stadium to its portfolio has enabled VenuesWest to increase patronage across its venue portfolio from 3.7 million in 2016-17 (prior to the opening of Optus Stadium) to an estimated 5.1 million patrons in 2018-19.

A year of records and achievements

Optus Stadium recorded numerous achievements during its first year of operations, including being awarded 33 local, state and international awards in the areas of tourism, architecture, catering, landscaping, design, building and construction. This included the 'Project of the Year' award at the world's leading stadium industry awards – *TheStadiumBusinessAwards*.

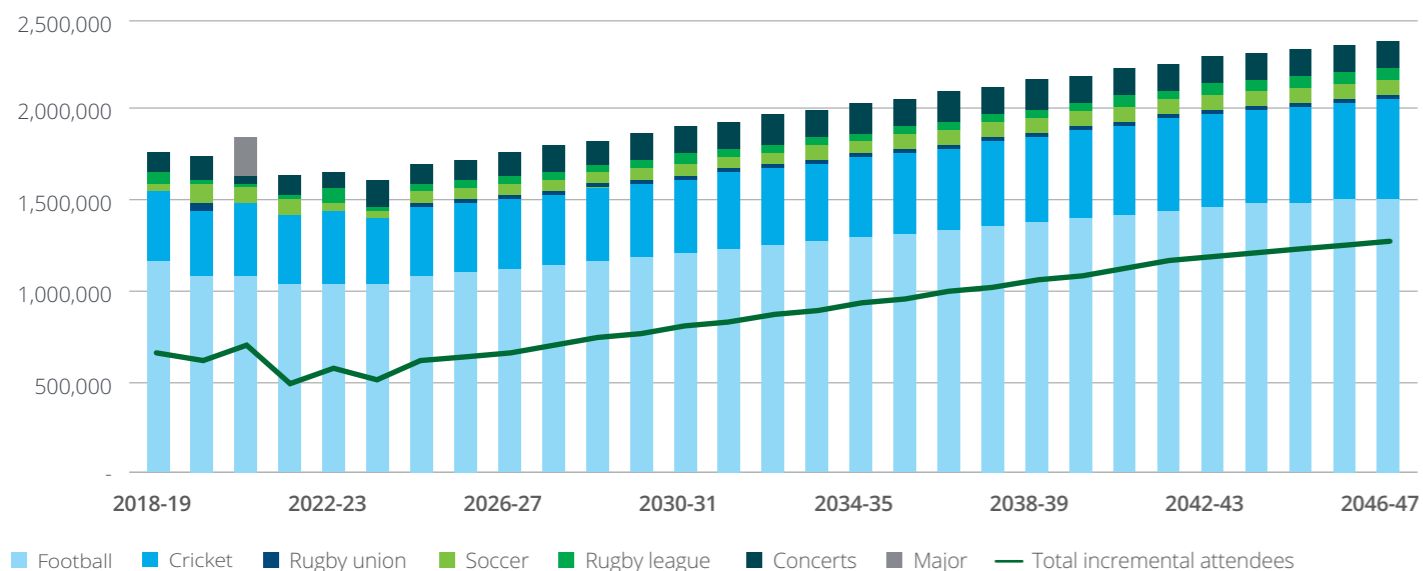
In its first year, Optus Stadium also saw substantial increases in overall patronage for major events compared to previous facilities, hosting over 1.97 million patrons across 43 major live entertainment and sporting events. This represents an additional 805,000 attendees (or a 68.9% increase) who would not have attended an event if Optus Stadium did not exist.

Key highlights of the first year include:

- Nearly 1.2 million people attended the 13 West Coast Eagles and 12 Fremantle Dockers home games hosted at Optus Stadium during the 2018 AFL Premiership season. This represents a 57.5% increase on attendance at matches hosted at Domain Stadium during the 2017 AFL Premiership season, or an additional 437,000 fans. The preliminary final hosted at Optus Stadium between the West Coast Eagles and Melbourne Football Club holds the record for the highest attendance at a stadium sporting event in Western Australia, with 59,608 attendees.
- The AFLW match between the Fremantle Dockers and Collingwood Football Club holds the record for the highest attendance at a female sporting event in Western Australia, with 41,975 attendees.
- Nine cricket matches were hosted in the first year of operations with almost 362,000 attendees. Overall, patronage for cricket matches hosted at Optus Stadium was 47.1% higher than what would have been expected if these matches were hosted at the WACA ground. The One Day International match played between Australia and England on 28 January 2018 was attended by 53,781 people, marking the highest attendance for a single-day cricket event in Western Australia's history.
- The exhibition soccer match between Chelsea Football Club and Perth Glory marked the first time the Chelsea Football Club had visited Perth in over 40 years.¹ At the time, the event set a record for the highest attendance at a soccer match in Western Australia, with 55,522 attendees.
- The NRL double header event on 10 March 2018, which at the time set a record for the highest attendance at an NRL match in Western Australia with 38,824 attendees.
- Ed Sheeran's *÷ (Divide) Tour* attracted more than four times the audience compared to his 2015 show at HBF Park (formerly known as nib Stadium), with a total attendance of 120,979 across two shows. His Saturday night show (3 March 2018) holds the record for the highest attendance at a single event at Optus Stadium, with 62,622 attendees.
- Taylor Swift's *Reputation Stadium Tour* concert was attended by 48,405 people. This was more than twice the size of her 2013 *Red Tour* concert at HBF Park.
- More than 1.5 million people used public transport to access events at Optus Stadium, representing 75.7% of all event attendees. Public transport usage was 79.1% for football events – a significant increase on the 42.3% of attendees that used public transport to access Domain Stadium in 2016.²
- Over 53,000 interstate and overseas visitors attended events at Optus Stadium, collectively spending an estimated \$105.0 million during their stays in Western Australia. This includes 23,700 visitors who would not have visited Western Australia had Optus Stadium not been built – these visitors generated an estimated \$47.1 million in additional visitor spend.
- Patrons to major events collectively spent over \$52.3 million on food and beverage purchases from outlets located throughout the venue. By value, 68% of Optus Stadium's food and beverage supplier contracts are with Western Australian businesses, supporting local jobs and businesses.

In its first year, Optus Stadium achieved record Western Australian attendances for football, cricket, soccer, rugby league and concerts.

Chart 1: Total patronage at Optus Stadium events, 2018-19 to 2046-47



Source: VenuesLive; Deloitte Access Economics

Looking forward

Over the next 29 years, attendance at major sporting and live entertainment events is forecast to increase. Chart 1 illustrates the number of attendees expected to attend events hosted at Optus Stadium from 2018-19 to 2046-47, including the number of incremental attendees. These incremental attendees are those that are expected to attend a sporting or live entertainment event at Optus Stadium, but who would not have attended an event if the stadium had not been built.

Over the next 29 years, 57.8 million people are expected to attend major sporting and live entertainment events at Optus Stadium. This includes an additional 25.6 million attendees who would not have attended an event if Optus Stadium had not been built, or an average of 884,000 additional attendees each year. By 2046-47, total annual patronage is forecast to grow to almost 2.4 million attendees. This represents a 35.5% increase in annual attendees over the next 29 years.

Football matches are expected to continue to generate the majority of patronage for Optus Stadium, accounting for 63.6% of total patronage in 2046-47. Over 36.6 million fans are expected to attend football matches over the next 29 years.

Cricket attendance is expected to contribute 22.3% of total patronage over the next 29 years with over 12.8 million fans expected to attend matches at Optus Stadium.

Over the next 29 years, almost 2 million interstate (87.0%) and overseas (13.0%) visitors are expected to attend events hosted at Optus Stadium, representing over 1.1 million additional visitors who would otherwise not have visited Western Australia in the absence of Optus Stadium. In aggregate, these visitors are estimated to spend over \$3.8 billion during their stays in Western Australia (including \$2.2 billion in additional spending that would not have been realised without Optus Stadium, or an average of \$75.4 million each year).

The notable spike in annual patronage at Optus Stadium in 2020-21 (see Chart 1) is due to Optus Stadium hosting the 2020 ICC T20 World Cup. This is expected to attract 210,000 attendees across six matches. Given the high proportion of interstate and overseas visitors expected to attend, this event alone is expected to bring over 77,000 visitors to Western Australia. In total, these visitors are expected to spend over \$154.1 million during their stays in Western Australia. This demonstrates the importance of major, international events to the local economy, which Optus Stadium could better position Western Australia to host in the future.³

Visitors to Optus Stadium are estimated to spend over \$3.8 billion during their stays in Western Australia over the next 29 years.



One Day International cricket match: Australia vs England

A venue for the community

Optus Stadium was designed to be accessible and enjoyed by all Western Australians. To deliver on this objective, the Optus Stadium project team worked collaboratively with working groups made up of members from the community. As a result of consultation with the Sports Fans User Group, patrons are welcomed to Optus Stadium by wide concourses, a larger number of food and beverage outlets and toilets to reduce queuing and waiting times, a cup holder in every single seat and a consistent connection to the field of play. The stadium is designed to be accessible to all people and includes 450 wheelchair positions and 327 enhanced amenity seats, available for people with reduced mobility.

The Stadium Park precinct was developed along with Optus Stadium as a destination for locals and visitors to enjoy throughout the year on both event and non-event days. During the design phase, the Optus Stadium project team consulted with the Whadjuk Working Party to ensure that the Whadjuk and Noongar culture was incorporated into the design of the venue and the surrounding precinct.

The result is a precinct which incorporates Aboriginal artwork to recognise the significance of the Optus Stadium site to Aboriginal people. Stadium Park also offers a range of outdoor event spaces, playgrounds, picnic and barbecue facilities and a network of walking and cycling tracks.

The unique ‘fans first’ approach to the design and development of the stadium has enabled it to be truly centred on the fans that support and enjoy it. This was reflected in feedback from customer satisfaction surveys undertaken during the first year of operations, which indicated an overall customer satisfaction rating of 92% across a range of events.⁴ The stadium and the surrounding precinct have become known as a place where friends and family can enjoy spending time together, as they appreciate the natural beauty of the site or attend an event together at the stadium.

Optus Stadium will host almost 2 million interstate and overseas visitors over the next 29 years.

Supporting Western Australia through construction and operations

The construction of Optus Stadium and the surrounding Stadium Park involved significant capital works in and around the Burswood Peninsula. These construction works drove increased economic activity in Western Australia, with high levels of local employment and local procurement.

The construction of Optus Stadium and the Stadium Park precinct was completed in December 2017, drawing to a close a \$955.4 million capital works program. By value, over 80% of the subcontracts awarded during construction were awarded to Western Australian businesses. In addition, over 7,000 people were employed as part of the construction of Optus Stadium and the Stadium Park precinct, with a peak construction workforce of over 1,200.

The transport infrastructure, built to support the Stadium, allows for 50,000 people to depart from the precinct within one hour of an event concluding. This includes Perth Stadium Station, Perth Stadium Bus Station, upgrades to East Perth Train Station and the Matagarup Bridge. Approximately 1,600 people were employed during the construction of the transport infrastructure, with a peak onsite workforce of 517 people. It is estimated that as a result of the Matagarup Bridge contract, \$25 million of the total construction expenditure has flowed to local steel manufacturers, with the creation of approximately 250 local jobs.⁵

Aside from the construction works, the ongoing operations and maintenance of these assets continue to support economic activity in Western Australia. In 2018, a total of \$111.3 million was spent on the day-to-day operations of Optus Stadium.⁶ A large proportion of these costs were spent in the local economy, with \$12.4 million accounting for wages paid directly to staff involved in venue operations. In addition to the 100 permanent operations staff, over 3,200 casual staff worked over 730,000 hours on event days in 2018.

Of the \$49.6 million paid to suppliers to Optus Stadium in 2018, \$42.5 million (85.8%) relates to contracts with 278 Western Australian businesses, including well-known key suppliers Gage Roads and Mrs Mac's. Therefore, through its operations, Optus Stadium indirectly supports the employment of Western Australians who work in businesses that fulfil its major supply contracts.

Flow-on economic impacts of Optus Stadium

The construction and ongoing operations of Optus Stadium and the surrounding precinct creates flow-on impacts for the broader Western Australian economy. Similarly, the expenditure of visitors attracted to Western Australia as a result of the stadium also impacts the broader economy. These economic impacts can be measured at the macroeconomic level as changes in both economic output and employment.

Deloitte Access Economics estimates that to date, Optus Stadium and the surrounding precinct has generated an additional \$129.7 million of gross state product (GSP) in Western Australia (present value terms).

Of the \$49.6 million paid to Optus Stadium suppliers, 85.8% relates to contracts with 278 Western Australian businesses.

GSP represents the total value of goods and services produced in the Western Australian economy, less the cost of goods and services used in the production process. Further, an average of 367.8 FTE jobs have been created each year since the commencement of construction (see Table 1.1).⁷

Over the longer term – considering the entire period of construction and 30 years of operations – it is estimated that Optus Stadium and the surrounding precinct will generate an additional \$653.6 million of GSP in Western Australia. This equates to an additional \$19.8 million in GSP each year on average. In addition, an average of 231.3 FTE jobs are expected to be created in Western Australia each year.

The economic impact of Optus Stadium is substantial. However, the value of Optus Stadium extends beyond the numbers. It is a place that allows Western Australians to experience sports and live entertainment in a way that has never before been seen in the state. It has created new possibilities in the ways that concerts and other large-scale events are staged in Perth, and it has revitalised and enhanced the weekend sports match experience. Put simply, Optus Stadium is a venue that all Western Australians can be proud of.

Table 1.1: Impact of Optus Stadium and surrounding precinct on Western Australian economic output and employment

Timeframe	Gross state product (\$ million)	Average annual employment (FTE)
Construction plus one year of operations	129.7	367.8
Construction plus 30 years of operations	653.6	231.3

Source: Deloitte Access Economics



Fremantle Dockers vs Collingwood Football Club AFLW match

1 Introduction

1.1 A new home for all Western Australian fans

Officially opened on Sunday, 21 January 2018, Optus Stadium is the culmination of three years of construction and over a decade of planning and design. Nestled on the Burswood Peninsula, the stadium is enveloped by views of the Swan River and Perth city to the west and the Perth foothills to the east. A seating capacity of 60,000 makes Optus Stadium the third largest stadium in Australia, and in 2018 it hosted over 2 million patrons. Optus Stadium represents a significant \$1.075 billion investment by the WA Government in the stadium and surrounding precinct, and more importantly, a home for Western Australian fans to come together and celebrate.

1.2 Designing a stadium for the fans

The unique 'fans first' approach to the design and development of the stadium has enabled it to be truly centred on the fans that support and enjoy it. Several user groups were formed at an early stage in project planning, and were engaged throughout the design phase to provide ongoing advice relating to the user experience at events.

The Sports Fans User Group was brought on board in 2012 (see Figure 1.1). Facilitated by the inclusion of recommendations made by this user group, patrons are welcomed to Optus Stadium by wide concourses, a larger number of food and beverage outlets and toilets to reduce queueing and waiting times, a cup holder in every single seat and a consistent connection to the field of play.

