# Stadium Australia

## Architectural and Urban Design Report

By Cox Architecture
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STATE OF ORIGIN
NSW
BLUES

Artist's Impression

# 1. Introduction

## 1.1 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) for the refurbishment of Stadium Australia, which is submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). Infrastructure NSW is the proponent of the SSD DA.

# 1. Introduction

## Concept

Following the completion of the Business Case for the redevelopment of Stadium Australia into a world class dedicated rectangular stadium for Rugby League, Rugby Union and Soccer the NSW Government elected to pursue this State Significant Development Application to redevelop the stadium into the country's leading rectangular code venue.

### 1.2 Background

Stadium Australia opened in 1999 ahead of the 2000 Sydney Olympic and Paralympic Games and, at the time, was the largest Olympic Stadium ever built and the second largest stadium in Australia.

In March 2018, the NSW Premier announced plans to refurbish Stadium Australia to address the dramatic changes in the content now using the stadium. Originally converted from an Athletics stadium after the Olympics  it was modified by bringing in the North And South Stands to only eliminate Athletics but accommodated Cricket and AFL.

However with the ensuing years Cricket and AFL were hosted mostly at the Sydney Cricket Ground and Spotless Stadium so the sports content at the stadium became dominated by rectangular sports with network of rectangular sport  stadia and events infrastructure in NSW.

The NSW Stadia Strategy 2012 provides a vision for the future of stadia within NSW, investment priorities to achieve the optimal mix of venues to meet community needs and to ensure a vibrant sports and event environment in NSW.

A key action of the strategy includes developing Tier 1 stadia and their precincts covering transport, integrated ticketing, spectator experience, facilities for players, media, corporate and restaurant and entertainment provision. Stadium Australia is one of three Tier 1 stadia within NSW, the others being Sydney Football Stadium and the Sydney Cricket Ground.

In order to qualify for Tier 1 status, a stadium is required to include:

- Seating capacity greater than 40,000;
- Regularly host international sporting events;
- Offer extensive corporate facilities, including suites, open-air corporate boxes and other function/dining facilities; and
- Be the home ground for sporting teams playing in national competitions.

The refurbishment of Stadium Australia will address deficiencies in the existing infrastructure and improve facilities to be in line with contemporary Australian venue standards.

The works ensure the stadium remains a modern, globally competitive venue that achieves the requirements for a Tier 1 stadium. The refurbishment of Stadium Australia addresses the following project objectives:

- Transform the stadium into a 'fan favourite' destination for experiencing and enjoying sports and entertainment events;
- Maximise the direct and indirect economic, social and cultural benefits to NSW from the project, including securing major, economically beneficial events within NSW to ensure the economic sustainability of the stadium into the future;
- Deliver a multi- use contemporary rectangular venue that meets the needs of patrons, hirers and other users for rugby, football, concerts and other new forms of entertainment, and reaffirms the status of the stadium as Australia's largest purpose-built rectangular venue in Australia;
- Improve the facility's sensitivity to the environmental conditions of the site by providing a roof which provides cover to 100% of seats (to the drip line);
- Provide new and refurbished corporate areas, members areas and general admission areas to enhance the patron experience;
- Promote universal accessibility, safety and security such that the stadium is welcoming, inclusive and safe for all stadium users, including persons requiring universal access;
- Promote environmental sustainability and embrace a whole of life approach to operations and maintenance; and
- Achieve a high standard of design and reinforce the Stadium's status and identity within the NSW stadia network, and more broadly, nationally and internationally.

Figure 1: View of the interior of the stadium during a full house Socceroos game.

# 1. Introduction

## 1.3 Site Description

The site is located at 15 Edwin Flack Avenue within the Sydney Olympic Park. It is bound by Edwin Flack Avenue to the west, Dawn Fraser Avenue to the south, Olympic Boulevard to the east and Qudos Bank Arena to the north. The site is located within the City of Parramatta Local Government Area.

The site is legally described as Lot 4000 in DP 1004512 and part of Lot 4001 in DP 1004512. In 2017, the Minister for Sport assigned Venues NSW as the trustee of Stadium Australia under the Sporting Venues Authorities Act 2008.

In a broader context, the site forms part of Sydney Olympic Park which is a sporting and economic centre in metropolitan Sydney that covers 680 hectares. Sydney Olympic Park comprises a range of sports and entertainment venues, parklands, and commercial, retail and residential developments.

It benefits from convenient access to Homebush Bay Drive, Parramatta Road and the M4 Western Motorway, as well as Olympic Park railway station. The Parramatta Light Rail Stage 2 and Sydney Metro West will also significantly increase accessibility.

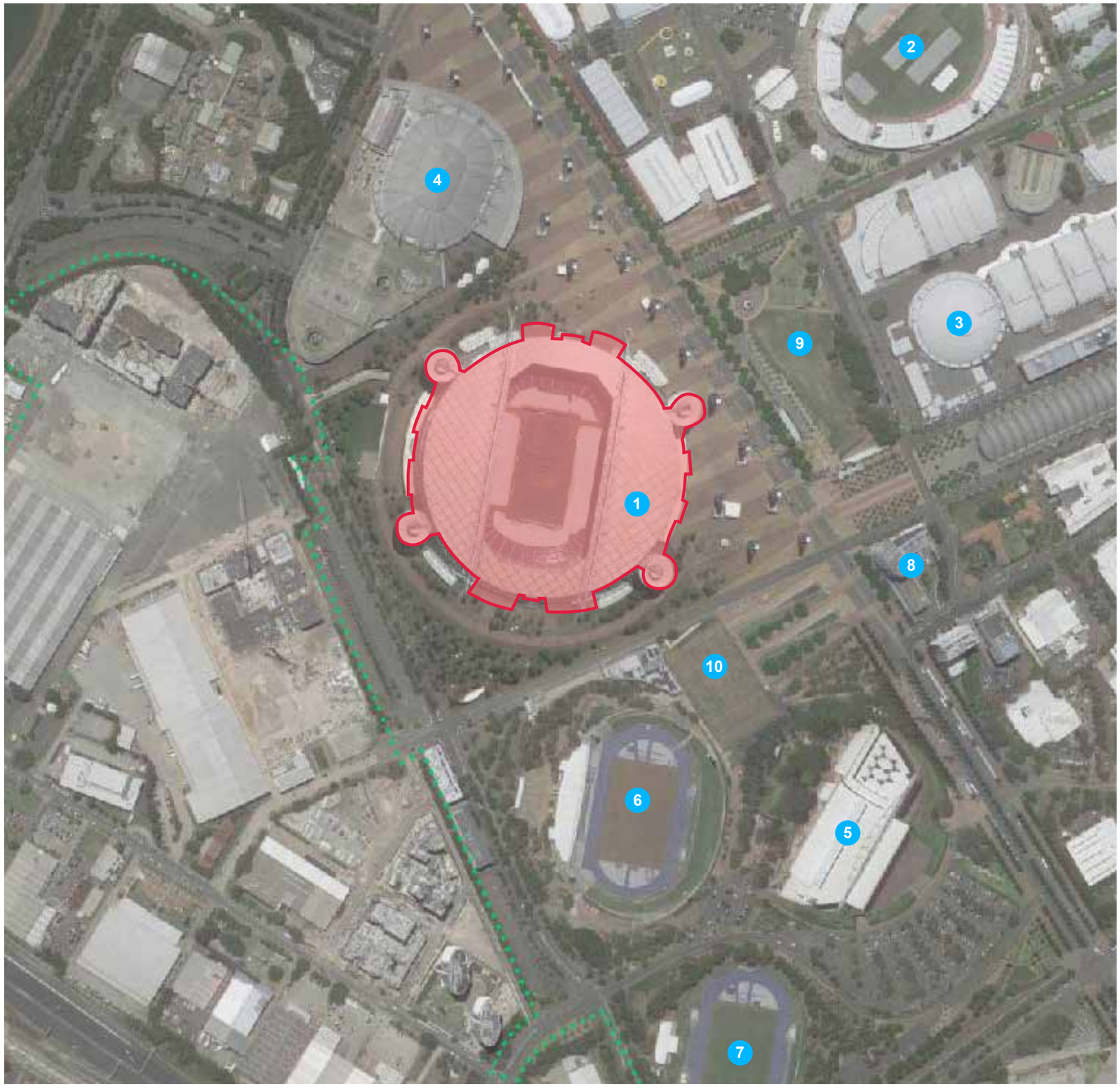
The location context of the Regional Site is shown in Figure 1, whilst the site boundaries and existing site features are shown in Figure 2.

Legend

- Site Boundary
- SOPA Land
- Sydney Olympic Park Town Centre
- Olympic Park Station
- Parramatta Light Rail Stage 2
- Construction Boundary
- 1 Qudos Arena
- 2 Spotless Stadium (GIANTS)
- 3 Sydney Showground
- 4 Athletic Centre
- 5 Aquatic Centre
- 6 NSW Rugby League Centre of Excellence
- Carter Street Precinct

0 100 250 500 m


Figure 2: Regional Site Context Plan




Legend

- Site Boundary
- 1 Stadium Australia
- 2 Spotless Stadium (GIANTS)
- 3 Sydney Showground
- 4 Qudos Bank Arena
- 5 Aquatic Centre
- 6 Athletic Centre
- 7 Warm Up Arena
- 8 Novotel
- 9 Cathy Freeman Park
- 10 NSW Rugby League Centre of Excellence
- (Under construction )

0 100 250 m

Figure 3: Site Area and Local Context

# 1. Introduction

## 1.4 Site Analysis - Access and movement

Pedestrian access points surround the stadium and are gained via Olympic Boulevard coming from the train station and bus ranks.

The site is activated on all sides, with public benches along Edwin Flack and Dawn Fraser Avenue and a public "games memories" monument celebrating the 2000 Summer Olympics on the corner of Dawn Fraser Avenue and Olympic Boulevard.

The vehicle access points to Stadium Australia are located off Edwin Flack Avenue through the underground roadway that circumnavigate the stadium footprint. This entry point is used for accessing the VIP underground parking and the loading dock adjacent the kitchen and services and plant rooms. It is also provides access to the four Pedestrian Access Vomitories (PAVs) onto the Field of Play for ground maintenance and concerts

The site is situated on a large public open plaza, shared with Qudos Bank Arena, allowing for movements and egress of large crowds.

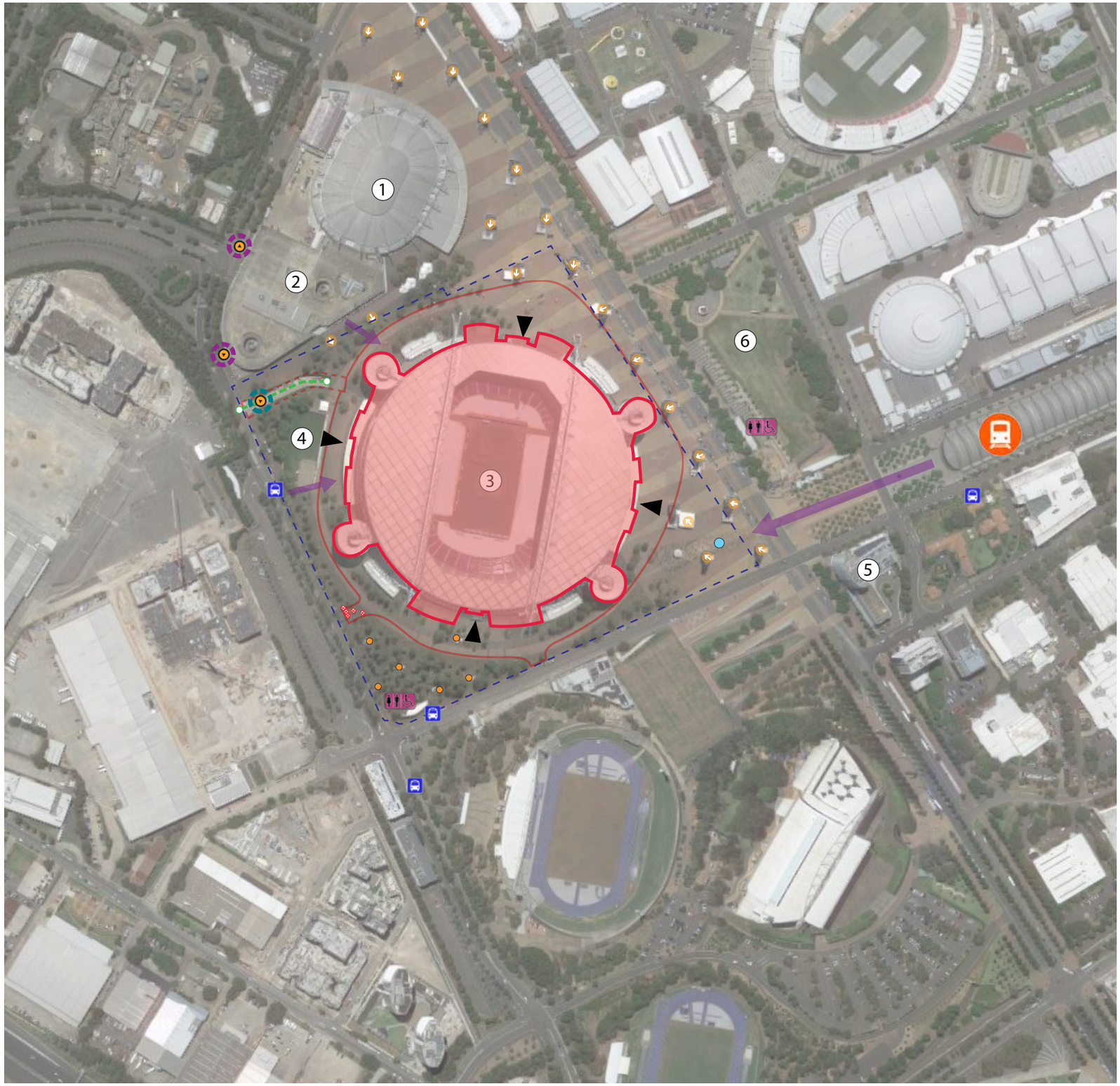



Figure 3: Site Analysis

## 1.5 Site Analysis - Precinct Wide Connections

Urban Context

The Sydney Olympic Park Precinct is in Homebush which is situated in the heart of Greater Sydney, being less than 18 kilometres from the city CBD and 14 kilometres from Parramatta.

The Precinct is well connected by public transport including its own dedicated train station and daily buses. On major event days buses are increased to and from the site conveniently linking various suburbs around Sydney to the event.

The Precinct is easily accessible by car situated off either Homebush Bay Drive Silver Water Drive or the Western Motorway to access different areas of Sydney. With the addition of the recent completion of WestConnex is now only a 20 minute drive the centre of the CBD. There is a wide range of parking available in the Precinct that can be pre-purhcased for ease of access on event days.

The Precinct has become a town centre with business and residential developments adjacent the various sporting and entertainment venues. The Bicentennial Park is now a popular place for families as well as the Showground offering activities to many family friendly events year round.

LEGEND

- BUS STOP
- MAIN ROAD
- OLYMPIC PARK TRAIN STATION
- MAIN INTERSECTIONS
- SECONDARY ROAD
- HOMBUSH BAY DRIVE
- WESTERN MOTERWAY

1. ATHLETIC CENTRE
2. SYDNEY SHOWGROUNDS
3. STADIUM AUSTRALIA
4. CATHY FREEMAN PARK
5. ATHLETIC CENTRE
6. AQUATIC CENTRE
7. WARM UP ARENA
8. BICENTENNIAL PARK
9. SPORTS HALL
10. OLYMPIC PARK RETAIL, COMMERICAL AND FOOD
11. GIANTS STADIUM
12. HASLAMS CREEK
13. BRICKPIT PARK
14. NEWINGTON

0 100 250 500 m


Figure 5: Wider Precinct

# 1. Introduction

## 1.6 Overview of Proposed Development

In March 2018 the NSW Government announced its commitment to refurbish the existing Stadium Australia and retain its status as a premier venue within a network of stadia and events infrastructure in NSW. This comprises the following:

- Reconfiguring the field of play to a permanent rectangular configuration.
- Redeveloping the lower and middle seating bowl to locate seating closer to the field and increase the pitch (steepness) of the seating bowl, which has the effect of reducing the capacity to approximately 70,000 seats (plus up to 20,000 persons on the field during concerts).
- Providing 100% drip-line roof coverage to all permanent seats by replacing the northern and southern sections of the roof and extending the existing eastern and western sections of the roof.
- Providing a new northern and southern public stadium entrance, including a new stadium facade and double-height concourse
- Providing a new northern and southern public stadium entrance, including a new stadium facade and double-height concourse
- Renewing the food and beverage concessions, bathrooms, team facilities including new gender neutral change rooms, members and corporate facilities, press and broadcast facilities, and back of house areas.
- Providing new signage, high-definition video replay screens, LED lighting, and other functional improvements.
- Enhancing the public domain within the site boundary, including hard and soft landscaping, to deliver a range of publicly accessible, event and operational areas.