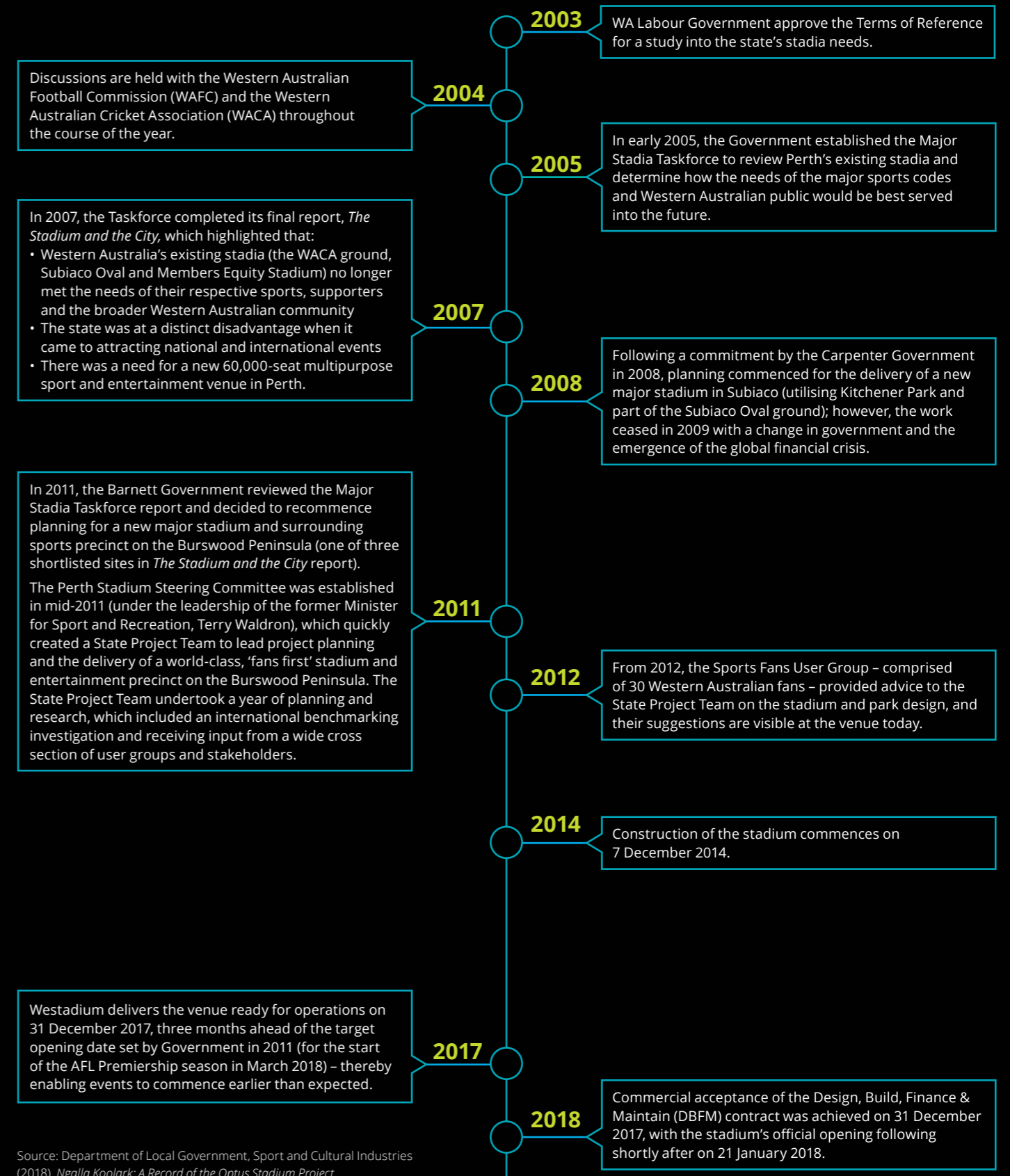
The enhanced user experience extends to everyone, with the design also adopting a wide range of access and inclusion features that exceed the requirements set out in the 2013 National Construction Code. These include 450 wheelchair positions – 28% more than required under the code – and 327 enhanced amenity seats for people who have mobility requirements but are not in a wheelchair. In addition, the Whadjuk Working Party, representing the Traditional Owners of the land, advised on the historical significance of the site and the incorporation of Whadjuk and Noongar culture into the stadium and precinct design.

The result is a stadium that delivers a new and enhanced patron experience for sports and live entertainment fans. This is reflected in feedback from customer satisfaction surveys undertaken during the first year of operations, which indicated an overall customer satisfaction rating of 92% across a range of events.⁸



Optus Stadium at sunset

Figure 1.1: A timeline of the history of Optus Stadium, from conception to opening



Source: Department of Local Government, Sport and Cultural Industries (2018), Ngalla Koolark: A Record of the Optus Stadium Project

1.3 Celebrating year one: A bumper year

In its first year of operations, Optus Stadium hosted over 2 million patrons across 43 live entertainment and sporting events, and over 400 meetings and special events. These included Australian rules football, international and domestic cricket, soccer, rugby league, and concerts featuring major international artists Ed Sheeran and Taylor Swift.

Optus Stadium has already achieved a number of impressive attendance figures at major events. Key highlights have included:

- Western Australia's highest attendance at a sporting event, with 59,608 attendees at the West Coast vs Melbourne AFL Preliminary Final on 22 September 2018
- The Fremantle Dockers vs Collingwood Football Club AFLW match on 10 February 2018, with the 41,975 attendees marking the highest attendance at a female sports event in Western Australia's history
- An exhibition football match featuring Chelsea Football Club and Perth Glory on 23 July 2018, with 55,522 in attendance
- The Australia vs England One Day International (ODI) cricket match on 28 January 2018, with 53,781 in attendance
- Taylor Swift's *Reputation Stadium Tour* concert on 19 October 2018, with 48,405 in attendance
- Ed Sheeran's *÷ (Divide) Tour*, with a total attendance of 120,979 across two concerts on 2 and 3 March 2018. The Saturday night show (3 March 2018) holds the record for the highest attendance at Optus Stadium, with 62,622.

In addition to major events, VenuesLive – as the operator of Optus Stadium – hosts public tours of the venue and other special events. In the first year of operations, nearly 58,000 people attended 420 functions and special events at the stadium, and 31,550 people toured the stadium across 1,450 guided tours.

In recognition of the success of its first year of operations, Optus Stadium has already received 33 state, national and international awards in the areas of tourism, architecture, catering, landscaping, design, building and construction. For example, in November 2018 Optus Stadium won the 'Project of the Year' award at the world's leading stadium industry awards – *TheStadiumBusinessAwards*, held in London, UK.

The award recognised Optus Stadium for excellence in a new stadium build or expansion amongst international competition, including Kuala Lumpur Sports City (Malaysia), Fiserv Forum (Milwaukee, WI, USA), Little Caesars Arena (Detroit, MI, USA), Louis Armstrong Stadium (Queens, NY, USA), Audi Field (Washington, DC, USA) and SunTrust Park (Atlanta, GA, USA). Acknowledging the award, the Minister for Sport and Recreation made the following comments:

*"The State Government and VenuesLive have overseen an incredibly successful commissioning and first year of operations at Optus Stadium. Being awarded the world's best in these awards reflects the hard work undertaken by everyone involved in Optus Stadium's first year of operations. This award confirms Optus Stadium's status as a truly world-class venue, and one all Western Australians can be proud of."*¹⁹

In its first year of operations, Optus Stadium received 33 state, national and international awards.



Optus Stadium

1.4 About VenuesWest

Optus Stadium is owned by VenuesWest on behalf of the WA Government. The Western Australian Sports Centre Trust – trading as 'VenuesWest' – is the statutory authority established under the *Western Australian Sports Centre Trust Act 1986* with overall responsibility for the management of the facility.

VenuesWest owns and manages major sports and entertainment facilities on behalf of the WA Government. With the opening of Optus Stadium in January 2018, VenuesWest now manages a portfolio of 13 venues, which are valued in excess of \$2 billion and are expected to welcome an estimated 5.1 million patrons in 2018-19 – a 38.8% increase on the 3.7 million patrons it hosted at its venues in 2016-17 prior to the opening of Optus Stadium. Its other venues include RAC Arena, HBF Park, HBF Stadium, HBF Arena, WA Athletics Stadium, the State Netball Centre, Champion Lakes Regatta Centre, SpeedDome, WA Rugby Centre, WAIS High Performance Service Centre, Bendat Basketball Centre and Perth Motorplex.

1.5 Operating model

During the planning phase, the procurement options analysis identified that for the construction of the stadium, a design, build, finance and maintain (DBFM) public private partnership (PPP) model would best balance the control of project cost and risk with the achievement of project objectives, and as such was the procurement model most likely to maximise value-for-money for the government and taxpayers.¹⁰

Westadium Project Co Pty Ltd was appointed by the State as the lead contractor to deliver the DBFM procurement model, subsequently subcontracting Brookfield Multiplex Engineering and Infrastructure Pty Ltd to undertake the design and construction phase. Brookfield Johnson Controls Pty Ltd was subcontracted by Westadium to provide facilities management services for a 25-year period, following the commissioning of construction works.

As part of a separate procurement process, VenuesLive was appointed by VenuesWest as the operator of Optus Stadium. VenuesLive undertakes activities such as securing events, promoting Optus Stadium, agreeing commercial arrangements with hirers, branding and advertising, and making event and function arrangements; this includes ticketing, event and function staffing, crowd control and catering.

1.6 Economic impact assessment

On the backdrop of the success of the first year of operations, Deloitte Access Economics was engaged by VenuesWest to undertake an economic impact assessment (EIA) of Optus Stadium. The primary focus of the study was to estimate the economic impact for the Western Australian economy from both construction and the first year of operations at Optus Stadium, along with an estimation of the cumulative economic impact that could be expected from future operations. This report presents the findings of this study.

2 Building a world-class sports and entertainment precinct

The development of Optus Stadium involved much more than the construction of a multipurpose stadium. Significant capital works in and around the Burswood Peninsula were necessary to deliver the infrastructure required to create a world-class sports and entertainment precinct, with a 60,000-seat stadium as its nucleus. Figure 2.1 illustrates the location of each of these investments on the Burswood Peninsula. These construction works drove increased economic activity in Western Australia, with high levels of local employment and procurement. In addition, the ongoing operations and maintenance of these assets continue to support economic activity in Western Australia.

Figure 2.1: Location of major investments on the Burswood Peninsula





Fremantle Dockers fans attending a home game during the 2018 AFL Premiership season

The development of the precinct has also revitalised and transformed the Burswood Peninsula, with the stadium attracting over 2 million people to the area in its first year of operations. These visitors to the area are a dramatic increase from the annual average of 97,103 visitors to the Burswood Peninsula for the three-year period preceding the stadium's opening.¹¹ The welcoming of these new visitors has been aided through enhanced connectivity of the Burswood Peninsula to surrounding areas, supported by Perth Stadium Station, Perth Stadium Bus Station and the Matagarup Bridge.

The following sections outline the primary investments that have been instrumental in developing the precinct, and how they generate benefits for Western Australia.

2.1 Optus Stadium

The construction of Optus Stadium and the surrounding Stadium Park precinct commenced on 7 December 2014 and was completed in December 2017, drawing to close a \$955.4 million capital works program. As part of the design and construction phase, the utilisation of local businesses and employees was an ongoing commitment. Over \$470 million worth of subcontracts – or over 80% of the total value of all subcontracts awarded during construction – were awarded to Western Australian businesses, creating employment opportunities for Western Australians.

A further 18% of subcontracts were awarded to other Australian businesses, with only 2% awarded to international businesses, primarily for materials and equipment not manufactured in Australia.

In total, more than 7,000 people were employed as part of the construction of Optus Stadium and the Stadium Park precinct. The construction workforce peaked at over 1,200 in mid-2017, as the significant works associated with internal fit-outs were being delivered.

In 2018, a total of \$111.3 million was spent on the day-to-day operations of Optus Stadium.¹² A large proportion of these costs were spent in the local economy, with \$12.4 million accounting for wages paid directly to staff involved in venue operations. As a result, Optus Stadium is a large employer in Western Australia; in addition to the 100 permanent operations staff, over 3,200 casual staff worked over 730,000 hours on event days in 2018.

In addition, of the \$49.6 million paid to suppliers to Optus Stadium in 2018, \$42.5 million (85.8%) relates to contracts with 278 Western Australian businesses, including well-known key suppliers Gage Roads and Mrs Mac's. Therefore, through its operations, Optus Stadium indirectly supports the employment of many more Western Australians working in businesses that fulfil its major supply contracts.

Over 7,000 people were employed as part of the construction of Optus Stadium, with a peak construction workforce of over 1,200.



Chevron Parkland

2.2 Stadium Park

The Stadium Park precinct was developed along with Optus Stadium as a destination for locals and visitors to enjoy throughout the year on both event and non-event days. Surrounding the stadium, the park is set against the Swan River and acknowledges the site's Aboriginal heritage. Stadium Park offers a range of outdoor event spaces, playgrounds, several permanent artworks, picnic and barbecue facilities and a network of walking and cycling tracks. Visitors to Stadium Park also have the opportunity to dine at The Camfield or one of Optus Stadium's restaurants that overlook the Swan River.

As part of Stadium Park, the Chevron Parkland covers 2.6 hectares of rehabilitated parkland. The area includes six 'nature play' areas and several permanent artworks by Western Australian Aboriginal artists. The Chevron Parkland was designed with input from the Whadjuk Working Party, and is inspired by the Noongar six seasons.

The nature play areas are designed to encourage children to explore the natural landscape and participate in outdoor recreation; they include various climbing, balancing, and tunnelling features, in addition to sand pits and lookouts. Each play area is in close proximity to picnic and barbecue facilities for easy access and supervision.

The BHP Boardwalk links the BHP Amphitheatre in the south of Stadium Park to the Northern Oval. At more than 200 metres long, it features a series of interpretive story boards recognising the role and importance of Aboriginal culture on the stadium site and within Western Australia. The BHP Amphitheatre provides tiered seating for about 1,000 people and is suitable for a range of event types, including outdoor cinemas, and plays and concerts for children.

Of the \$49.6 million paid to Optus Stadium suppliers, 85.8% relates to contracts with 278 Western Australian businesses.

2.3 Transport infrastructure

Since Optus Stadium was built on a greenfields site, major works were required to develop the supporting transport infrastructure required to quickly move large crowds of people to and from the venue on event days. The transport works included an integrated public transport solution, which allows for the movement of about 50,000 people within an hour of the conclusion of an event. This included the construction of Perth Stadium Station and the Perth Stadium Bus Station.

In addition, public transport infrastructure works were supported by significant road works on the Burswood Peninsula to make Optus Stadium more accessible by vehicle. The package of transport infrastructure works involved a total project value of \$418.2 million, with over 1,600 people employed to carry out the works and a peak on-site workforce of 517 people.

2.3.1 Perth Stadium Station

To provide event attendees with access to Optus Stadium by train, the existing unused Belmont Park Rail Station was redeveloped into the new six-platform Perth Stadium Station. To enable the new station to meet the high patronage demand expected on major event days, additional railyards were built to hold up to 112 railcars, allowing an almost continuous flow of trains to the station before and after events. As a result of the upgrades, the train system alone is capable of transporting 28,000 people within one hour on event days.

This level of efficiency is made possible by dividing the train station into two concourses, with the Western concourse servicing passengers on the Joondalup and Fremantle lines, and the Eastern concourse serving passengers on the Armadale line and those travelling into the CBD. The station is the second largest train station in Perth and is just 130 metres from Optus Stadium's nearest entrance.

2.3.2 Perth Stadium Bus Station

The Perth Stadium Bus Station is located within Stadium Park and complements the rail services by transporting over 8,000 people on event days to areas of Perth not serviced by rail. The bus station has 22 bus stands, which facilitate travel to the suburbs as well as specific shuttle services travelling into the CBD.

2.3.3 Other transport works

Upgrades to East Perth Train Station were also required to cater for up to 7,000 additional patrons expected to pass through the station on event days. These works included expanding the platform to accommodate four and six-car trains.

In addition, to connect Optus Stadium to existing road infrastructure, major road works were required in the area. This included the construction of new roads within the stadium grounds, and the extension and upgrade of existing roads to support increased usage and larger vehicles, such as buses. A public jetty was also installed on the Swan River to the south-west of Optus Stadium, to enable access to the stadium via boat.

2.4 Matagarup Bridge

To support the integrated public transport solution, facilitating increased pedestrian access to the Burswood Peninsula was crucial. The Matagarup Bridge is a pedestrian bridge over the Swan River, which provides a direct connection between East Perth and the Burswood Peninsula.

At 370 metres long from bank-to-bank and a width of nine metres, the bridge is designed to support an expected capacity of 14,000 people on event days and create a spectacular entry for pedestrians into Stadium Park. It has a steel cable-stay span of 160 metres at the centre, and its centre structural arch is an apex that reaches 72 metres above the river. The bridge also plays an important role in supporting the public transport system, with eight bus stands on the East Perth foreshore, which transport around 6,000 people to inner-city areas on event days.

Construction of the bridge is estimated to have cost \$91.5 million.¹³ Initially, a subcontract for the manufacture of key components of the bridge was awarded to a Malaysian firm, but this agreement was ultimately terminated. A new subcontract was awarded to Civmec – based in Henderson, Western Australia – to manage the steel fabrication and other related works. As part of this agreement, it was estimated that \$25 million of the total construction expenditure would flow to local steel manufacturers and create approximately 250 local jobs.¹⁴

Over 1,600 people were employed to carry out major transport infrastructure upgrades to support Optus Stadium.



The Pie Shop at Optus Stadium

Case study 1: Mrs Mac's

Established in 1954 by the Macgregor family, Mrs Mac's is a Western Australian family-owned business and one of Australia's largest savoury pastry producers. Today, Mrs Mac's has a team of over 300 people based in its Western Australian factory and head office, and a commercial office in Sydney. It has delivered more than 100 million pies, sausage rolls, pastries and other savoury products to customers across Australia and New Zealand.

VenuesLive's strong emphasis on supporting and partnering with Western Australian suppliers made Mrs Mac's an obvious choice to engage as a key food supplier. A Western Australian-based bakery that can bake up to 33,000 pies per hour strengthened Mrs Mac's ability to meet an enormous demand for savoury pastries. In the first year of stadium operations, over 225,000 Mrs Mac's products were consumed by fans from 20 outlets within the stadium, including a dedicated Mrs Mac's pie-shop. This has seen up to one in every seven visitors at major events eating a Mrs Mac's item. The Mrs Mac's Sunday Funday \$2 pie promotion sold 15,000 units alone during one Fremantle Dockers match.

The integration of a longstanding Western Australian food icon into stadium operations provides a mutually beneficial outcome for all parties. The 60,000-seat Optus Stadium is a showpiece for Mrs Mac's range of pies and sausage rolls, enabling the company to exhibit their brand on a large scale and demonstrate their ability to successfully operate in a large venue with intensive all-year activity. In return, Optus Stadium is stocked year-round with quality Western Australian products for sports and entertainment fans to enjoy.

Beyond VenuesLive's expenditure on supply contracts with Mrs Mac's, which was equivalent to just over \$579,000 in 2018, commitment to supporting Western Australian producers extends across all facets of the supply chain. Product bundling and creating deals with fellow Western Australian producer Gage Roads has enhanced brand support for local products at the stadium itself, while Mrs Mac's is also committed to supporting local Western Australian industry and producers in its own activities, sourcing more than 80% of its ingredients from within the state.

3 Highlights of the first year

Optus Stadium set a number of impressive records and achievements during its first year of operations, which spans from its official opening on Sunday, 21 January 2018 to Sunday, 20 January 2019. These included substantial increases in overall patronage for major events compared to previous facilities, record attendances for Perth-hosted concerts and football, cricket, soccer and rugby league matches, and over 53,000 interstate and overseas visitors who collectively spent an estimated \$105.0 million during their stays in Western Australia.

It is estimated that an additional 805,000 people (or a 68.9% increase) attended events who would not have attended if Optus Stadium did not exist.

In total, 27 football matches were hosted at Optus Stadium in the first year. This included 13 West Coast Eagles and 12 Fremantle Dockers home games during the 2018 AFL Premiership season, an AFLW Fremantle Dockers home game, and the 2018 WAFL Grand Final played between Subiaco and West Perth.

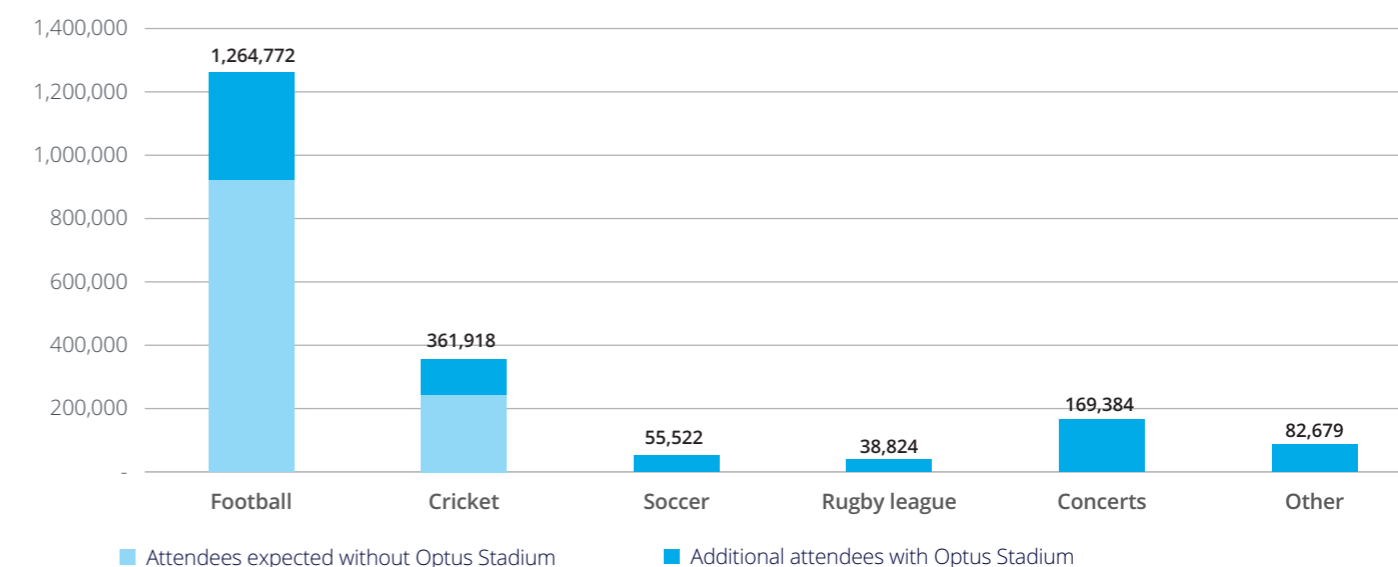
Patronage for AFL matches was 57.5% higher at Optus Stadium in 2018 than the previous year at Domain Stadium.

3.1 Live entertainment and sporting events

In its first year of operations, Optus Stadium hosted over 1.97 million patrons across 43 major live entertainment and sporting events. Chart 3.1 illustrates the number of attendees by event type, including additional attendees who were able to attend events due to the increased capacity of Optus Stadium compared to previous facilities, or who were able to attend new events which Western Australia would not have secured in the absence of Optus Stadium.

Football was the most highly attended event category, with almost 1.3 million people attending matches in the first year (see Chart 3.1). This included almost 1.2 million people who attended a West Coast Eagles or Fremantle Dockers home game, representing a 57.5% increase on attendance at matches hosted at Domain Stadium during the 2017 AFL Premiership season – or an additional 437,000 fans.¹⁵ A key highlight was the West Coast Eagles vs Melbourne Demons AFL Preliminary Final held on 22 September 2018, which holds the record for the highest attendance at a sporting event in Western Australia, with 59,608 attendees.

Chart 3.1: Patronage at major events hosted at Optus Stadium, first year of operations



Source: VenuesLive



Barry McGuire's sculpture 'Message Sticks' in front of Optus Stadium

Patronage for cricket matches at Optus Stadium was 47.1% higher than expected at the WACA ground.

Across all football events,¹⁶ patronage was 37.1% higher at Optus Stadium in 2018 than what would have been expected if the same matches were hosted at Domain Stadium. This reflects an additional 342,000 fans attending football matches as a result of Optus Stadium.

A total of nine cricket matches were hosted at Optus Stadium in the first year of operations, including five Big Bash League (BBL) matches, two ODI matches, the second Test of the Australia vs India Domain Test series, and a Sheffield Shield match between Western Australia and New South Wales.¹⁷ Notably, the One Day International match played between Australia and England on 28 January 2018 was attended by 53,781 people, marking the highest attendance for a single-day cricket event in Western Australia's history. In addition, 81,104 people attended the Test match played between India and Australia, held over five days from 14 to 18 December 2018. Overall, patronage for cricket matches hosted at Optus Stadium was 47.1% higher than what would have been expected if these matches were hosted at the WACA ground.

Another key highlight of the first year of operations at Optus Stadium was the exhibition soccer match between Chelsea Football Club and Perth Glory, which is unlikely to have been secured without the capacity and quality of facilities offered by Optus Stadium. The match marked the first time the Chelsea Football Club had visited Perth in over 40 years¹⁸ and provided an exciting opportunity for soccer fans to watch one of the most successful teams in the English Premier League play on Western Australian turf. The match was attended by 55,522 people, which at the time was a record for the highest attendance at a soccer match in Western Australia. Two more exhibition soccer matches are planned for July 2019, with Manchester United vs Perth Glory on 13 July 2019 and Manchester United vs Leeds United on 17 July 2019.

On 10 March 2018, Perth rugby league fans had the opportunity to attend the first match of the 2018 NRL Telstra Premiership season at Optus Stadium. The double header event saw the Melbourne Storm take on the Canterbury-Bankstown Bulldogs, and the New Zealand Warriors play against the South Sydney Rabbitohs. Although Western Australia does not have a team in the NRL competition, there is a strong local fan base for the game. This is demonstrated by the crowd of 38,824 people who attended the double header event, which at the time marked the highest attendance at an NRL match in Western Australia.

Optus Stadium achieved record Western Australian attendances for football, cricket, soccer, rugby league and concerts.

Although sporting events dominated Optus Stadium's events calendar during the first year of operations, live entertainment events were perhaps the most popular and high-profile events. With a total attendance of 120,979 across two shows at Optus Stadium, Ed Sheeran's *÷ (Divide) Tour* attracted more than four times the audience compared to his 2015 show at HBF Park (formerly known as nib Stadium). Notably, Ed Sheeran's Saturday night show (3 March 2018) holds the record for the highest attendance at a single event at Optus Stadium, with 62,622 attendees. Taylor Swift's *Reputation Stadium Tour* concert was also very popular, attended by 48,405 people. This was more than twice the size of her 2013 *Red Tour* concert at HBF Park.

A list of all major events held at Optus Stadium in the first year of operations – along with their associated attendances – is provided in Table 3.1.



Ed Sheeran's *÷ (Divide) Tour* concert



Chelsea Football Club vs Perth Glory exhibition football match

Table 3.1: List of major events hosted at Optus Stadium, first year of operations

Date	Event	Attendance
21 Jan 2018	Community Open Day	69,016
28 Jan 2018	ODI – Australia vs England	53,781
1 Feb 2018	BBL Semi Final – Perth Scorchers vs Hobart Hurricanes	51,037
10 Feb 2018	AFLW – Fremantle Dockers vs Collingwood Football Club	41,975
2 Mar 2018	Ed Sheeran <i>÷ (Divide) Tour</i> concert	58,357
3 Mar 2018	Ed Sheeran <i>÷ (Divide) Tour</i> concert	62,622
10 Mar 2018	NRL double header – Melbourne Storm vs Canterbury-Bankstown Bulldogs; New Zealand Warriors vs South Sydney Rabbitohs	38,824
25 Mar 2018	AFL – Round 1, West Coast Eagles vs Sydney Swans	53,553
31 Mar 2018	AFL – Round 2, Fremantle Dockers vs Essendon Football Club	49,021
7 Apr 2018	AFL – Round 3, Gold Coast Suns vs Fremantle Dockers	33,388
8 Apr 2018	AFL – Round 3, West Coast Eagles vs Geelong Football Club	54,535

Date	Event	Attendance
14 Apr 2018	AFL – Round 4, West Coast Eagles vs Gold Coast Suns	51,774
21 Apr 2018	AFL – Round 5, Fremantle Dockers vs Western Bulldogs	43,056
22 Apr 2018	Nitro Circus <i>Next Level Tour</i>	13,663
29 Apr 2018	AFL – Round 6, Fremantle Dockers vs West Coast Eagles	56,521
5 May 2018	AFL – Round 7, West Coast Eagles vs Port Adelaide Football Club	50,516
12 May 2018	AFL – Round 8, Fremantle Dockers vs St Kilda Football Club	41,752
20 May 2018	AFL – Round 9, West Coast Eagles vs Richmond Football Club	57,616
27 May 2018	AFL – Round 10, Fremantle Dockers vs North Melbourne Football Club	37,575
2 Jun 2018	AFL – Round 11, West Coast Eagles vs St Kilda Football Club	54,188
10 Jun 2018	AFL – Round 12, Fremantle Dockers vs Adelaide Football Club	33,421
21 Jun 2018	AFL – Round 14, West Coast Eagles vs Essendon Football Club	51,409
1 Jul 2018	AFL – Round 15, Fremantle Dockers vs Brisbane Lions	41,674
8 Jul 2018	AFL – Round 16, West Coast Eagles vs Greater Western Sydney Giants	52,105
15 Jul 2018	AFL – Round 17, Fremantle Dockers vs Port Adelaide Football Club	33,190
22 Jul 2018	AFL – Round 18, West Coast Eagles vs Western Bulldogs	46,854
23 Jul 2018	Chelsea Football Club vs Perth Glory exhibition football match	55,522
29 Jul 2018	AFL – Round 19, Fremantle Dockers vs Hawthorn Football Club	41,845
5 Aug 2018	AFL – Round 20, West Coast Eagles vs Fremantle Dockers	57,375
12 Aug 2018	AFL – Round 21, Fremantle Dockers vs Carlton Football Club	40,028
19 Aug 2018	AFL – Round 22, West Coast Eagles vs Melbourne Football Club	55,824
25 Aug 2018	AFL – Round 23, Fremantle Dockers vs Collingwood Football Club	41,320
6 Sep 2018	AFL – Finals Week1, West Coast Eagles vs Collingwood Football Club	59,585
22 Sep 2018	AFL – Finals Week 3, West Coast Eagles vs Melbourne Football Club	59,608
23 Sep 2018	WAFL Grand Final – Subiaco vs West Perth	25,064
19 Oct 2018	Taylor Swift <i>Reputation Stadium Tour</i> concert	48,405
4 Nov 2018	ODI – Australia vs South Africa	24,342
27–30 Nov 2018	JLT Sheffield Shield – Western Australia vs New South Wales	3,810
14–18 Dec 2018	Second Test – Australia vs India	81,104
26 Dec 2018	BBL – Perth Scorchers vs Adelaide Strikers	40,646
5 Jan 2019	BBL – Perth Scorchers vs Brisbane Heat	40,511
13 Jan 2019	BBL – Perth Scorchers vs Sydney Sixers	30,075
18 Jan 2019	BBL – Perth Scorchers vs Hobart Hurricanes	36,612

Source: VenuesLive

3.2 Meetings and special events

With 18 uniquely designed event spaces offering a mix of Swan River, Perth city and playing surface views, Optus Stadium is capable of accommodating events of all sizes and formats. Its function spaces have the capacity to host events of up to 2,000 guests across a variety of settings, making them suitable for all occasions.

In 2018, Optus Stadium hosted 57,776 people across 420 meetings and special events; these included conferences, exhibitions, Christmas parties, balls, cocktail functions and other celebrations. High profile events included the 2018 *RAC WA Sports Star Awards*, the 2017 *QANTAS Australian Tourism Awards* and the 2018 *Telstra Perth Fashion Festival*. The early part of 2019 also saw Optus Stadium secure other major special events, including the 2019 *40under40 Awards*.