Part of the existing stadium forecourt will be used as a construction compound during the construction phase and reinstated following the completion of works and prior to commencement of stadium operations.

Figure 4: Indicative photomontage of proposed stadium.

# 1. Introduction

## 1.7 Assessment Requirements

The Department of Planning and Environment have issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

| SEAR | Response |
|---|---|
| **Key Issues:** | |
| Better Placed: An integrated design policy for the built environment of NSW | Refer to Section 2 & Appendix A of this report |
| Draft Greener Places (NSW Government Architect Green Infrastructure Policy) | Refer to Section 2 & Appendix B of this report |
| Sydney Olympic Park Master plan 2030 (2018 Review) | Refer to Section 2 |
| Sydney Olympic Park Authority's Design Excellence Policy | Refer to Section 4 |
| Sydney Olympic Park Commercial Signage Policy 2018 | Refer to Section 5 |
| Sydney Olympic Park Urban Elements Design Manual | Refer to Section 5 |

| SEAR | Response |
|---|---|
| **Built Form and Urban Design** | |
| Provide a design excellence strategy to ensure the external changes to the stadium are provided with a high level of design quality and are consistent with the design integrity of the existing stadium | Refer to Section 4 |
| Provide detailed design and analysis of the development, including architectural design and materials | Refer to Section 3 |
| Demonstrate how the development will achieve an optimal design and amenity outcome, including minimising overshadowing of the public domain | Refer to Section 6 |
| Outline potential design considerations aimed at mitigating any impacts identified | Refer to Section 7 |
| Consider moral rights issues in relation to the design of the existing stadium. | Refer to Section 4 |

| SEAR | Response |
|---|---|
| **Public Domain and Landscaping** | |
| Address any impacts on existing trees | Refer to Arboricultural Report prepared by Tree iQ |
| Incorporate green infrastructure and provide any landscaping and/or public domain details, including provision for increase tree canopy surrounding the stadium | Refer to Section 4 |

| SEAR | Response |
|---|---|
| **Environmental Amenity** | |
| Include solar access analysis/shadow diagrams outlining impacts on adjoining developments/public domain | Refer to Section 6 |
| Detail the impacts of the development on view loss, wind impacts and reflectivity | Refer to the section on View impacts -Section 5. For Wind and reflectivity refer to consultant reports |
| Detail any new external lighting or illumination and consider the impacts of this lighting/illumination to surrounding properties and the public domain. | Refer to Section 5 |

| SEAR | Response |
|---|---|
| **Signage** | |
| Provide detail on the location, size and content of any proposed signage | Refer to Section 5 |
| Consider any signage as part of the overall built form and urban design of the development | Refer to Section 5 |
| Demonstrate how any proposed signage is consistent with the Sydney Olympic Park Commercial Signage Policy 2018. | Refer to Section 5 |


RABBITOHS

# 2. Policy Context

Artist's impression

# 2. Policy Context

## Design

The design of the redevelopment of Stadium Australia carefully considers its context at Sydney Olympic Park and as a legacy venue that ensures that it continues to lead the way as the premier venue in the precinct and a leading stadium in the sporting world.

### 2.1 Sydney Olympic Master Plan

The Sydney Olympic Park Master Plan 2030 (2018 Review) is a vision for the sustainability development of the park.

The Master Plan established controls and guidelines for future developments within the park and is a requirement of the Sydney Olympic Park Authority Act 2001.

Stadium Australia is located within the 'Stadia Precinct' as denoted by the Master Plan. The Master Plan notes that in addition to the existing venues (Stadium Australia and Qudos Bank Arena) the Stadia Precinct may accommodate future development around the venues to assist in activating the precinct.

As the proposed Stadium Australia Refurbishment is within the existing building envelope of the stadium, the proposal is consistent with the requirements of the Master Plan.

A detailed assessment of compliance with the controls outlined in the Master Plan is included in the Environmental Impact Statement.

### 2.2 Better Placed

Better Placed- An Integrated Design Policy for the Built Environment of NSW, NSW Government Architect, 2017 is the over arching policy for design within the State. The Policy notes 'Better Placed is about enhancing the design quality of our built environment, raising expectations and raising standards, about working better and creating better environments.'

The Policy contains 7 key objectives to guide the design of the built environment in NSW:

- Better fit- contextual, local and of its place
- Better performance- sustainable, adaptable and durable
- Better for community- inclusive, connected and diverse
- Better for people- safe, comfortable and liveable
- Better working- functional, efficient and fit for purpose
- Better value- creating and adding value
- Better look and feel- engaging, inviting and attractive

A detailed assessment of the Stadium Australia Refurbishment against the objectives of Better Placed is included at Appendix A.

### 2.3 Green Places

Greener Places- Establishing an urban green infrastructure policy for NSW, NSW Government Architect, 2017 is a draft policy to guide the planning, design and delivery of green infrastructure across NSW. Greener Places 'aims to create a healthier, more liveable and sustainable urban environment by improving community access to recreation and exercise, supporting walking and cycling connections, and improving the resilience of urban areas.'

Greener Places includes four principles to guide thinking on the incorporation of green spaces within developments:

- Integration- combine green infrastructure with urban development and grey infrastructure.
- Connectivity- create an interconnected network of open space
- Multifunctional deliver multiple ecosystem services simultaneously
- Participation- involve stakeholders in development and implementation

Whilst the Stadium Australia Refurbishment is limited to works within the existing building footprint, an assessment of the project against the principles of Greener Places is included at Appendix B.

Figure 5: Proposed Stadium and Precinct


AUSTRALIA
AUSTRALIA

# 3. The Proposal

Artist's impression

# 3. The Proposal

## Architecture

The redevelopment of the stadium has allowed it to be the platform for the development of an exceptional and iconic design. Starting with the seating bowl that positions the spectators as close to the action as possible to create a "wall of faces", the Stadium concourse and facilities wrap around it, providing a level of amenity and ease of access appropriate for this world class venue.

### 3.1 Sydney Olympic Park

Sydney Olympic Park is a large and unique area covering 640 hectares, twice the size of the Sydney central business district. Of this land area, 430 hectares are green space and parklands with areas inhabited by threatened species, protected marine vegetation and endangered ecological communities.

Today, Sydney Olympic Park is home to residents, a workforce, students and visitors, who come to enjoy sporting facilities, entertainment, exhibitions and events as well as open green space, playgrounds and cycle ways. Today, the Park attracts more than double the amount of visitors who came for the Sydney 2000 Olympic and Paralympic Games. Which is now over 10 million people come each year.

### 3.2 Stadium Australia Incidental Works

It is noted that there are a range of improvements being undertaken by the venue manager as part of the renewal of the stadium for which consent is not sought. Accordingly, the following sections discuss the proposed refurbishment works as part of a larger package of works, for completeness and to provide greater context to the overall vision for the stadium. The Architectural Plans identify only those works for which consent is required and sought as part of this application, noting that any works not indicated on the plans will be pursued separately.

### 3.3 Stadium Australia Refurbishment Works

The Stadium is a superb example of sustainable development. In the original design all materials were selected following a detailed life cycle assessment with an emphasis on low embodied energy. Part of the Stadium's energy requirements was provided by two gas cogeneration units which were estimated to save an estimated 500 tonnes of $CO_2$ emissions annually. Excess heat generated by the cogeneration process is used to heat water.

Natural lighting is maximised by the use of translucent roofing, 'light scoops' and light wells. Energy efficient light sensors are used for evening illumination or where the natural lighting does not meet requirements. The lighting system has reduced energy requirements by 20%.

Oversized lift shafts, stairwells and escalator voids provide a flow path for warm air while drawing cool air from the edge of the building. The use of air conditioning has been minimised with Levels 1 and 6 completely naturally ventilated. The lounge area located on Level 2 is cooled through passive ventilation and Level 4 is a mixture of passive and mechanical ventilation. The passive ventilation system has reduced the air conditioning demand by approximately 40%

Although Stadium Australia was built with the latest technology at the time, it attempted to be a fully flexible venue which has resulted in all sports hosted being compromised. Over time this has resulted in the oval sports - Cricket and AFL moving to other venues, leaving the rectangular sports to use the stadium. The oval field compromises the rectangular-field codes, placing the closest spectator too far from the field of play. This has resulted in a loss of atmosphere and enjoyment of the sport.

Previous refurbishments to the stadium focussed on provision of spectator facilities to create a "Fan First" experience. Ranging from the quality of seats, increased numbers of toilets, easier circulation, more and better food and beverage options, pre/during and post entertainment, plus improved environments both internally and externally. Video screens were as large as they could be, and TV monitors were provided in all circulation areas of the venue.