3.3 Stadium tours

In addition to major events, VenuesLive hosts public tours of the venue and other special events. A tour of the stadium provides a unique behind-the-scenes opportunity to experience the new state-of-the-art facilities. The tour offers impressive views of the playing surface, the Swan River and Perth city from the stadium's highest vantage point, with a range of sports memorabilia from Western Australia's rich sports history to be discovered along the way.

In the first year of operations, 31,550 people toured the stadium across 1,450 tours. Stadium tours were most popular in September (4,219 attendees) and October (3,650 attendees). At its peak in October, an average of 173.8 people toured the stadium each operating day. Of those that toured the stadium, 3,450 undertook a tour as part of their meeting or special event which was hosted at Optus Stadium.

3.4 Public transport usage

The stadium construction works were supported by major investment in the development of an integrated public transport solution, which included construction of Perth Stadium Station and the Perth Stadium Bus Station (see Section 2.3). Achieving a high level of public transport utilisation for event attendees was a key priority of the WA Government in designing the stadium; the infrastructure is designed to allow for the movement of about 50,000 people within an hour of the conclusion of an event.

In the first year of operations, more than 1.5 million attendees of major events – or 75.7% of all attendees at major events – used public transport to access Optus Stadium, with 53.5% using the train as their primary mode of transport and 22.1% using the bus. This outcome exceeds the public transport usage target of 70.0% that was set for the precinct prior to its development.

Public transport usage was 79.1% for football events, which is a significant increase on the 42.3% of attendees that used public transport to access Domain Stadium in 2016.¹⁹ Football also had the highest rate of bus usage, with 28.2% of attendees using this as their primary mode of transport. The highest level of public transport usage recorded for any individual event was 95.4% of attendees for the Fremantle Dockers vs Gold Coast Suns AFL match on 7 April 2018.

More than 1.5 million attendees – or 75.7% of all attendees – used public transport to access Optus Stadium.



Second Test of the Australia vs India Domain Test series

3.5 On-site spend

In the first year of operations, the 1.97 million patrons to major events hosted at Optus Stadium spent \$52.3 million on food and beverage purchases from outlets located throughout the venue. More than \$32.7 million (62.5%) of this spending was during the 25 AFL matches, with another \$12.7 million (24.2%) relating to cricket matches and \$3.0 million (5.8%) relating to the three concerts. This spending is reflected in some of the key food and beverage sales figures for 2018, including the sale of over 1 million litres of Gage Roads beer, over 225,000 Mrs Mac's products, and over 500,000 boxes of hot chips.

Although on-site spending by event patrons is collected as catering revenue and shared between VenuesWest and VenuesLive, it indirectly creates benefits for Western Australia through the supply chain. Optus Stadium paid \$21.8 million to its food and beverage suppliers in 2018, of which 68% related to contracts with Western Australian businesses, including key food and beverage suppliers Gage Roads and Mrs Mac's.²⁰

3.6 Interstate and overseas visitors

It is estimated that over 53,000 interstate and overseas visitors attended an event at Optus Stadium in its first year of operations (see Chart 3.2), with over 9,000 of these visitors originating from overseas. Over 24,000 visitors (45.6%) attended an AFL match, with an estimated 2.4% of all AFL attendees at Optus Stadium visiting from interstate.²¹

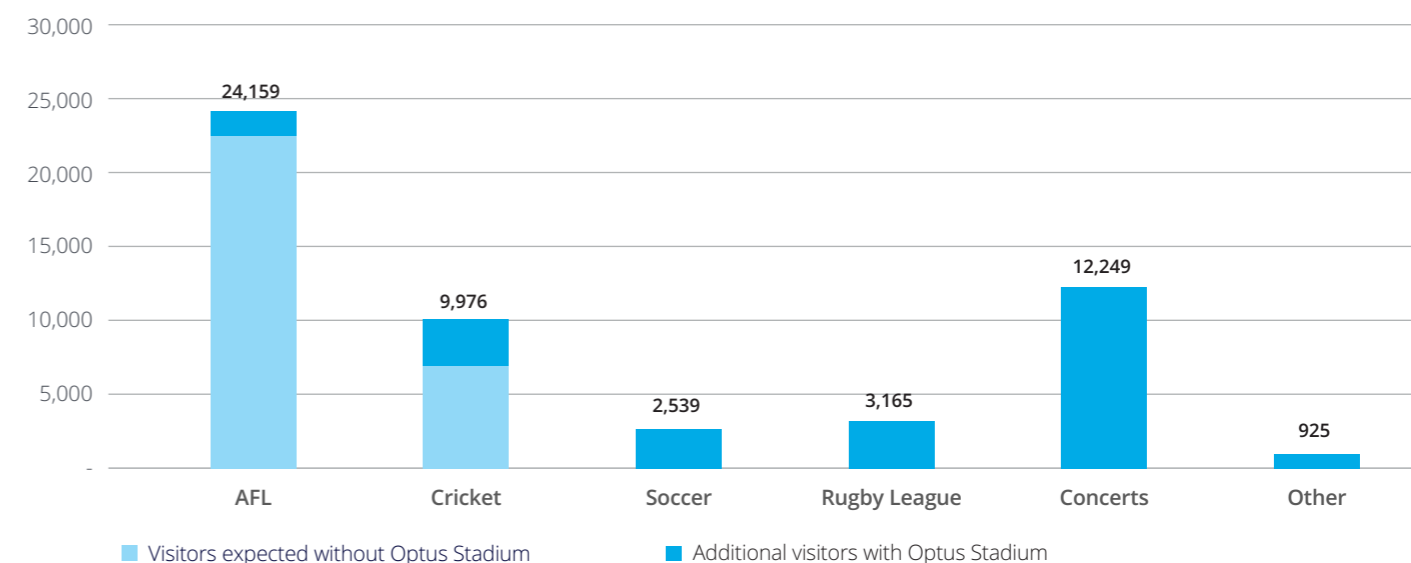
The high-profile concerts hosted at Optus Stadium in 2018 – featuring two performances by Ed Sheeran on his *÷ (Divide) Tour* and Taylor Swift's *Reputation Stadium Tour* concert – also attracted a large number of visitors, with an estimated 7.2% of all attendees originating from either interstate (4.7%) or overseas (2.5%). In total, it is estimated that visitors who attended events at Optus Stadium in its first year of operations collectively spent \$105.0 million during their stays in Western Australia.

Over 53,000 interstate and overseas visitors attended an event at Optus Stadium.



West Coast Eagles fans attending a home game during the 2018 AFL Premiership season

Chart 3.2: Total interstate and overseas visitors to Optus Stadium events, first year of operations



Source: VenuesLive; Deloitte Access Economics

It is likely that some visitors who attended events at Optus Stadium would still have visited Perth in the absence of the stadium (see Appendix C.4.1). Accounting for this, it is estimated that of the 53,000 visitors to attend an event in the first year, 23,700 represented additional visitors that would not have attended an event in Western Australia in the absence of Optus Stadium – either because Perth would have been unable to secure the event or because the capacity at alternative facilities would have prevented them from attending.

It is estimated that these visitors collectively spent \$47.1 million during their stays in Western Australia, representing genuine additional economic activity attributable to Optus Stadium. Appendix C.4 discusses the approach applied in estimating the number of interstate and overseas visitors, and their expenditure in Western Australia.



The Camfield

Case study 2: The Camfield

The opening of Optus Stadium coincided with the opening of another achievement for Western Australia: one of Australia's biggest pubs. The Camfield is located alongside the stadium, merely 100 metres away, on the Burswood Peninsula. The Camfield is owned by Three Pound Group, who also own the Reveley in Elizabeth Quay and Stables Bar in Perth CBD, and employs approximately 45 full-time staff and 155 casual staff.

A capital works package of \$17.0 million included the creation of a new bar, café, restaurant facilities and a microbrewery. In fact, The Camfield is actually home to five separate bars, spanning across more than 9,000 square metres. By volume of beer sold – to the tune of 450,000 litres in its first year – The Camfield comes in as one of the top two bars in Western Australia and top 10 in Australia.

In addition to being the watering hole of choice for fans and patrons attending events at the stadium, the venue has also kept the diverse use of the surrounding precinct in mind in order to maximise its offering. In the first year of operations, the venue hosted almost 200 functions ranging from concerts and festivals to Christmas parties, weddings, wakes, seminars and more. A large front veranda soaks up sweeping vistas of the Swan River, and there is ample grassed areas for children to play, in addition to the existing outdoor areas within the Chevron Parklands and throughout the Stadium Park precinct.

For its first year of operations, The Camfield set a target turnover of \$20 million. This figure proved easily beaten, with the venue ending up generating a total turnover in excess of \$22 million. About 40% of this revenue was generated from event days, with each event day seeing the venue clock in at full capacity of 2,500 people for about five hours. Supporting operating activities was \$11 million worth of operational expenditure, with over \$4 million paid in staff wages and an estimated 85% of its remaining expenditure going directly to Western Australian suppliers. The Camfield has proven to be another success in the Optus Stadium story, contributing to the atmosphere and diversity of experiences available on the Burswood Peninsula, and supporting Western Australian fans and suppliers in the process.



Priceline Dinner at The Riverview Room

4 Looking into the future

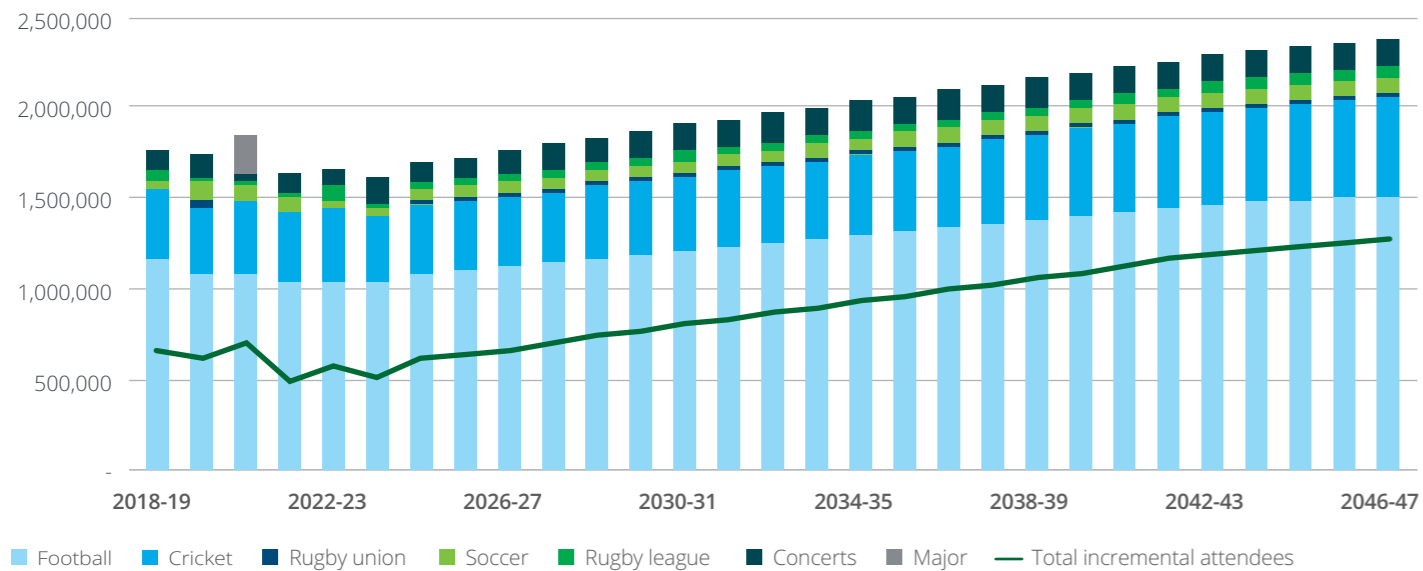
On the backdrop of the success of Optus Stadium's first year of operations, this chapter takes a look at what the next 29 years of operations could bring for the stadium and Western Australia. Forecasts of events and patronage, along with the number of interstate and overseas visitors and their spending in Western Australia are discussed in the sections that follow.

4.1 Events and patronage

Event and patronage forecasts for the period 2018-19 to 2023-24 were provided by VenuesLive. Over this period, the number of events is forecast to remain relatively consistent at an average of 40 events per year, peaking at 43 events in 2020-21. Consultation with VenuesLive revealed that there are unlikely to be significant changes in the number of events hosted at Optus Stadium each year, mainly due to the venue's existing events schedule. For example, the venue is committed to hosting regular events such as the AFL Premiership season, and BBL, ODI and Test cricket.

Future high-profile sporting events hosted at Optus Stadium include the 2019 Bledisloe Cup and the 2020 ICC T20 World Cup.

Chart 4.1: Total patronage at Optus Stadium events, 2018-19 to 2046-47



Source: VenuesLive; Deloitte Access Economics

Note: Total incremental attendees line denotes total estimated attendance that is incremental to the base case (see Appendix C.1 and Appendix C.2).

Over the next 29 years, 57.8 million people are expected to attend major sporting and live entertainment events at Optus Stadium. This includes an additional 25.6 million attendees who would not have attended a sporting or live entertainment event if Optus Stadium had not been built, or an average of 884,000 additional attendees each year. As shown in Chart 4.1, total annual patronage is forecast to grow to almost 2.4 million attendees by 2046-47. This represents a 35.5% increase in annual attendees over the next 29 years.

Similar to the first year of operations (see Section 3.1), football matches are expected to continue to generate the majority of patronage for Optus Stadium. Over the six years to 2023-24, these events are forecast to host nearly 6.5 million attendees, reflecting 63.0% of total Optus Stadium attendees. This proportion remains high across the entire forecast period, with football matches still expected to account for 63.6% of total patronage in 2046-47. Over the 29 years, this reflects over 36.6 million attendees at football matches. The vast majority of this attendance (98.5%) is expected to be contributed by West Coast Eagles and Fremantle Dockers matches as part of the AFL Premiership season.

Cricket matches also account for a substantial share of patronage, with almost 2.3 million attendees over the six years to 2023-24 (21.9%) and over 12.8 million attendees expected over the next 29 years, reflecting 22.3% of total patronage. The majority of patronage to cricket matches is contributed by BBL (65.1%) and Test matches (27.0%).

Cricket also accounts for a notable spike in annual patronage in 2020-21, when Optus Stadium is set to host six matches as part of the 2020 ICC T20 World Cup, in October 2020 (included separately as part of 'major' events in Chart 4.1). Over the six matches, a total attendance of 210,000 is expected;²² this drives significant numbers of interstate and overseas visitors to Western Australia (see Section 4.2). Given its capacity and quality of the facilities, Optus Stadium is expected to enable Western Australia to host other major, international sporting events and tournaments in the future; however, with many factors affecting both Australia and Western Australia's ability and desire to bid for such events, and the uncertainty about when they would occur, the patronage forecasts do not estimate attendance at any such future events.

On 10 August 2019, Optus Stadium will host the first match of the annual Bledisloe Cup series between the Wallabies and the All Blacks, with an attendance of 55,000 expected. Notably, this is the only time the Wallabies and the All Blacks will play against each other in Australia in 2019, with the second match in the series to be hosted at Eden Park in Auckland.

The most significant growth in patronage is expected for concerts. Although an average of only two major concerts each year are expected until 2023-24, the share of total patronage is expected to grow from 5.8% in 2018-19 to 9.1% in 2023-24, with three concerts expected in that year. Over the 29 years, over 3.9 million concert attendees are expected.

Over the next 29 years, 36.6 million people are expected to attend football matches at Optus Stadium.