The other major development has been the integration of facilities and flexibility to meet a greater diversity of uses other than sport. Stadiums are now regularly used for major entertainment events such as concerts and other public gatherings. They need to allow for temporary amenities and access/egress provisions if the permanent facilities can't suffice.

For major international sports events such as the FIFA World Cup and the Summer Olympic Games, major overlays are required within the venue and its perimeter. These requirements have grown significantly over the last 20 years. Requirements include minimum facility recommendations as well as key overlay requirements. Key areas where the requirements have increased are in security, media and corporate facilities required.

The proposed stadium design within this application meets the FIFA guidelines and the requirements for other major events. Facilities are planned to be adaptable to possible future patronage profile changes and there is space allowance for temporary amenities and access/egress provision if it is needed for the event.


Figure 6: Aerial of the Proposed Stadium at night.

# 3. The Proposal

## 3.4 Vision

The modified Stadium Australia consists of a significant refurbishment that rebuilds the lower and mid -tiers to create an intimate dedicated rectangular stadium for 70,000 spectators forming a critical part of the NSW Government's Stadium Strategy.

The refurbishment will see the ongoing legacy of the Sydney Olympics guaranteed into the future through the transformation of the stadium into Australia's premier world class rectangular stadium. The new lower and mid-tier has been designed to bring fans closer to the action. The experience will be comparable to any stadium in Australia and indeed closer than many famed world stadia such as Wembley, Stade de France and Singapore Sports Hub.

The stadium design has accommodated this by bringing the west and east stands 5m closer to the action and the north and south stands 18m closer to the action. The new mid and lower tiers create a 'cauldron' effect for approximately 50,000 fans, bringing them closer to the action than Suncorp Stadium or the new Perth Stadium.

With the upper tiers retained in the east and west stands this offers a scalable, flexible stadium that can cater for regular season games, national games and block buster international events can all be hosted without losing atmosphere or proximity.

New addition of roofs to the north and south stand roofs provides 100% drip line coverage to fans in those stands and when combined with the extended roofs on the east and west stands means that the new refurbished stadium provides roof coverage to 100% of the fans.

New technology permeates the refurbished stadium with Wi-Fi across all seats and LED theme lighting changing the look and feel of the stadium and providing a theatrical experience to fans and promoters. New technology through the largest LED video replay boards of any rectangular stadium bring the action closer to all seats.

New LED ribbon boards to the front of every tier creates a dynamic billboard that when combined with the theme lighting gives new opportunities to brand the venue for the home team.

New members, corporate and sponsor facilities have been incorporated to bring these facilities closer to the action as well as bringing them new 'social' spaces that encourage pre and postgame activity.

New public facilities in the new north and south stands as well as the existing east and west stands provide the latest in fan facilities. New and improved food and beverage facilities, food courts, refurbished and new toilets, improved facilities for People with Disabilities have all been incorporated into the design.

The venue has been re imagined to create a new dynamic architectural and urban response that builds on the legacy of the Olympic Games, Sydney's greatest sporting triumph. It creates a new events platform for the 21st Century that ensures a legacy of the Games as well as creating a truly world class sporting venue capable of hosting today's and tomorrow's events in an environmentally responsible manner.

## 3.5 The Design

### 3.5.1 Sporting Legacy

Stadium Australia hosted the 2000 Olympics and in doing so became ingrained in Australia's rich sporting history. As part of its legacy the original spectator wings were removed on the north and south and replaced with the current roof structure and seating. It is this infill that will be revitalised, allowing the building to maintain its strong identity and character.

The design will provide an unrivalled active events platform which integrates the stadium into the striking natural environment of its unique historic setting. Its existing public domain creates a year-round public precinct that can flexibly accommodate event day patrons and the wider community.

### 3.5.2 The Façade

The design creates an integration of the existing stadium with the new stands north and south to blend the best of the existing stadium.

### 3.5.3 The Roof

The design of the new roof is supported on a new arched trust to ensure that the existing structure is not encumbered by any additional loads to avoid the need for additional strengthening. The roof design has 5 new fixed roof modules at the north and south ends between the top chords of the existing arched trusses. The new structure includes new long span north south trusses, with new thrust blocks.

The roof covering in Polytetrafluoroethylene fabric (PTFE) 'Tenara' is fitted to trusses that span east west between the new arch trusses. In addition, cantilever add-ons are located between the north and south roofs to provide drip line coverage over the lower bowl of the east and west stands.

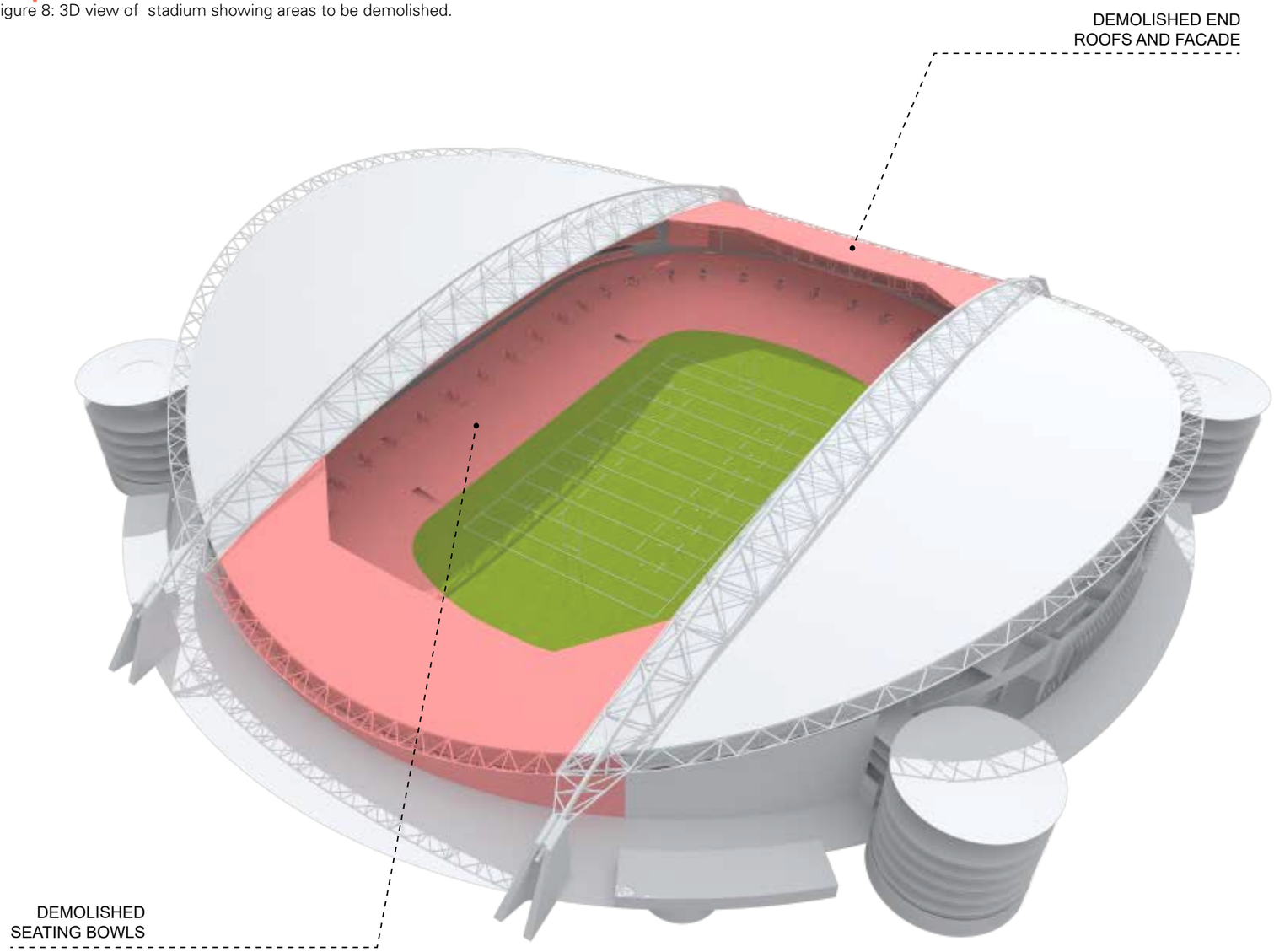

Figure 7: View of the North Elevation of the Proposed Stadium at night.

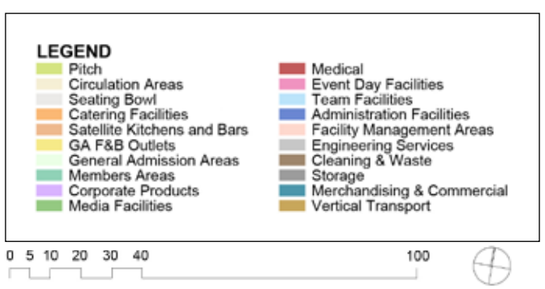
# 3. The Proposal

## 3.6 Architectural Planning

The following 3D images demonstrate the proposed refurbishment to Stadium Australia

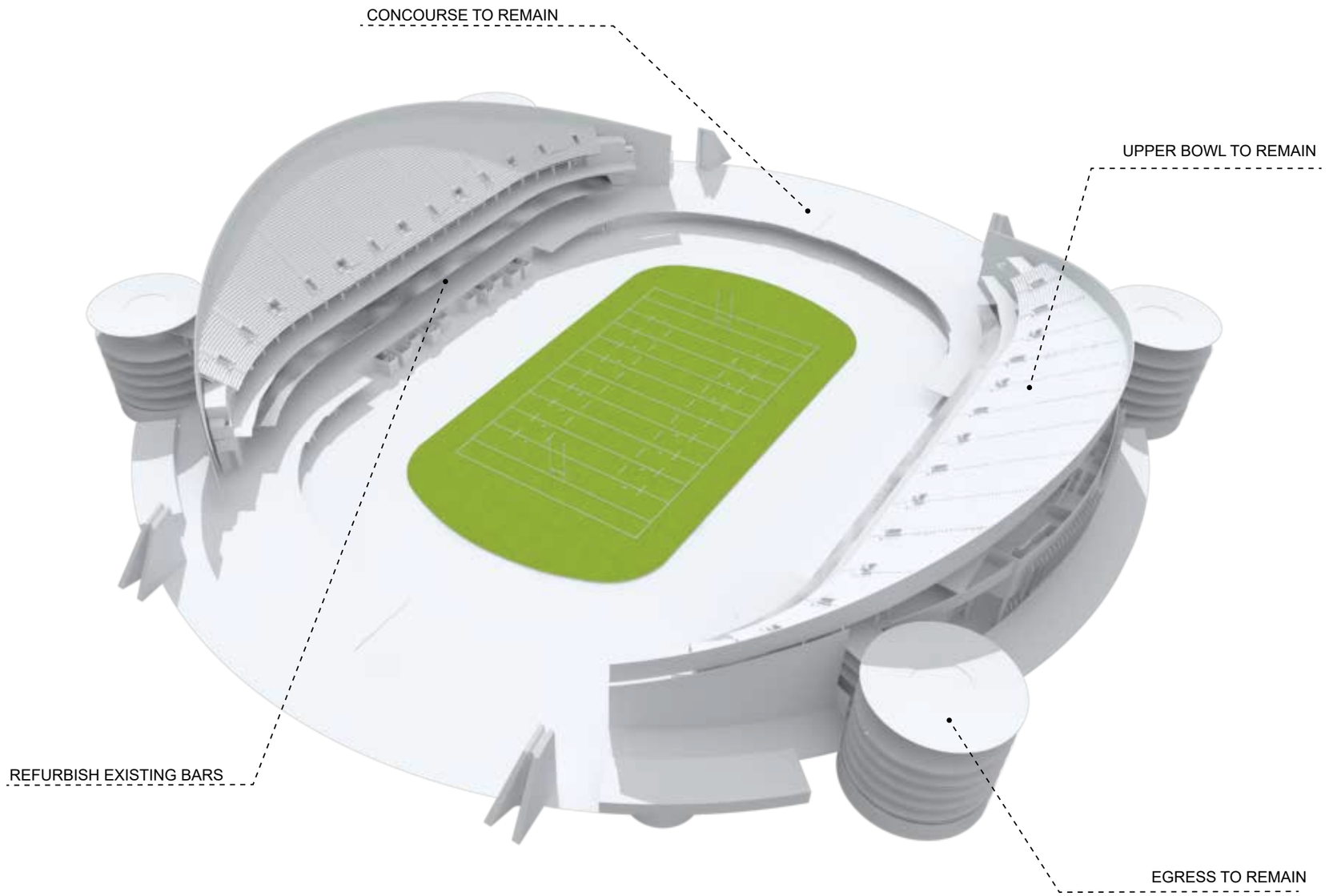
**Proposed Demolition**
Figure 8: 3D view of  stadium showing areas to be demolished.



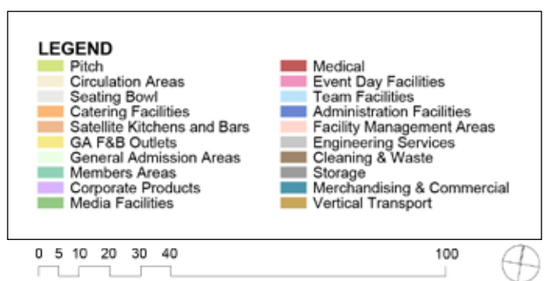



## Remaining Building

Figure 9: 3D view of  stadium showing areas that remain.




• Stadium roof removed for clarity

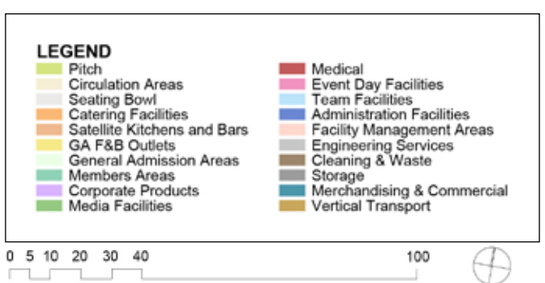


# 3. The Proposal

## 3.6 Architectural Planning

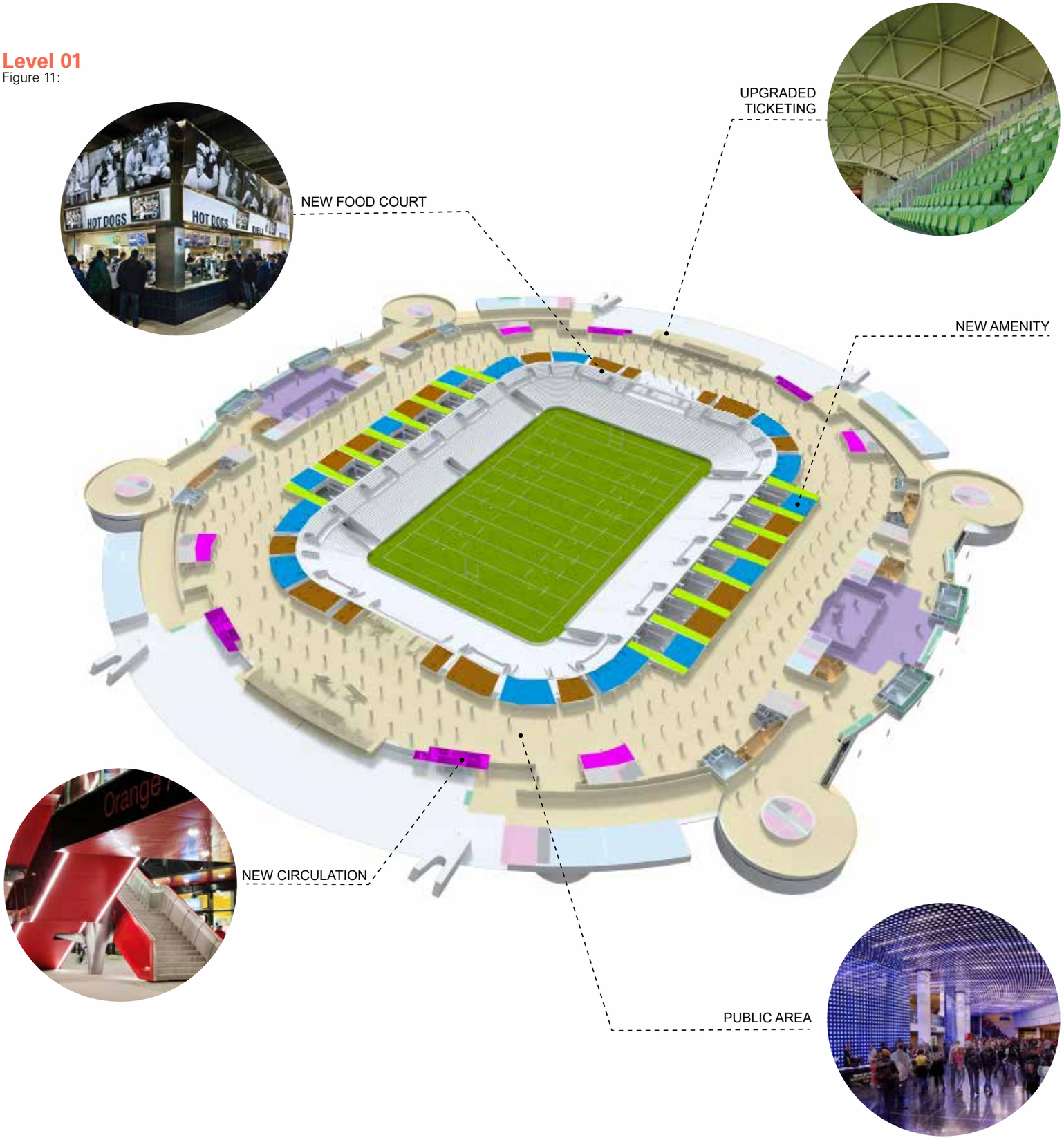
- Secure BOH for players, performers and VIP's
- 360 degree circulation for services and operations
- Dedicated gender neutral team and change areas
- Media and performer areas
- Refurbished locker room
- Bicycle Parking.