4.2 Interstate and overseas visitors

The number of interstate and overseas visitors expected to attend events at Optus Stadium over the period 2018-19 to 2046-47 is shown in Chart 4.2. Over 395,000 visitors are forecast in the six years to 2023-24 alone. It is estimated that these visitors will spend over \$783.3 million during their stays in Western Australia.

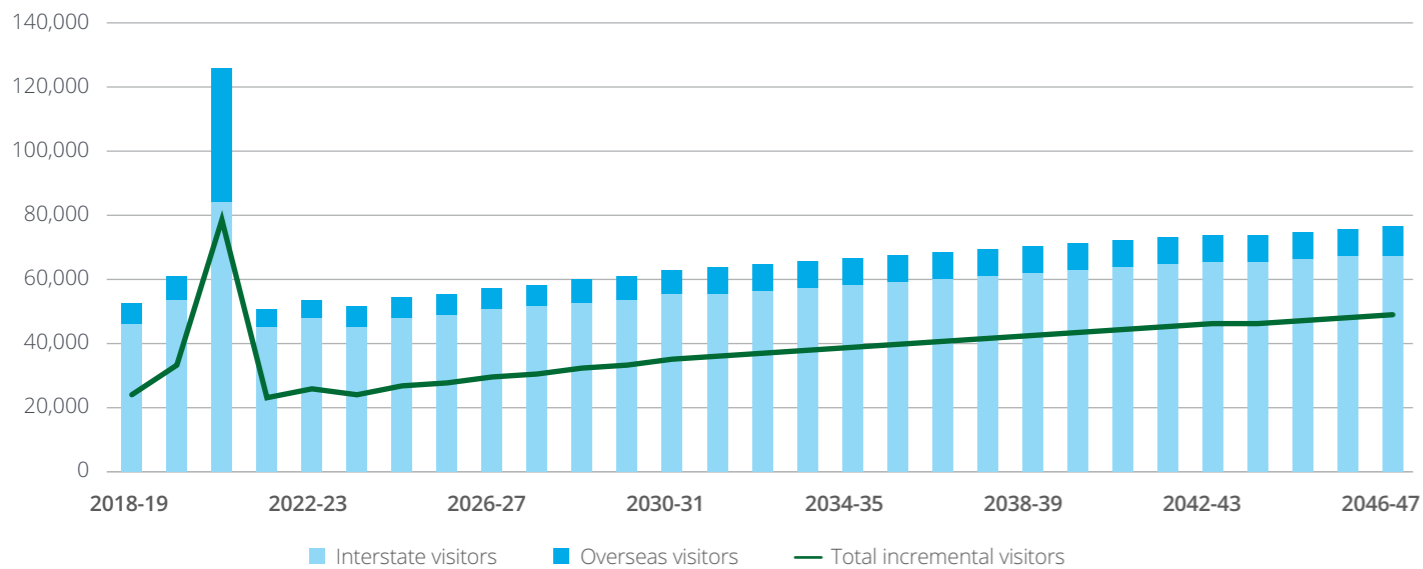
A significant spike in visitation occurs in 2020-21; this correlates with the jump in attendance in the same year (see Chart 4.1), which relates to the six matches of the 2020 ICC T20 World Cup in October 2020. Of the forecast 210,000 patrons expected to attend these matches, over 77,000 are expected to be unique interstate and overseas visitors (see Appendix C.4). In total, visitors to this event alone are expected to spend over \$154.1 million during their stays in Western Australia.

This demonstrates the importance of major, international events to the local economy, which Optus Stadium could better position Western Australia to host in the future.

From 2024-25, interstate and overseas visitors are forecast to grow more modestly, mostly driven by increasing total patronage at Optus Stadium events (see Chart 4.1). Over the 29 years, almost 2 million interstate (87.0%) and overseas (13.0%) visitors are expected to attend events hosted at Optus Stadium, with over 1.1 million – or an average of 38,000 per year – representing additional visitors that would not have visited in the absence of Optus Stadium. In aggregate, these visitors are estimated to spend over \$3.8 billion during their stays in Western Australia (including \$2.2 billion in additional spending that would not have been realised without Optus Stadium, or an average of \$75.4 million per year).

In the six years to 2023-24, Optus Stadium is expected to host 395,000 visitors who will spend \$783.3 million in Western Australia.

Chart 4.2: Interstate and overseas visitors to events hosted at Optus Stadium, 2018-19 to 2046-47



Source: VenuesLive; Deloitte Access Economics

Note: Total incremental visitors line denotes total estimated interstate and overseas visitors that are incremental to the base case (see Appendix C.4.1).



The Single Fin bar at Optus Stadium

Case study 3: Gage Roads

Named after the strip of ocean that separates Rottnest Island and Fremantle in Western Australia, Gage Roads is a brewery based in Palmyra, Western Australia. The company was formed in 2002 and, despite only having about 40 employees, was successful in securing the exclusive contract to supply beer to Optus Stadium. Beating out international competition – including the Belgian-headquartered owners of Carlton and United Breweries, Anheuser-Busch InBev and the Japanese-owned Lion – Gage Roads is the first craft brewery in the world to be appointed as the exclusive beer supplier to a stadium.

A key prerequisite to securing the supply contract was for Gage Roads to demonstrate their ability to fulfil the huge quantity of demand expected at the stadium. The company succeeded in doing so, producing 5,000 kegs of different variety beers over a five-day trial period. The brewer then went on to supply 1.1 million litres of beer to fans and patrons at the stadium in its first year of operations; over 700 kegs of beer were prepared for the West Coast Eagles vs Collingwood Football Club AFL qualifying match alone in September 2018. Despite the stadium contract being within the brewer's existing capacity, a stadium account manager was hired specifically to manage the supply contract with Optus Stadium.

The appointment of Gage Roads as sole beer supplier is a good news story for brewer, stadium, and Western Australia alike. In addition to the benefits for Gage Roads, VenuesLive are able to continue their support of Western Australian producers by offering a range of quality local beer. On offer at Optus Stadium are a number of brews produced locally in Gage Roads' Palmyra brewery, including the Single Fin Summer Ale, Atomic Pale Ale, ALBY Lager and Hello Sunshine Cider.

The results for Gage Roads have been significant. Draught keg sales increased by 445% as a result of stadium business, but most important is the increase in profile afforded by an exclusive contract at Perth's nexus of sports, entertainment and celebration, which is proving to be a great launchpad for brand awareness within the state and beyond. The Optus Stadium contract is both a result and driver of Gage Roads' 'Returning to Craft' strategy, which was first launched in May 2016 and focuses the brewer's efforts on growing its proprietary craft beer range and the production of a high quality beer.

5 Flow-on economic impacts

The increased economic activity generated from the construction of Optus Stadium and the infrastructure in the surrounding precinct (see Chapter 2), along with its ongoing operations and attraction of visitors to Western Australia creates flow-on impacts in the broader economy. These economic impacts can be measured at the macroeconomic level, and include changes in both economic output and employment.

The economic impacts presented in this chapter are estimated using computable general equilibrium (CGE) modelling. Further details about the modelling approach applied and key assumptions used in CGE modelling are provided in the appendices to this report. Importantly, the results from two modelling scenarios are presented:

- Construction plus one year of operations.** This scenario considers the entire period of construction of Optus Stadium and the surrounding precinct, plus the first year of operations (2014-15 to mid-2018-19). As a result, this scenario provides an estimate of the economic impact that has already been generated by Optus Stadium for the Western Australian economy.
- Construction plus 30 years of operations.** This scenario considers the entire period of construction of Optus Stadium and the surrounding precinct, the first year of operations, and a forecast of 29 years of future operations (2014-15 to 2046-47). This scenario provides an estimate of the cumulative economic impact that could be expected from future operations at Optus Stadium.

5.1 Economic output

Total economic activity in a state economy is measured by gross state product (GSP).²³ As such, GSP is used as a measure of the impact of Optus Stadium and the surrounding precinct on the Western Australian economy.

Table 5.1 shows the cumulative increase in economic output in Western Australia as a result of Optus Stadium. The net economic impacts are expressed in present value terms.²⁴ It is estimated that Optus Stadium and the surrounding precinct has generated an additional \$129.7 million of GSP in Western Australia to date in present value terms.

In the longer term, it is estimated that Optus Stadium and the surrounding precinct will generate an additional \$653.6 million of GSP in Western Australia. This reflects an average of \$19.8 million of GSP per year over the 33 years spanning construction and operations. The largest increases in GSP per year are realised during the construction phase; however, benefits continue to be realised from future operations.

Table 5.1: Cumulative impact of Optus Stadium and the surrounding precinct on Western Australian economic output, present value terms

Timeframe	Gross state product (\$ million)
Construction plus one year of operations	129.7
Construction plus 30 years of operations	653.6

Source: Deloitte Access Economics

Optus Stadium has generated \$129.7 million of GSP in Western Australia to date, with a total of \$653.6 million estimated over the next 29 years.





Optus Stadium by night

5.2 Employment

The change in economic output generated by Optus Stadium and the surrounding precinct influences the Western Australian labour market. The results presented here refer to the number of additional jobs created as a result of the stadium and precinct, which are expected to provide employment to people who would otherwise be unemployed.

Table 5.2 shows how total full-time employment is expected to change in Western Australia as a result of Optus Stadium and the surrounding precinct. Since the commencement of construction, it is estimated that Optus Stadium and the surrounding precinct has generated an average of 367.8 full-time equivalent (FTE) jobs in Western Australia each year, to date. In the longer term, it is estimated that Optus Stadium and the surrounding precinct will generate an average of 231.3 FTE jobs in Western Australia each year.

It is important to note that these estimates of additional FTE jobs are those created across the economy as output expands as a result of Optus Stadium and the surrounding precinct; they do not refer to the number of people employed directly in construction or operations. As illustrated in Figure 5.1, over 8,600 people were directly employed in the construction of Optus Stadium and more than 3,300 people are directly employed in operations each year.

Optus Stadium and the surrounding precinct has generated an average of 367.8 FTE jobs each year in Western Australia to date.

Table 5.2: Average annual employment generated by Optus Stadium and the surrounding precinct for Western Australia (FTE)

Timeframe	Employment (FTE)
Construction plus one year of operations	367.8
Construction plus 30 years of operations	231.3

Source: Deloitte Access Economics

However, this direct employment does not represent additional FTE jobs created in the economy. For example, it is entirely possible that in the absence of Optus Stadium, many of these construction and operations workers may have found employment in other areas of the economy. In contrast, the annual average of 367.8 FTE jobs presented in Table 5.2 represents additional jobs that would not have existed in Western Australia in the absence of Optus Stadium.

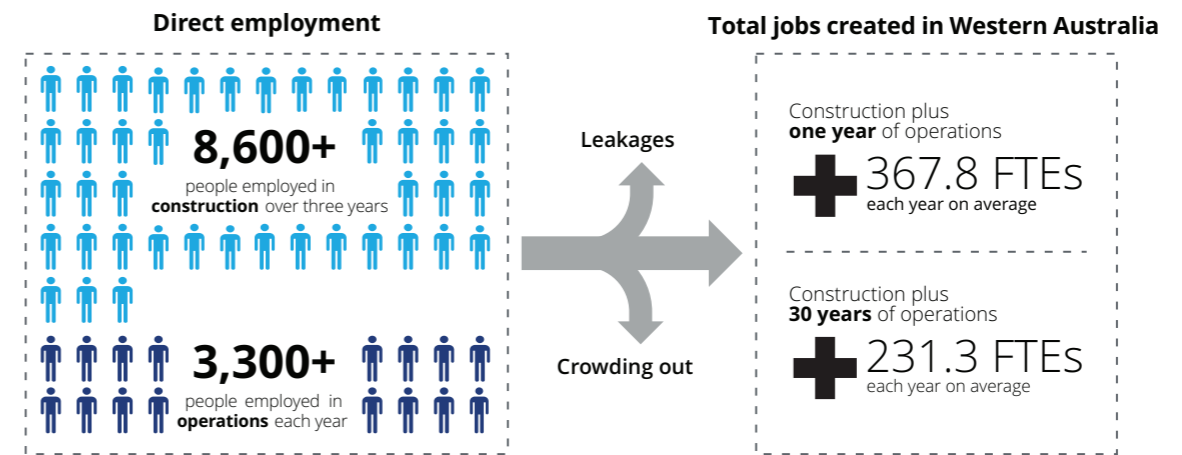
Chart 5.1 illustrates the number of additional jobs created by Optus Stadium and the surrounding precinct in Western Australia over time. The FTE numbers presented are cumulative, and do not indicate an annual increment of jobs.

Employment peaks during the construction phase, when annual expenditure is at its highest. Although employment decreases following the completion of construction, a positive employment impact is expected to endure for several years in Western Australia.

This is due to two factors. The first is the legacy of the initial construction expenditure, which drives economic expansion and related growth in a number of industries. These industries experience a longer-term expansion, despite the temporary nature of the stimulus. The second is continued growth in the Western Australian economy due to the operations of Optus Stadium and the surrounding precinct, which fuels additional demand for inputs from across the state.

A noticeable increase in employment occurs in 2020-21. This correlates with the expected increase in interstate and overseas visitors to Western Australia in that year, as a result of the six matches of the 2020 ICC T20 World Cup hosted at Optus Stadium. As outlined in Section 4.2, visitors to this event are expected to spend over \$154.1 million during their stays in Western Australia. This short-term boost in visitors and expenditure reflects increased demand for goods and services supplied from within the state, which benefits local suppliers and supports the employment of more Western Australians.

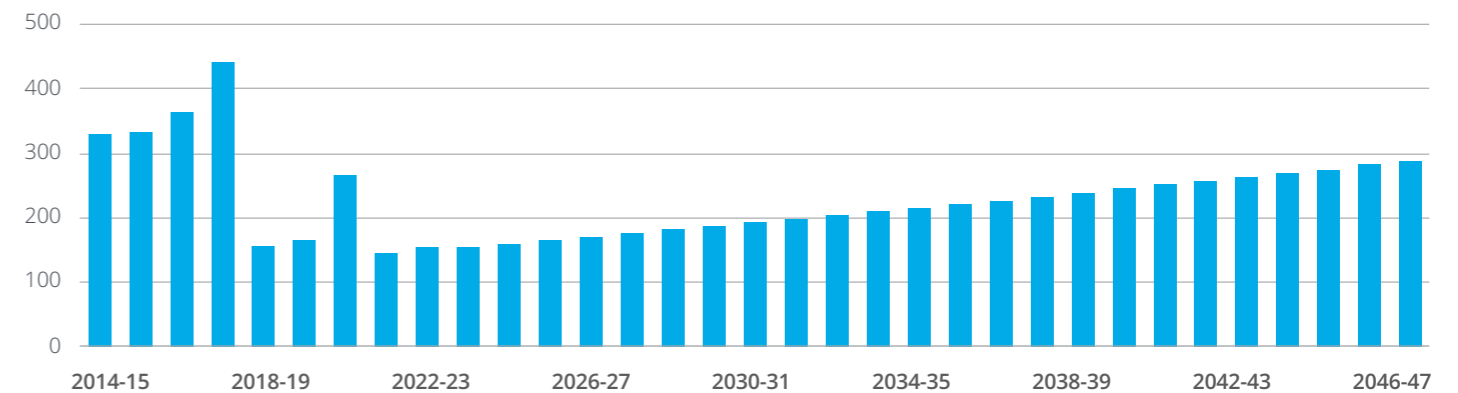
Figure 5.1: Direct employment and total jobs created in Western Australia



Source: VenuesLive; Deloitte Access Economics

Note: The 8,600+ people employed in construction relates to the 7,000 people employed as part of the construction of Optus Stadium and Stadium Park, plus the 1,600 people employed as part of construction of the required transport infrastructure. The 3,300+ people employed in operations each year relates to the 3,200 casual staff employed to work on event days plus 100 permanent operations staff. Appendix A.3 provides a discussion on leakages and crowding-out effects.