**Level 00**
Figure 10:

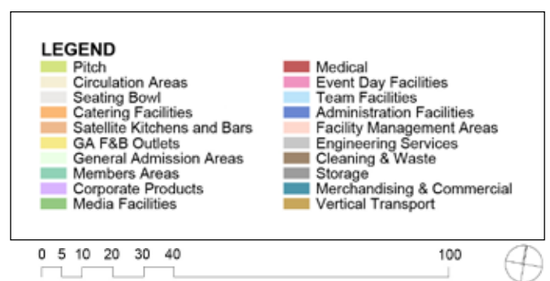



## Level 01

Figure 11:




- Clear and legible entries
- Intuitive movement
- Unrestricted movement around the ground
- Enhanced retail offering
- Integrated technologies
- Quality seating with optimal sightlines
- More toilets and reduced waiting times.
- Easy access to the food courts and F&B offering
- Open spaces to eat, drink and meet up.
- Upgrade and new food and beverage offering
- Upgraded and new amenities

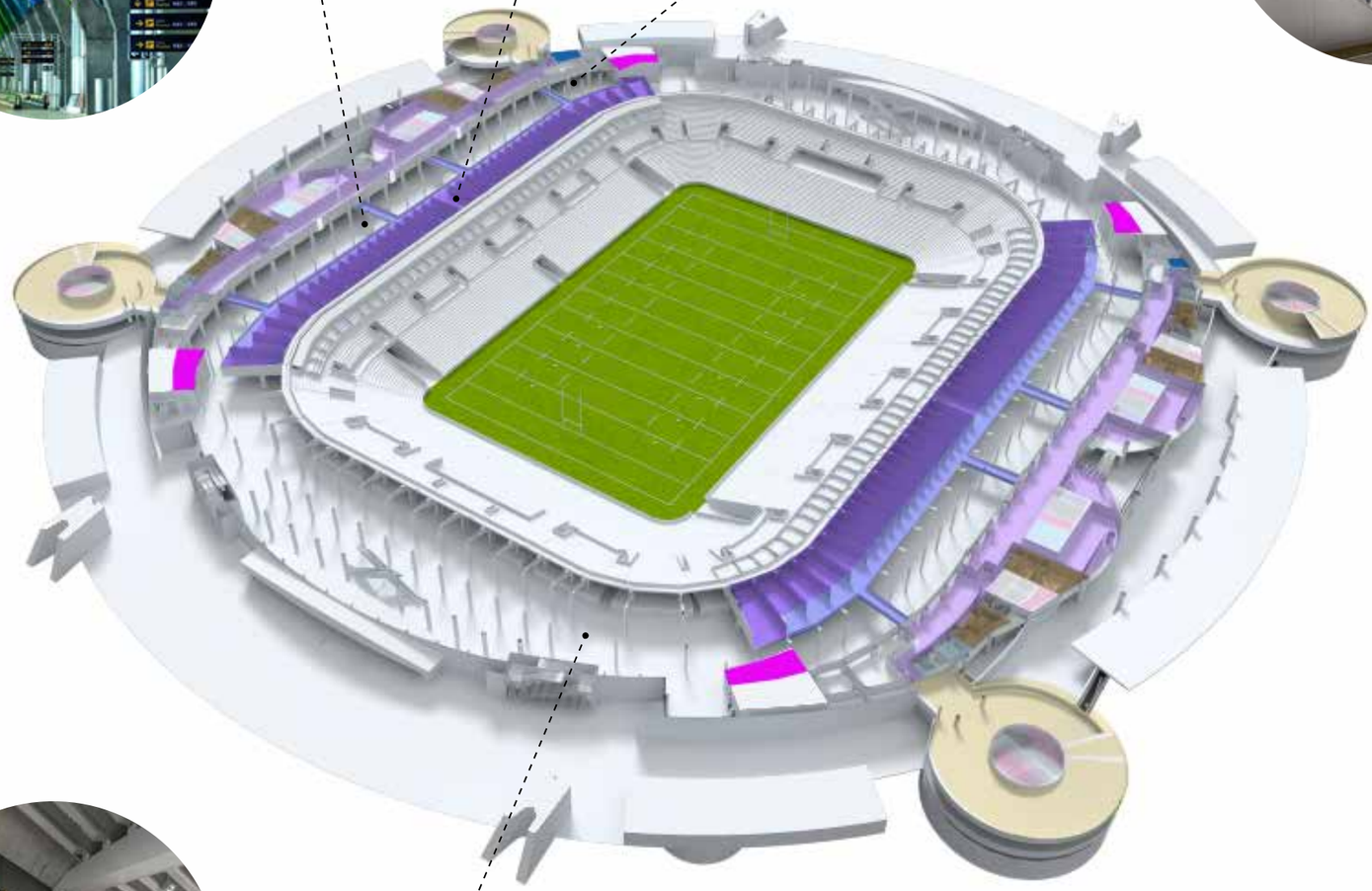


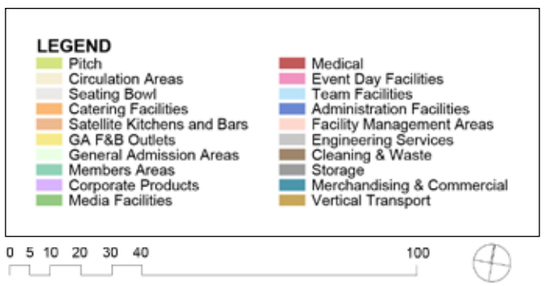
# 3. The Proposal

## 3.6 Architectural Planning

- New suites on both the East and West
- Suites are closer to the action
- Premium food and beverage options
- Bridge links to connect hospitality
- Corporate verandah
- New kitchen facilities
- Upgrade and new food and beverage offering
- Upgraded and new amenities

**Level 02**
Figure 12:



## Level 03

Figure 13:

OPEN CORPORATE RESERVE

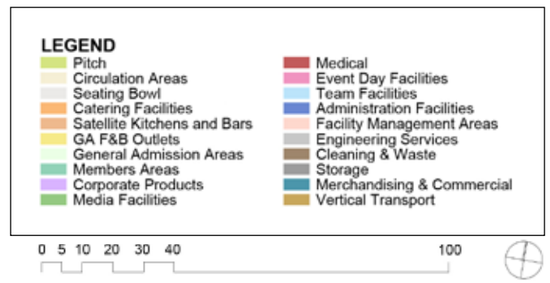

GOLD CLUB

CLUB BARS

NEW UPPER GA CONCOURSE

CLUB LOUNGE

- Unrestricted access around the ground
- Wind protected
- Coliseum atmosphere
- Optimal sightlines
- Easy access to amenities, food and drinks
- Park and precinct views
- DDA access
- Revitalised club lounge
- Upgrade and new food and beverage offering
- Upgraded and new amenities



# 3. The Proposal

## 3.6 Architectural Planning

**Level 04**
Figure 14:

GOLD DINING

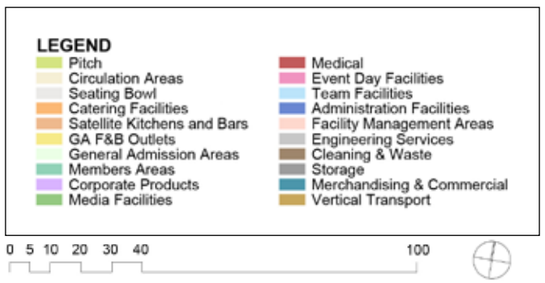
CORPORATE CLUB

VOID TO L3

PLATINUM CLUB

MILLENNIUM ROOM

- Members dining room with optimal views over the field
- Stadium club incorporating bars and lounges
- High quality finishes to all amenities
- Premium seats
- Social networking areas
- Premium dining options
- Upgrade and new food and beverage offering
- Upgraded and new amenities



## Level 05

Figure 15:

MEDIA FACILITIES

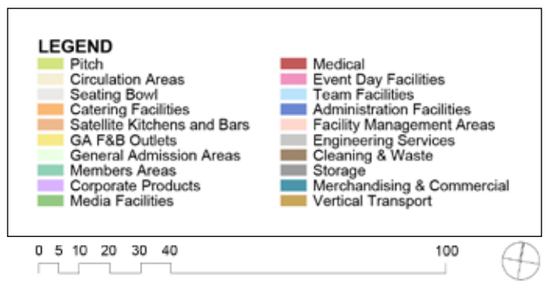
ADVERTISING BOARDS

NEW LED SCREEN

NEW SUITES

NEW SUITES

- Purpose built and best practice media facilities
- Closer to the action
- Camera platform in optimal location
- Multiple broadcaster capacity
- Upgrade and new food and beverage offering
- Upgraded and new amenities
- Upgraded dining rooms

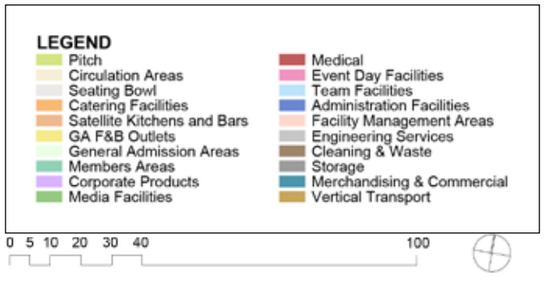


# 3. The Proposal

## 3.6 Architectural Planning

**Level 06**
Figure 16:


- No modification
- Seating reduction improves concourse amenities
- Wind protected
- Roof enclosure
- Easy and direct access to seats
- Existing sightlines
- Easy access to amenities, food and drinks
- Park and precinct views
- Upgrade and new food and beverage offering
- Upgraded and new amenities



## Level 07

Figure 17:






- Wind protected
- Roof enclosure
- Easy and direct access to seats
- Optimal sightlines
- Easy access to amenities, food and drinks
- Park and precinct views

**LEGEND**

| | |
|---|---|
| Pitch | Medical |
| Circulation Areas | Event Day Facilities |
| Seating Bowl | Team Facilities |
| Catering Facilities | Administration Facilities |
| Satellite Kitchens and Bars | Facility Management Areas |
| GA F&B Outlets | Engineering Services |
| General Admission Areas | Cleaning & Waste |
| Members Areas | Storage |
| Corporate Products | Merchandising & Commercial |
| Media Facilities | Vertical Transport |

0 5 10 20 30 40 100

# 3. The Proposal

## 3.7 Materials

### 3.7.1 The Existing Stadium:

The existing stadium consists of a concrete frame and slabs with some painted steel raker structure supporting the seating bowl. This is topped with a painted steel truss and poly carbonate roof. The facades are unitised glass and metal and walling is block work.

### 3.7.2 Modifying the existing:

The refurbishment of the stadium limits the changes of existing building to elements to attending to elements that need deep cleaning, painting or repairing.

### 3.7.3 The Stadium Insertion:

The new components of the stadium are the north and south stands that almost align exactly with the alignment of the existing arched trusses.

This insertion will follow the construction of the existing stadium with a concrete frame and slabs and painted steel raker structure supporting the seating bowl. This is topped with a painted steel truss however in this instance the roof is a PTFE Tenara. The facades are unitised glass and aluminium fins.

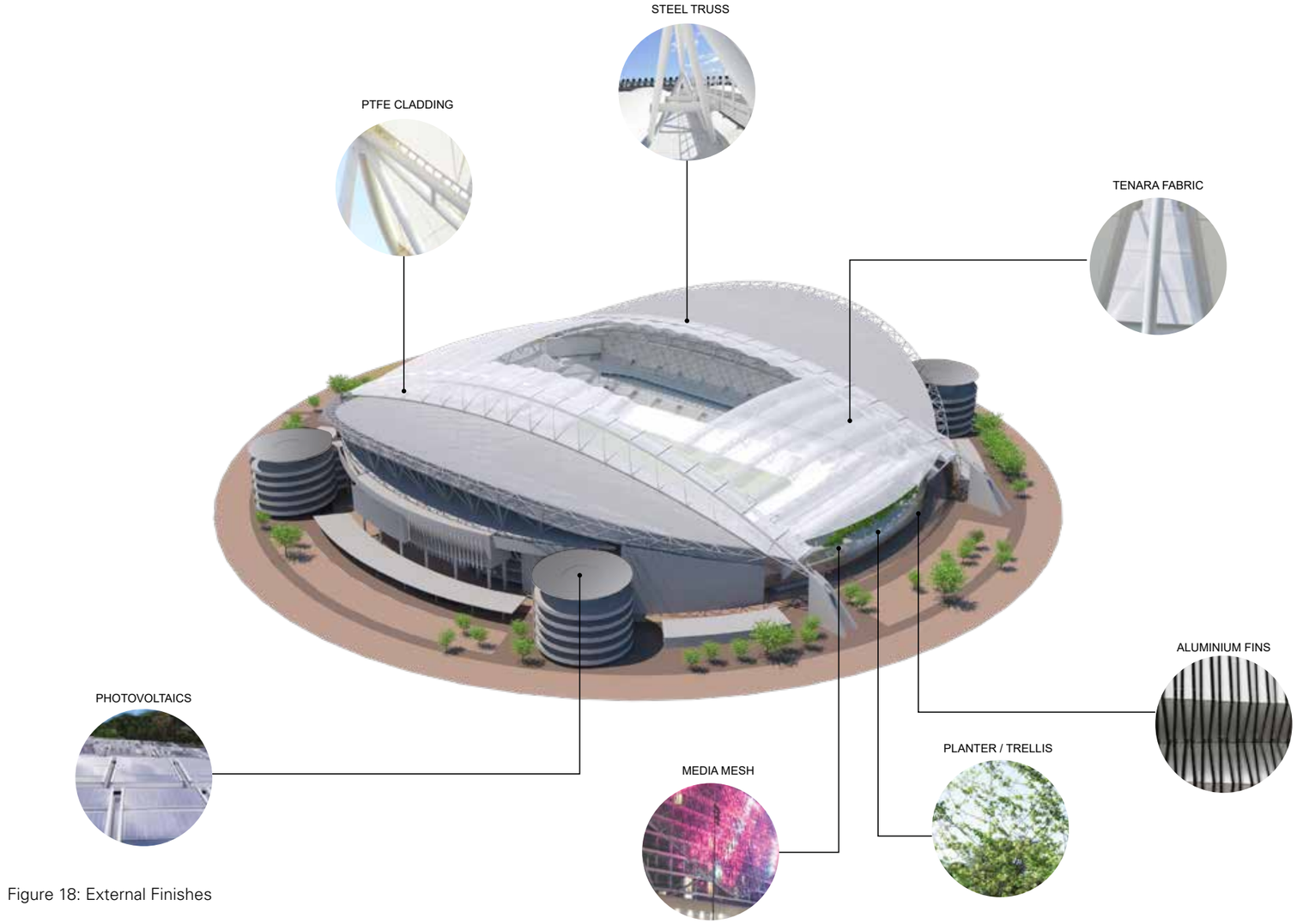



Figure 18: External Finishes

## 3.8 Functional planning

The Stadium has 7 levels of facilities with 3 tiers of seating. The levels are as follows:

- Basement/Level 0- kitchens, back of house, team and officials, media and servicing.
- Level 1- for General Admission (GA) north, south and east and member spectator facilities on the west, with circulation to their seats in the lower seating bowl. The concourse wraps around the seating bowl for a full 360 degrees. Views are available from the Concourse into the seating bowl especially from the revised north and south stands.
- Level 2- is a suite level for members, VIP and corporate spectators.
- Level 3- for members, corporate and GA spectators. Gold club, Club bars and open corporate reserve are in this level.
- Level 4- for members on the west and corporate in the east including gold dining, the Platinum Club, Corporate Club and the Millennium Room.
- Level 5- media and a suite level for members, VIP and corporate spectators.
- Level 6- GA spectators.