Chart 5.1: Overall impact of Optus Stadium and the surrounding precinct on Western Australian employment (FTE)



Source: Deloitte Access Economics

Appendices

Appendix A: Methodology

A.1. What is an economic impact assessment?

An EIA is an analytical approach used to estimate the impacts generated by a particular investment or policy change on the economy. For this analysis, an EIA has been undertaken to estimate the impact on the Western Australian economy from both construction and the first year of operations at Optus Stadium, along with an estimation of the cumulative economic impact that could be expected from future operations.

A.2. Approach to undertaking this economic impact assessment

A.2.1. Summary of approach

Four key steps have been taken to prepare this EIA. These include:

1. Base case and investment case definition
2. Modelling scenario definition
3. Direct impact modelling
4. Computable general equilibrium (CGE) modelling.

A.2.2. Investment case and base case definition

The value of the economic impacts estimated in an EIA are derived from the incremental changes in economic activity that are generated from a given policy or investment activity. This approach ensures that only the net impacts on the economy – which can be reasonably attributed to the policy or investment – are included within the analysis. Following this approach, the economic impact of Optus Stadium is measured as the incremental difference between two scenarios: an investment case and a base case.

A.2.2.1. Investment case

For this analysis, the investment case is defined as the status quo; that is, the investment case refers to the 'real-life' scenario in which all investments associated with Optus Stadium and the surrounding precinct proceed to development. The construction of Optus Stadium commences in 2014, with the stadium officially opening for operation on 21 January 2018. Upon opening of Optus Stadium, a range of events and associated patronage is diverted from existing facilities to the new stadium. These include:

- The West Coast Eagles and Fremantle Dockers both relocate their home ground from the existing Domain Stadium to Optus Stadium from the 2018 AFL Premiership season onwards
- The Perth Scorchers move most of their home matches from the WACA ground to Optus Stadium from the end of the 2017-18 BBL season onwards, commencing with the Perth Scorchers vs Hobart Hurricanes BBL Semi Final on 1 February 2018
- Other international cricket matches – including Test, ODI and Twenty20 International (T20I) matches – are diverted from the WACA ground to Optus Stadium, commencing with the Australia vs England ODI match on 28 January 2018.

Major live entertainment events are hosted at Optus Stadium in the investment case, including Taylor Swift's *Reputation Stadium Tour* concert on 19 October 2018 and Ed Sheeran's *÷ (Divide) Tour* concerts on 2 and 3 March 2018. However, these concerts – and other concerts in the forecast period – are considered as additional to the base case (see Appendix C.2.5).

Although the investment case reflects a real-life scenario, a range of assumptions are required to develop the forecast component of the scenario. These assumptions are summarised in Appendix C.1.

A.2.2.2. Base case

The base case is defined as a scenario in which Optus Stadium does not exist; that is, Optus Stadium and the Stadium Park precinct and surrounds do not proceed to development, and live entertainment and sporting events continue to be held in other available facilities across Perth. The key assumptions that underpin the base case have been informed by consultation with VenuesWest, VenuesLive and Tourism Western Australia, and can be summarised as follows:

- The West Coast Eagles and Fremantle Dockers continue to play their home games at the existing Domain Stadium
- The Perth Scorchers continue to play their home matches at the WACA ground
- Other international cricket matches – including Test, ODI and T20I matches – that are hosted at Optus Stadium in the investment case continue to be held in Perth at the WACA ground
- Due to the increased capacity and higher quality amenities and facilities available at Optus Stadium compared to other venues, it has already been able to secure a number of events which would not have been hosted in Perth in the base case. This trend is expected to continue; over the assessment period, there are assumed to be 5.5 less events per year on average in the base case compared to the investment case. In terms of past and future known events to be hosted at Optus Stadium, these include:
 - Community Open Day on 21 January 2018
 - NRL double header event on 10 March 2018, featuring Melbourne Storm vs Canterbury-Bankstown Bulldogs, and New Zealand Warriors vs South Sydney Rabbitohs
 - Chelsea Football Club vs Perth Glory exhibition soccer match on 23 July 2018
 - Perth Running Festival event on 7 October 2018
 - Game 2 of the NRL State of Origin series on 23 June 2019
 - Two exhibition soccer matches in July 2019, including Manchester United vs Perth Glory on 13 July 2019 and Manchester United vs Leeds United on 17 July 2019
 - Bledisloe Cup on 10 August 2019.

Similar to the investment case, a range of assumptions are required to develop the forecast component of the base case. These assumptions are summarised in Appendix C.2.

A.2.3. Modelling scenario definition

The incremental changes in economic activity that are generated from an investment activity are not static in nature; rather, they are realised over time, during which the structure of the economy changes in response to the investment. As such, the modelling of economic impacts is undertaken over a time period that allows the impacts on the economy to be realised.

This analysis considers two primary modelling scenarios:

- **Construction plus one year of operations.** This scenario considers the entire period of construction of Optus Stadium and the surrounding precinct, plus the first year of operations (2014-15 to mid-2018-19). However, it excludes any consideration of the economic impacts from future operations. As a result, this scenario provides an estimate of the economic impact that has already been generated by Optus Stadium for the Western Australian economy.
- **Construction plus 30 years of operations.** This scenario considers the entire period of construction of Optus Stadium and the surrounding precinct, the first year of operations, and a forecast of 29 years of future operations (2014-15 to 2046-47). This scenario provides an estimate of the cumulative economic impact that could be expected from future operations at Optus Stadium.

A.2.4. Direct impact modelling

The specification of direct impacts in an EIA involves identifying the sources of economic impact that are directly attributable to the investment. This generally includes capital expenditure and ongoing maintenance or operational expenditure that is additional to what would be expected in the base case. A range of other sources of direct impact may also be relevant, depending on the nature of the investment.

For the purposes of this analysis, six sources of direct impact have been identified as measurable and attributable to Optus Stadium:

1. Optus Stadium (i.e. the stadium itself)
2. Stadium Park
3. Transport infrastructure
4. Matagarup Bridge
5. The Camfield
6. Tourism expenditure.

Table A.1 presents the values of the direct impacts that are included in the analysis, which are incremental to the base case (see Appendix A.2.2). Chapter 2 provides a discussion of the construction works that relate to the sources of direct impact. Appendix C.3 outlines the assumptions used in estimating the value of operational spending in the base case, which was used to estimate the value of incremental operational expenditure. Section 3.6 and Section 4.2 discuss the value of tourism expenditure during the first year of operations and over the forecast period respectively, while Appendix C.4 outlines the assumptions that have been used in estimating the value of incremental tourism expenditure.

Table A.1: Summary of direct impacts

	Construction plus one year of operations (\$ million)	Construction plus 30 years of operations (\$ million)
Capital expenditure^(a)		
Optus Stadium and Stadium Park	955.4	955.4
Transport infrastructure	418.2	418.2
Matagarup Bridge	91.5	91.5
The Camfield	17.0	17.0
Total capital expenditure	1,523.8	1,523.8
Operational expenditure^(b)		
Optus Stadium and Stadium Park	104.4	2,090.2
Transport infrastructure	16.6	489.7
Matagarup Bridge	0.07	2.1
The Camfield	11.0	324.5
Total operational expenditure	132.0	2,906.4
Tourism expenditure		
Interstate visitors	32.0	1,713.9
Overseas visitors	15.1	496.8
Total tourism expenditure	47.1	2,210.7
Total direct impact	1,703.0	6,640.9

Note: The values in this table are 2018 Australian dollars.

^(a)Capital expenditure is the same under both scenarios, as both scenarios include the entire construction period.

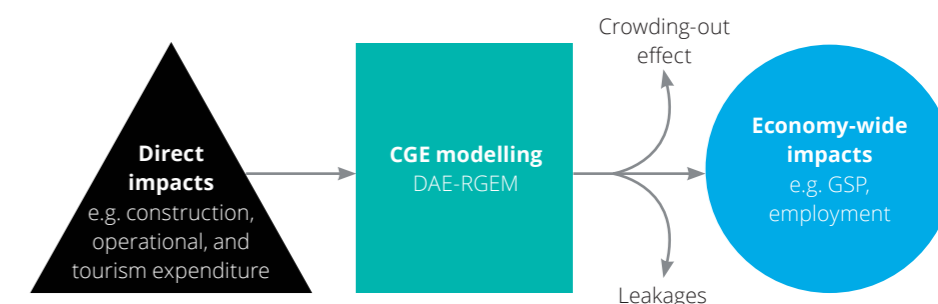
^(b)Operational expenditure estimates for Opus Stadium, Stadium Park and Perth Stadium Station were provided by VenuesWest, and estimates for the Matagarup Bridge and The Camfield were provided by Main Roads Western Australia and The Camfield respectively.

A.2.5. CGE modelling

The direct impacts form the primary inputs into the CGE modelling. This modelling is used to estimate the flow-on effect of these economic ‘shocks’ through the economy, accounting for crowding-out effects and leakages (see Appendix A.3 and Figure A.1).

This EIA has been undertaken using Deloitte Access Economics’ Regional General Equilibrium model (DAE-RGEM). DAE-RGEM is a large-scale, multi-region, multi-commodity, dynamic CGE model of the world economy. A more detailed explanation of the model is provided in Appendix B.

Figure A.1: CGE modelling





The Locker Room at Optus Stadium

As outlined in Appendix A.2.2, the economic impact of Optus Stadium is measured as the incremental difference between an investment case and a base case. DAE-RGEM thus models an investment case – in which all investments associated with Optus Stadium and the surrounding precinct proceed to development – and a base case, in which Optus Stadium does not exist. The results of the analysis are expressed as the incremental difference between the base case and the investment case.

As such, the results of the analysis – including employment and economic output – can be interpreted as the net impacts on the economy of Optus Stadium. That is, they would not have otherwise been realised in the absence of the stadium, and they are additional to what would have been expected if the stadium had not been developed.

A.3. Multiplier effects in CGE modelling

It is noteworthy that the impact to GSP estimated in this analysis is only a fraction of the total expenditure on construction of Optus Stadium and the surrounding precinct (see Appendix A.2.4). This is because the impact of major investment projects on the structure of small economies (such as Western Australia) is influenced by two complexities: ‘leakages’ and ‘crowding-out effects’.

The ability to model these complexities is unique to CGE modelling and is a key reason for its preference over Input-Output (IO) modelling among government decision-makers, since it avoids the overstatement of economic impacts. This is discussed further below.

A.3.1. Leakages

The term ‘leakages’ refers to spending within one economy that flows into other economies, and therefore does not contribute to total economic output. Although construction of Optus Stadium and the surrounding precinct involved a significant amount of inputs sourced from within Western Australia, not all of the expenditure can reasonably be expected to remain in Western Australia.

While labour is sourced locally, other inputs to production are often imported from interstate or overseas. These inputs – which do not originate in Western Australia – do not contribute to the measurement of change in Western Australian GSP. There is therefore a ‘leakage’ of part of the impact to other economies, to the extent that intermediate inputs are sourced from interstate and overseas suppliers. For example, if steel for fabrication is imported from China as part of a local supply contract, the expenditure on that steel does not contribute to Western Australian GSP.

These leakages can be substantial in major investment projects even where local content is high, simply due to their capital-intensive nature. In addition, local industry is often unable to supply all the inputs required to fulfil its contracts. The size of these leakages is determined as part of the CGE modelling, based on the sector in which the expenditure occurs.

A.3.2. Crowding-out effects

Crowding-out effects refer to the opportunity cost attached to project inputs. Western Australia has a limited supply of labour and capital; therefore, periods of large investment tend to draw resources away from other sectors of the economy. For example, increased output in the construction sector may draw inputs from the manufacturing sector, resulting in lower manufacturing output. The lower output of the manufacturing sector partially offsets the increased output of the construction sector, blunting the overall increase to GSP.

The treatment of crowding-out effects is one of the key differences of CGE modelling compared to IO modelling. CGE modelling accounts for crowding-out effects by measuring net changes against a counterfactual scenario, whereas IO modelling ignores crowding-out effects.

Appendix B: CGE modelling

B.1. Overview of CGE modelling

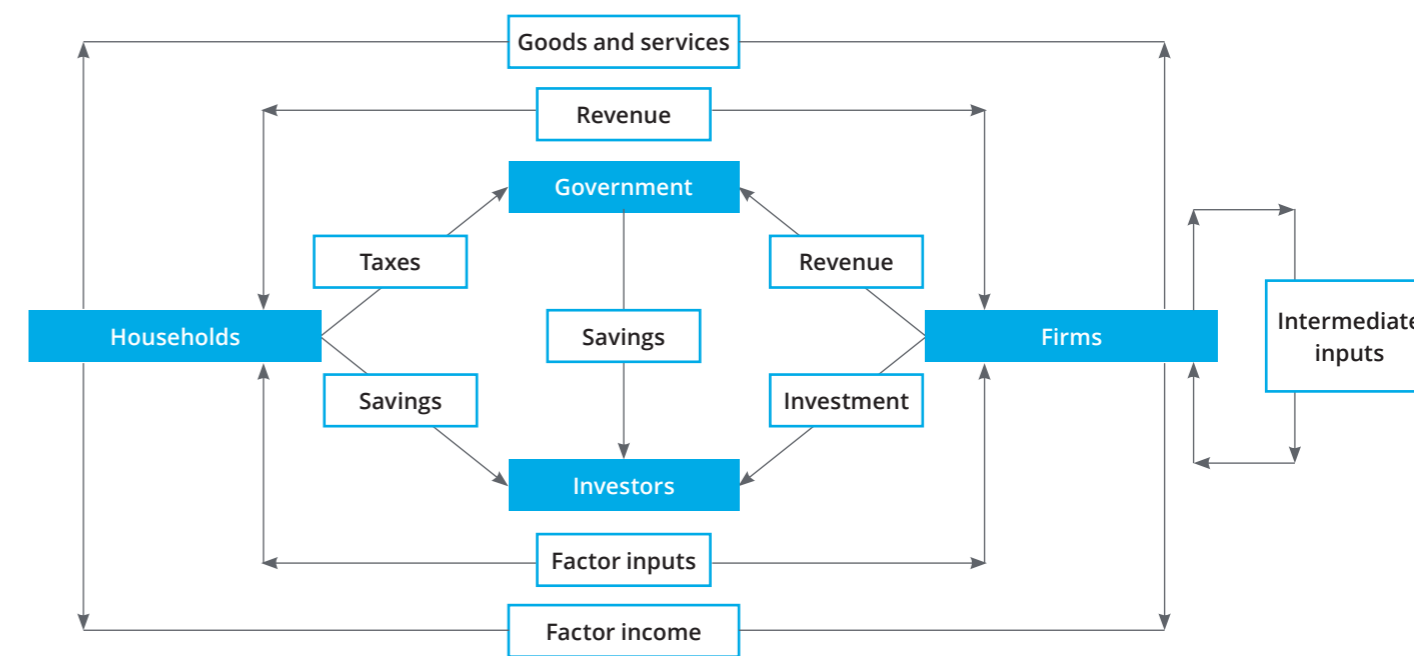
Deloitte Access Economics’ Regional General Equilibrium Model (DAE-RGEM) is a large scale, dynamic, multi-region, multi-commodity CGE model of the world economy with bottom-up modelling of Australia’s regions. DAE-RGEM is based on a standard CGE model developed by the Global Trade Analysis Project (GTAP), and has been tailored to the Australian economy. This tailoring involved building in a greater level of disaggregation of Australian industries and regions than is provided in the standard model. The results of the model are based on a set of underlying relationships between its various components.

The model allows policy analysis in a single, robust, integrated economic framework. This model projects changes in macroeconomic aggregates such as GDP or GSP, employment, export volumes, investment and private consumption. At the sectoral level, detailed results such as output, exports, imports and employment are also produced.

Figure A.1 is a stylised diagram showing the circular flow of income and spending that occurs in DAE-RGEM. To meet demand for products, firms purchase inputs from other producers and hire factors of production (labour and capital). Producers pay wages and rent (factor income) which accrue to households.

Households spend their income on goods and services, pay taxes and put some away for savings. The government uses tax revenue to purchase goods and services, while savings are used by investors to buy capital goods to facilitate further consumption. As DAE-RGEM is an open economy model, it also includes trade flows with other regions, states and foreign countries.

Figure A.1: Components of DAE-RGEM and their relationships



Source: Deloitte Access Economics

The DAE-RGEM is based on a substantial body of accepted microeconomic theory. Key assumptions underpinning the model are:

- The model contains a 'regional consumer' that receives all income from factor payments (labour, capital, land and natural resources), taxes and net foreign income from borrowing (lending).
- Income is allocated across household consumption, government consumption and savings so as to maximise a Cobb-Douglas (C-D) utility function.
- Household consumption for composite goods is determined by minimising expenditure via a CDE (Constant Differences of Elasticities) expenditure function. For most regions, households can source consumption goods only from domestic and imported sources. In the Australian regions, households can also source goods from interstate. In all cases, the choice of commodities by source is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption for composite goods, and goods from different sources (domestic, imported and interstate), is determined by maximising utility via a C-D utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of creating capital.
- Producers supply goods by combining aggregate intermediate inputs and primary factors in fixed proportions (the Leontief assumption). Composite intermediate inputs are also combined in fixed proportions, whereas individual primary factors are combined using a constant elasticity of substitution (CES) production function.
- Producers are cost minimisers, and in doing so, choose between domestic, imported and interstate intermediate inputs via a CRESH production function.
- The model contains a more detailed treatment of the electricity sector that is based on the 'technology bundle' approach for general equilibrium modelling developed by ABARE (1996).
- The supply of labour is positively influenced by movements in the real wage rate governed by an elasticity of supply.
- Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. A global investor ranks countries as investment destinations based on two factors: global investment and rates of return in a given region compared with global rates of return. Once the aggregate investment has been determined for Australia, aggregate investment in each Australian sub-region is determined by an Australian investor based on: Australian investment and rates of return in a given sub-region compared with the national rate of return.
- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.
- Prices are determined via market-clearing conditions that require sectoral output (supply) to equal the amount sold (demand) to final users (households and government), intermediate users (firms and investors), foreigners (international exports), and other Australian regions (interstate exports).

- For internationally-traded goods (imports and exports), the Armington assumption is applied whereby the same goods produced in different countries are treated as imperfect substitutes. But, in relative terms, imported goods from different regions are treated as closer substitutes than domestically-produced goods and imported composites. Goods traded interstate within the Australian regions are assumed to be closer substitutes again.
- The model accounts for greenhouse gas emissions from fossil fuel combustion. Taxes can be applied to emissions, which are converted to good-specific sales taxes that impact on demand. Emission quotas can be set by region and these can be traded, at a value equal to the carbon tax avoided, where a region's emissions fall below or exceed their quota.

B.1.1. The representative household

Each region in the model has a so-called representative household that receives and spends all income. The representative household allocates income across three different expenditure areas: private household consumption; government consumption; and savings.

Going clockwise around in Figure A.1, the representative household interacts with producers in two ways. First, in allocating expenditure across household and government consumption, this sustains demand for production. Second, the representative household owns and receives all income from factor payments (labour, capital, land and natural resources) as well as net taxes. Factors of production are used by producers as inputs into production along with intermediate inputs. The level of production, as well as supply of factors, determines the amount of income generated in each region.



City views from the Sky View Lounge at Optus Stadium

The representative household's relationship with investors is through the supply of investable funds – savings. The relationship between the representative household and the international sector is twofold. First, importers compete with domestic producers in consumption markets. Second, other regions in the model can lend (borrow) money from each other. Key issues to note include:

- The representative household allocates income across three different expenditure areas – private household consumption; government consumption; and savings – to maximise a Cobb-Douglas utility function.
- Private household consumption on composite goods is determined by minimising a CDE expenditure function. Private household consumption on composite goods from different sources is determined by a CRESH (utility function).

- Government consumption on composite goods, and composite goods from different sources, is determined by maximising a Cobb-Douglas utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of generating capital.

B.1.2. Producers

Apart from selling goods and services to households and government, producers sell products to each other (intermediate usage) and to investors. Intermediate usage is where one producer supplies inputs to another's production. For example, coal producers supply inputs to the electricity sector.

Capital is an input into production. Investors react to the conditions facing producers in a region to determine the amount of investment. Generally, increases in production are accompanied by increased investment. In addition, the production of machinery, construction of buildings and the like that forms the basis of a region's capital stock, is undertaken by producers. In other words, investment demand adds to household and government expenditure from the representative household, to determine the demand for goods and services in a region.

Producers interact with international markets in two main ways. First, they compete with producers in overseas regions for export markets, as well as in their own region. Second, they use inputs from overseas in their production. Key issues to note include:

- Sectoral output equals the amount demanded by consumers (households and government) and intermediate users (firms and investors) as well as exports.
- Intermediate inputs are assumed to be combined in fixed proportions at the composite level. As mentioned above, the exception to this is the electricity sector that is able to substitute different technologies (brown coal, black coal, oil, gas, hydropower and other renewables) using the 'technology bundle' approach developed by ABARE (1996).
- To minimise costs, producers substitute between domestic and imported intermediate inputs is governed by the Armington assumption as well as between primary factors of production (through a CES aggregator). Substitution between skilled and unskilled labour is also allowed (again via a CES function).
- The supply of labour is positively influenced by movements in the wage rate governed by an elasticity of supply (is assumed to be 0.2). This implies that changes influencing the demand for labour, positively or negatively, will impact both the level of employment and the wage rate. This is a typical labour market specification for a dynamic model such as DAE-RGEM. There are other labour market 'settings' that can be used. First, the labour market could take on long-run characteristics with aggregate employment being fixed and any changes to labour demand changes being absorbed through movements in the wage rate. Second, the labour market could take on short-run characteristics with fixed wages and flexible employment levels.

B.1.3. Investors

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. The global investor ranks countries as investment destination based on two factors: current economic growth and rates of return in a given region compared with global rates of return. Key issues to note include:

- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.

B.1.4. International

Each of the components outlined above operate, simultaneously, in each region of the model. That is, for any simulation the model forecasts changes to trade and investment flows within, and between, regions subject to optimising behaviour by producers, consumers and investors. Of course, this implies some global conditions must be met such as global exports and global imports are the same and that global debt repayments equal global debt receipts each year.

The model compares a base case, where the proposed shock does not occur, with a counterfactual scenario where it does. This requires developing a set of inputs that stylise these alternative scenarios, so that the indirect impact of the event can be projected.

B.1.5. Additional sophistication over Input-Output models

The CGE approach models the economy through thousands of mathematical equations, with the additional sophistication over 'Input-Output' (IO) models allowing for a more 'real-world' assessment of impacts. This is driven by several factors:

- CGE models allow for a more explicit treatment of prices, with the values of transactions disaggregated into prices and quantities. This allows for behavioural responses to price changes to be modelled.
- Constraints in factor markets are accounted for, with a range of possible assumptions able to be applied regarding the availability of the primary factors of production. In the case of DAE's in-house CGE model – all capital must be funded by savings. That is, a choice must be made between consumption and investment. The available labour stock is also a function of demographic forecasts and participation rates (which is driven by wage movements).
- CGE models have a more sophisticated equation structure. Detailed equation structures including, for example, the formation of prices and behavioural responses are included which provides a significant body of variables that may be used to model "shocks" through the economy. CGE models also allow for a more detailed treatment of direct and indirect impacts which allow for intra and inter-regional trade, consumer choice between saving and consumption and the possibility for substitution between different intermediate inputs.
- CGE models also offer time dynamics. Many CGE models explicitly include the treatment of time, allowing for year-on-year time profiles of, for example, investment and consumption activity. Corresponding year-on-year outcome profiles can also be produced for a wide range of indicators including GDP, employment, wages, and industry output. This is in contrast to IO models, which provide contribution estimates of a snapshot in time for gross value added and employment only.

Appendix C: Key assumptions

C.1. Investment case events and patronage

The key assumptions that underpin the investment case have been informed by consultation with VenuesWest, VenuesLive and Tourism Western Australia. For the first 12 months of operations at Optus Stadium, historical data on events and associated attendance was available. Beyond the first year, event and patronage forecasts for the period 2018-19 to 2023-24 were provided by VenuesLive.

Consultation with VenuesLive revealed that there is limited capacity within the events schedule for Optus Stadium to host a significantly greater number of major events throughout the year, especially given its commitments to host regular and ongoing events such as the AFL Premiership season, and BBL, ODI and Test cricket. As such, the number of events hosted over the forecast period from 2024-25 has been estimated by using the average number of events hosted at Optus Stadium over the period 2018-19 to 2023-24.

The exception to this is major events, which include major, international sporting events and tournaments including the 2020 ICC T20 World Cup, with six matches to be hosted at Optus Stadium in October 2020. Given its capacity and quality of the facilities, it is expected that Optus Stadium will have the opportunity to host similar events in the future (beyond 2023-24). However, with many factors affecting both Australia and Western Australia's ability and desire to bid for such events, and the uncertainty about when they would occur, the patronage forecasts do not estimate attendance at any such future events.

Overall, attendance at events is forecast to increase beyond 2023-24. The relevant growth rates applied to the various event categories are outlined in Table C.1, and either reflect historical growth rates or forecasted population growth. Forecast attendance at individual events has been constrained by the capacity of Optus Stadium.

Table C.1: Annual growth rates applied to forecast patronage from 2024-25 in the investment case

Event type	Annual growth	Source
Football	1.8%	Average annual growth in AFL attendees in Perth between 1987 and 2017
Soccer	1.6%	Forecast annual rate of population growth in Western Australia
Cricket	1.6%	Forecast annual rate of population growth in Western Australia
Rugby league	1.6%	Forecast annual rate of population growth in Western Australia
Rugby union	1.6%	Forecast annual rate of population growth in Western Australia
Concerts	6.1%	Average annual growth in attendees at concert events at RAC Arena between 2015 and 2018
Major events	-	Not considered in patronage forecasts

Source: AFL statistics are from aflightables.com; RAC Arena statistics were provided by VenuesWest; forecast population growth sourced from Western Australia Tomorrow (2018), Population Report No. 11 – Western Australia Medium-Term Population Forecasts 2016 to 2031.

C.2. Base case events and patronage

Similar to the investment case, the key assumptions that underpin the base case have been informed by consultation with VenuesWest, VenuesLive and Tourism Western Australia. For several event types, the number of events that would have occurred in the base case is assumed to be the same as the number of events that are forecast in the investment case (see Table C.2). However, unlike the investment case – where attendance at these events is forecast to increase – the base case primarily uses averages of historical attendance at events to forecast patronage, and these numbers have been held constant from 2018-19. That is, it is assumed that attendance at these events does not deviate from historical averages.

This primarily reflects the assumption that in the absence of Optus Stadium, attendance at events held at existing facilities is unlikely to increase significantly over time as a result of capacity constraints and a lack of interest in events held at aging facilities, which may cause some individuals to pursue other entertainment options. A summary of the assumptions used to develop the event and patronage forecasts underlying the base case are presented in Table C.2. Further details are provided in the sections that follow.

Table C.2: Summary of event and patronage assumptions underlying the base case

Event type	Number of events	Event attendees
Football	Equal to the investment case	Average AFL match attendance at Domain Stadium from the 2014 to 2017 AFL Premiership seasons
Soccer	No events in the base case	No attendees in the base case
Cricket	BBL matches and T20 international matches are the same as the investment case Average number of ODI and Test matches hosted at the WACA ground between 2013-14 and 2017-18	BBL, T20I and ODI matches sell out at the WACA ground, and Test matches sell out on Day 1, with gradual declining attendance on each consecutive day
Rugby league	Equal to the investment case	Average attendance at NRL and State of Origin matches held in Perth between 2013-14 and 2017-18
Rugby union	Equal to the investment case	Average attendance at 2016 and 2017 Wallabies matches at HBF Park
Concerts	No events in the base case	No attendees in the base case
Major events	Number of matches hosted at the WACA ground during the previous ICC Cricket World Cup 2015	Average attendance at matches hosted at the WACA ground during the previous ICC Cricket World Cup 2015



Second test of the Australia vs India Domain Test series

C.2.1. Football

The main determinant of the number of matches that both the West Coast Eagles and the Fremantle Dockers play in Perth in each season is their performance in the competition, and whether they qualify to play in the finals. Therefore, the number of AFL matches that would have been played in the base case is assumed to be the same as the number of matches that are forecast in the investment case.

The average attendance at each of these matches in the base case is assumed to be 34,781 people. This is the average attendance across all football matches hosted at Domain Stadium between 2013-14 and 2016-17.

C.2.2. Soccer

Soccer matches expected to be hosted at Optus Stadium in the future are exhibition matches featuring English Premier League teams and Socceroos international matches. It is expected that these events – including the Chelsea Football Club vs Perth Glory exhibition soccer match on 23 July 2018 – would not have occurred in Perth without the capacity and quality of the facilities offered by Optus Stadium. Therefore, these matches are excluded from the base case. As such, all soccer matches in the investment case can be considered as additional events that would not have occurred without Optus Stadium.

C.2.3. Cricket

Cricket matches expected to be hosted at Optus Stadium in the future are BBL, ODI, Test and T20I matches. The 2020 ICC T20 World Cup is also hosted in Australia, with six matches to be played in Perth in October 2020; however, these events are considered under the major events category (see Appendix C.2.6).

Similar to AFL matches (see Section C.2.1), the number of BBL matches that the Perth Scorchers play in Perth in each season is primarily determined by their performance in the competition. Therefore, the number of BBL matches that would have been played in the base case is assumed to be the same as the number of matches that are forecast in the investment case. It is also assumed that BBL matches will continue to sell out at the WACA ground in the base case.

The number of T20I matches in the base case is also expected to be the same as the number of matches in the investment case. It is assumed that these matches also sell out at the WACA ground.

The average number of ODI and Test matches hosted at the WACA ground between 2013-14 and 2017-18 is used to inform forecasts of the number of these events in the base case. Based on this historical data, 1.2 ODI matches and 0.6 Test matches are expected to be held in Perth at the WACA ground each year.

ODI matches are expected to sell out at the WACA ground, while Test matches are expected to sell out on Day 1, and then see a gradual decline in attendance each day for the remainder of the match.

C.2.4. Rugby

Due to a number of factors, VenuesLive forecasts indicate that the number of NRL (rugby league) and rugby union matches held in Perth will decrease in the near future, compared to historical averages. This is related to the availability of upcoming competitions that could be hosted in Perth, and is not suggestive of Optus Stadium's inability to secure events. Therefore, the number of NRL and rugby union matches in Perth in the base case is assumed to be the same as the number of matches that are forecast in the investment case. There are assumed to be no NRL State of Origin matches hosted in Perth in the base case.

On average, 19,177 people are expected to attend each rugby union match in the base case. This is based on the average attendance at the 2016 and 2017 Wallabies matches hosted at HBF Park.²⁵ For rugby league, an average of 14,199 people are expected to attend NRL matches. This is based on the average attendance at NRL matches in Perth between 2013-14 and 2017-18.

C.2.5. Concerts

Three concerts were hosted at Optus Stadium in the first year of operations, including Taylor Swift's *Reputation Stadium Tour* concert on 19 October 2018 and Ed Sheeran's + *(Divide) Tour* concerts on 2 and 3 March 2018. These concerts – and other concerts in the forecast period – are excluded from the base case. This is because although these artists may have performed at alternative venues in Perth in the absence of Optus Stadium, these alternative venues would be unlikely to have the capacity to host all of these concerts plus others in their event calendars; some concerts would need to be excluded. As such, the total number of concerts hosted in Perth in the investment case still increases by the number of concerts hosted at Optus Stadium.

Another way to understand the logic behind this assumption is to consider what the operators of alternative venues would do if events that were previously hosted at their venue were moved to Optus Stadium – for example, Taylor Swift previously performed her 2013 *Red Tour* concert at HBF Park and Ed Sheeran previously performed a concert at the same venue in 2015. In these circumstances, venue operators would continue to work to secure live entertainment content for their venues, which would likely result in alternative artists and concerts being confirmed.

Therefore, the fact that some artists who perform concerts at Optus Stadium may still have performed in Perth at an alternative venue in the absence of the stadium does not impact the analysis. All concerts in the investment case can be considered as events that are additional to the base case.

C.2.6. Major events

The only major events currently forecast to be hosted at Optus Stadium are the six matches of the 2020 ICC T20 World Cup in October 2020. As such, the number of events in the base case is assumed to be similar to the ICC Cricket World Cup 2015, which was jointly hosted in Australia and New Zealand. During this tournament, the WACA ground in Perth hosted three matches, which were attended by an average of 15,459 people.²⁶

C.3. Base case operational expenditure

As discussed in Appendix C.2, it is assumed that a number of events considered in the investment case would still have been held in Perth in the base case. These events would have also generated economic impacts for Western Australia.

One source of these economic impacts is through the operating expenditure associated with hosting them, which creates benefits in industries supplying goods and services that are necessary to stage the event.

Some operational expenditure also relates to wages paid directly to permanent and casual event-day staff. Therefore, in order to estimate the incremental impact of Optus Stadium on the Western Australian economy, the operational expenditure associated with hosting events in the investment case must be adjusted for the operational expenditure that would have occurred to host these events in the base case; this is then used to estimate the value of incremental operational expenditure.

VenuesLive provided data on the operational expenditure associated with hosting each event in the first year of operations at Optus Stadium. An operational spend per capita (or per attendee) was then calculated for each event type, based on total event attendees (see Table C.3). These figures were then used to estimate the operational expenditure associated with staging events in the base case, based on the forecasts of the number of events and patronage (see Appendix C.2). This approach assumes that operational expenditure per attendee is the same in the base case; however, the number of events and attendees is lower in the base case, and so total operational expenditure in the base case is also lower.

Table C.3: Operational expenditure per attendee, by event type

Event type	Operational expenditure per attendee
Football	\$5.31
Soccer	\$13.51
Cricket	\$8.30
Rugby league	\$7.58
Rugby union ^(a)	\$7.58
Concerts	\$12.38
Major events ^(b)	\$10.25

Source: VenuesLive; Deloitte Access Economics

^(a) No rugby union matches were hosted at Optus Stadium during the first year of operations. As such, the operational expenditure associated with rugby union matches in the base case is assumed to be the same as rugby league matches.

^(b) The only major events forecast to be hosted at Optus Stadium are the six matches of the 2020 ICC T20 World Cup. It is assumed that the operational expenditure associated with hosting these events in the base case is the same as ODI cricket matches.

C.4. Tourism expenditure

C.4.1. Incremental visitors

Interstate and overseas visitors to Western Australia account for a genuine source of net export income to the state by way of the expenditure made by these visitors during their stay. Therefore, any increase in the number of interstate and overseas visitors to the state – which can be attributed to Optus Stadium – can be considered to create a genuine economic benefit to the Western Australian economy as a result of the stadium.

In estimating the incremental economic impact of Optus Stadium, it is important to ensure that only additional economic activity – that is, activity that would not have occurred otherwise – is included in the analysis. The economic impact would be exaggerated if the analysis was to treat the expenditure of all interstate and overseas visitors to Optus Stadium as a benefit to the Western Australian economy.

This is because it is likely that many visitors to Optus Stadium would still have visited Perth in the absence of the stadium (in the base case), and hence the expenditure of these visitors cannot be directly attributed as a benefit of Optus Stadium.

Instead, only incremental visitors – who account for genuine additional economic activity attributable to Optus Stadium – are included in the analysis of economic impacts (see Chapter 5 and Appendix A.2.4). These include visitors who would not have attended the same event in the base case, either because Perth would have been unable to secure the event or because the capacity at alternative facilities would have prevented them from attending. Only the expenditure of these incremental visitors is considered as genuine additional tourism expenditure within the Western Australian economy.

The analysis estimates the number of incremental visitors by estimating the total number of interstate and overseas visitors in both the base case and the investment case, using the assumptions presented in Table C.4. These proportions are applied to the total number of event attendees in both the base case and the investment case, allowing an estimation of the number of additional – or incremental – visitors in the investment case. Further details are provided in the sections that follow.

Table C.4: Proportion of total event attendees who are either interstate or overseas visitors

	Interstate	Overseas	Source of assumption
Football	2.4%	0.0%	Research commissioned by Tourism Western Australia found that 2.4% of all attendees at selected AFL matches at Optus Stadium in 2018 were interstate visitors
Soccer	4.5%	0.7%	Research commissioned by Tourism Western Australia found that 4.5% of all attendees at the Chelsea Football Club vs Perth Glory exhibition match were interstate visitors, and a further 0.7% were overseas visitors
Cricket			
BBL	2.6%	0.6%	
ODI	0.8%	0.5%	Informed by Ticketmaster data, which provided the postcode of the ticket purchaser for events hosted at Optus Stadium in 2018
Test	2.3%	0.9%	
T20I	0.8%	0.5%	Assumed to be the same as ODI matches
Rugby League	8.9%	0.2%	Informed by Ticketmaster data, which provided the postcode of the ticket purchaser for events hosted at Optus Stadium in 2018
Rugby Union	11.0%	1.7%	Informed by Ticketmaster data, which provided the postcode of the ticket purchaser for the Bledisloe Cup match to be hosted at Optus Stadium in 2019
Concerts	4.7%	2.5%	Informed by Ticketmaster data, which provided the postcode of the ticket purchaser for events hosted at Optus Stadium in 2018
Major events	26.7%	24.6%	Average proportion of interstate and overseas visitors to the ICC Cricket World Cup 2015 matches held in Australia

C.4.1.1. Football

A study by Metrix Consulting (commissioned by Tourism Western Australia) found that 29,179 interstate tourists visited Perth to attend an AFL match at Optus Stadium in 2018.²⁷ This reflects 2.4% of total attendees to AFL matches over the year. Notably, this suggests a higher proportion of visitors than the Ticketmaster postcode data, which indicates that only 1.9% of AFL match attendees were from interstate and 0.1% were from overseas. However, since the postcode data only indicates the postcode of the ticket purchaser, it is possible that Western Australians are purchasing tickets for friends and family travelling from interstate.

Informed by the study by Metrix Consulting, it is assumed that 2.4% of all attendees to AFL matches in the future are interstate visitors.²⁸ Since the study found no evidence of overseas visitors, it is assumed that overseas visitors do not travel to Perth to attend football matches at Optus Stadium.

C.4.1.2. Soccer

Another study by Metrix Consulting (commissioned by Tourism Western Australia) found that 2,497 interstate and 399 overseas visitors attended the Chelsea Football Club vs Perth Glory exhibition match hosted at Optus Stadium on 23 July 2018.²⁹ This reflects that 4.5% of total attendees were from interstate and 0.7% were from overseas. Although these proportions may not be suggestive of a national soccer competition – such as a Perth Glory A-League match – only major international and other exhibition soccer matches are currently forecast to be hosted at Optus Stadium in the investment case. Therefore, this analysis assumes that 4.5% of soccer attendees are interstate visitors and 0.7% are overseas visitors.

C.4.1.3. Cricket

Postcode data on ticket purchasers for cricket matches in the first year of operations at Optus Stadium indicated that approximately 7,600 attendees were from interstate (2.1% of all attendees) and 2,300 attendees were from overseas (0.7% of all attendees). However, given the various formats in which domestic and international cricket matches are played, each type of match is likely to attract a different mix of interstate and overseas visitors. Recognising this, the following assumptions are applied:

- 2.6% of BBL match attendees are interstate visitors and 0.7% are overseas visitors
- 0.8% of ODI match attendees are interstate visitors and 0.5% are overseas visitors.
- 2.3% of Test match attendees are interstate visitors and 0.9% are overseas visitors
- Since no T20I matches were hosted at Optus Stadium in the first year of operations, it is assumed that the proportion of visitors to these events is similar to the proportion of visitors to ODI matches. However, this assumption does not apply to the six matches of the 2020 ICC T20 World Cup to be hosted at Optus Stadium in October 2020 (see Appendix C.4.1.5).

C.4.1.4. Rugby union

The proportion of visitors attending rugby union matches was informed by postcode data on tickets purchased for the 2019 Bledisloe Cup match to be hosted at Optus Stadium on 10 August 2019. Although this event had not yet occurred at the time of this analysis, almost 43,000 tickets had already been purchased for the event. In addition, given the nature of the event as a major international rugby union match, it is reasonable to expect that most people who intend to travel from interstate or overseas to attend the event would purchase their tickets well in advance. Therefore, based on Bledisloe Cup postcode data, it is assumed that 11.0% of rugby union attendees are interstate visitors and 1.7% are overseas visitors.

C.4.1.5. Major events

As the only major events currently forecast to be hosted at Optus Stadium are the six matches of the 2020 ICC T20 World Cup in October 2020, it is assumed that the proportion of visitors for these events will be similar to the ICC Cricket World Cup 2015, which was jointly hosted in Australia and New Zealand. Of the 767,948 people that attended a match in Australia, 205,119 of them were from interstate and 189,187 were from overseas. As such, it is assumed that across all attendees at the six matches, 26.7% will be from interstate and 24.6% will be from overseas.

It is also reasonable to assume that interstate and overseas visitors who attend a match during the tournament will attend more than one match during their stay in Western Australia. Recognising this, it is assumed that each visitor will attend an average of 1.4 matches. This reflects the average number of matches attended by each unique visitor to Western Australia during the ICC Cricket World Cup 2015. Using this assumption, only the number of unique visitors expected to attend a match of the 2020 ICC T20 World Cup at Optus Stadium are considered in this analysis.

C.4.2. Tourism expenditure profiles

Tourism expenditure profiles were developed through assessment of five years of historical tourism data sourced from Tourism Research Australia.³⁰ Gross visitor expenditure within Western Australia by both interstate and overseas visitors was divided by total visitor volumes, in order to determine an average profile of expenditure for each type of visitor. These expenditure profiles reflect visitor spending by holiday travellers across a variety of industries and sectors including accommodation, retail, food and beverage and transport.

Based on the expenditure profiles, each interstate visitor is expected to spend \$1,969.21 during their stay in Western Australia, and each overseas visitor is expected to spend \$2,036.24.

End notes

1. Sydney Morning Herald (21 July 2018), *Football fever as Chelsea FC hit Perth*
2. Data on public transport usage of attendees at football matches hosted at Domain Stadium was not available for 2017.
3. Given its capacity and quality of the facilities, Optus Stadium is expected to host other major, international sporting events and tournaments in the future; however, with many factors affecting both Australia and Western Australia's ability and desire to bid for such events, and the uncertainty about when they would occur, the patronage forecasts do not estimate attendance at any such future events.
4. VenuesWest, *Optus Stadium Benefits Realisation Plan – Year 1 Review*. The overall customer satisfaction rating of 92% is based on feedback from 6,521 patrons across six events held during the first year of operations.
5. Government of Western Australia (5 August 2017), *WA Company to build Swan River Pedestrian Bridge*
6. Operations spending for Optus Stadium includes expenditure by both VenuesWest and VenuesLive in performing their roles.
7. It is important to note that these estimates of additional FTE jobs are those created across the economy as output expands as a result of Optus Stadium and the surrounding precinct; they do not refer to the number of people employed directly in construction or operations.
8. VenuesWest, *Optus Stadium Benefits Realisation Plan – Year 1 Review*. The overall customer satisfaction rating of 92% is based on feedback from 6,521 patrons across six events held during the first year of operations.
9. WA Government Media Statement, *Optus Stadium named world's best in international awards*, The Hon. M. Murray MLA, 16 November 2018
10. WA Department of Treasury, *The new Perth Stadium Design, Build, Finance and Maintain Project*, February 2015
11. VenuesWest, *Optus Stadium Benefits Realisation Plan – Year 1 Review*. VenuesWest are working with stakeholders to develop an effective method for measuring passive usage of the precinct; however, this data is unavailable for the first year of operations.
12. Operations spending for Optus Stadium includes expenditure by both VenuesWest and VenuesLive in performing their roles.
13. This figure has been informed by consultation with Main Roads Western Australia. The final project cost is unconfirmed, as works on the bridge were ongoing in early 2019.
14. Government of Western Australia (5 August 2017), *WA Company to build Swan River Pedestrian Bridge*
15. Part of the increase in attendance between the 2017 and 2018 AFL Premiership seasons is due to the difference in the number of matches hosted in Perth. There were 22 AFL matches hosted at Domain Stadium in 2017, and 25 AFL matches were hosted at Optus Stadium in 2018. However, the average attendance per match also increased substantially in 2018, with an additional 13,346 people attending each AFL match at Optus Stadium on average, compared to Domain Stadium.
16. Including AFL, WAFL and AFLW events.
17. Test matches are considered as individual events throughout the report and in the analysis, although they are played over multiple days.

18. Sydney Morning Herald (21 July 2018), *Football fever as Chelsea FC hit Perth*
19. Data on public transport usage of attendees at football matches hosted at Domain Stadium was not available for 2017.
20. *Fact Sheet: One Year of Optus Stadium*, January 2019
21. Metrix (2018), *AFL at Optus Stadium: 2018 Season Visitation Evaluation*
22. The forecast of 210,000 attendees to the six matches of the 2020 ICC T20 World Cup is based on four of the matches being played as double header events, with the remaining two matches played as individual events. This effectively reflects four individual events, of which three events (two double header events and one individual match) are expected to sell out (60,000 attendees), and one match is expected to generate attendance at 50% of the stadium's capacity (30,000 attendees).
23. Gross domestic product (GDP) – or GSP, which is the equivalent measure for a state economy – is a measure of the overall value of economic production in a given period, excluding double counting of the goods and services being produced (for example, where manufacturers purchase goods and services for use in their own production of goods and services). The Australian System of National Accounts defines GDP as: The total market value of goods and services produced in Australia after deducting the cost of goods and services used up (intermediate consumption) in the process of production, but before deducting allowances for the consumption of fixed capital (depreciation).
24. Values expressed in present value terms have been discounted to reflect the time value of money and the uncertainty of future cash flows using a discount rate of 7.00%. For this analysis, values have been discounted to 2018 dollars.
25. These matches include the Wallabies vs Pumas (Argentina) match on 17 September 2016 and the Wallabies vs Springboks (South Africa) match on 9 September 2017.
26. PwC (2015), *Cricket World Cup 2015: Economic impact and benefits analysis of the ICC Cricket World Cup 2015*
27. Metrix Consulting (2018), *AFL at Optus Stadium: 2018 Season Visitation Evaluation*
28. The studies by Metrix Consulting on AFL matches and the English Premier League exhibition match hosted at Optus Stadium in 2018 considers 'in-scope' visitors. That is, only interstate and overseas visitors whose primary purpose for travelling to Perth was to attend an event at Optus Stadium are considered in the studies.
29. Metrix Consulting (2018), *Chelsea FC v Perth Glory FC: Direct Economic Impact Evaluation*
30. Tourism Research Australia data is based on surveys conducted for interstate and overseas visitors to locations across Australia.

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