## 3.9 Seating Bowl

The seating bowl has 4 tiers. These are as follows:

1. Lower Tier for the General Admission (GA) spectators north south and east with members on the west.
2. Suite Tier for Members and Corporate on East and West Stands only.
3. Mid Tier for General Admission spectators North and South Corporate on the East and Members on the West.
4. Suite Tier for Members and Corporate on East and West Stands only.
5. Upper Tier for GA spectators East and West Stands only

- In Club Mode, the Lower Seating, Suite Tiers an Mid Tiers are accessible so that the capacity is 50,000 seats.
- In Championship Mode all levels of seating are open so that the capacity is up to 70,000 seats.
- The video replay/scoreboards are located in the north east and south west corners of the seating bowl.
- High quality sightlines to video screens and other spectator seating zones are delivered to enhance spectator event day atmosphere.

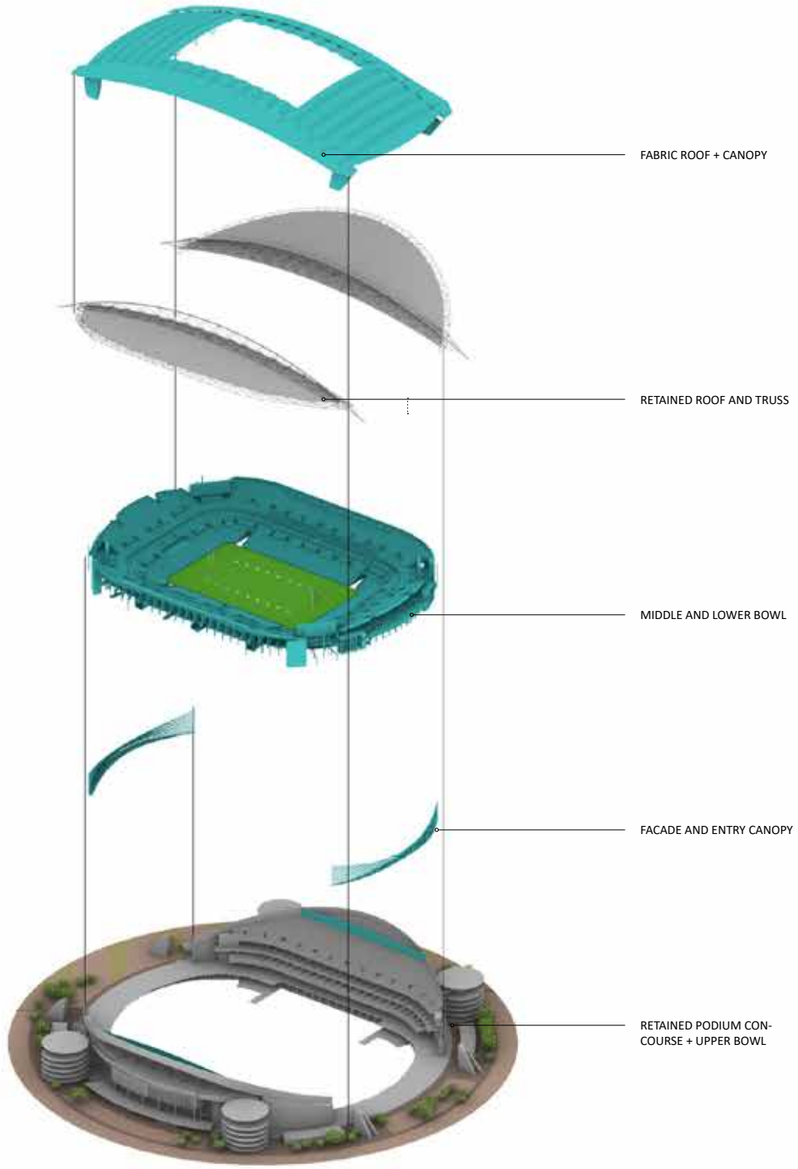



Figure 19: Overall Stadium Composition

# 3. The Proposal

## 3.10 The Elevations

Part of the north and south facade is to be demolished to allow for a new facade and entry canopy. These works will open up the concourse at ground level to create a new defined entry for the public.

A permeable screen has been proposed on the north and south facade allowing light and views into the stadium, blurring the relationship between the internal and external spaces. Planting is proposed on level 3 behind the screen that can been seen externally, adding to the sites greenery and street scape.

While the east and west facade remains the same, the proposed works to the north and south are respectful to the exiting form and building envelope, with the functional requirements for the stadium accommodated.

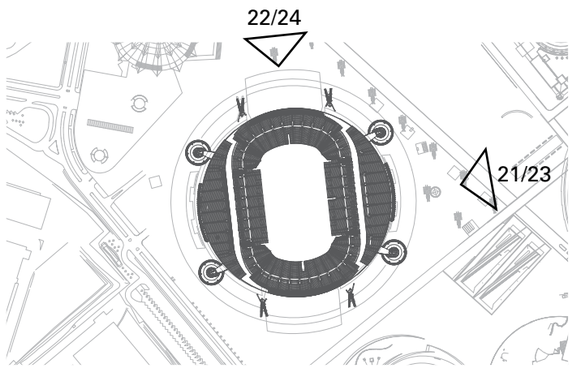



Figure 20: Plan diagram with elevations views

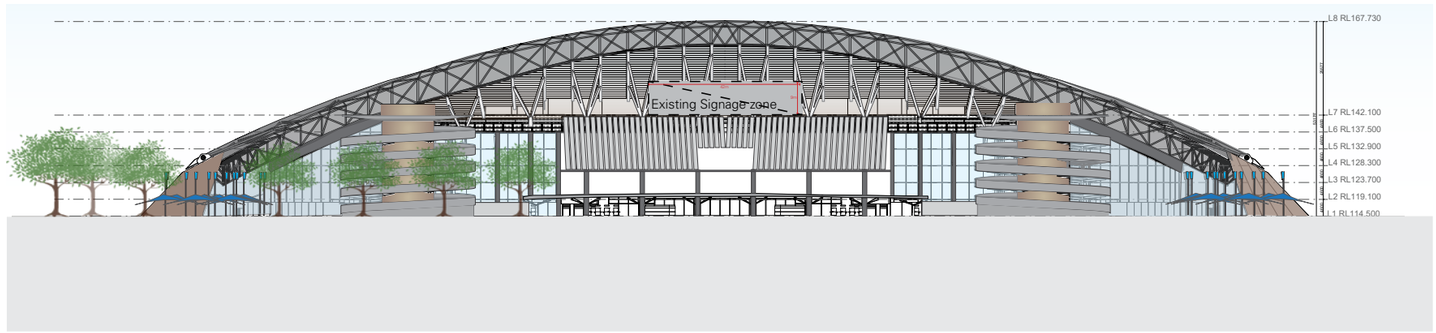



Figure 21: Existing East & West Elevation

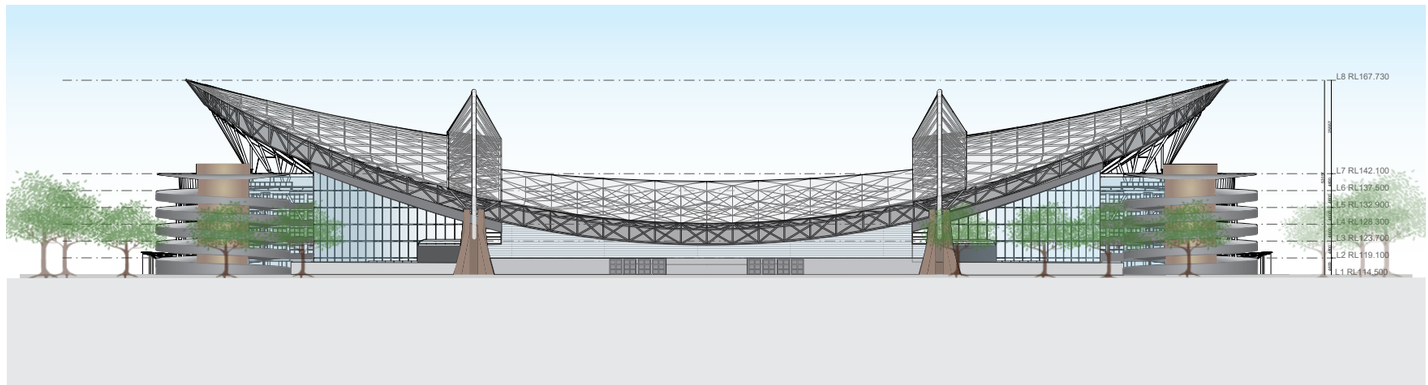



Figure 22: Existing North & South Elevation

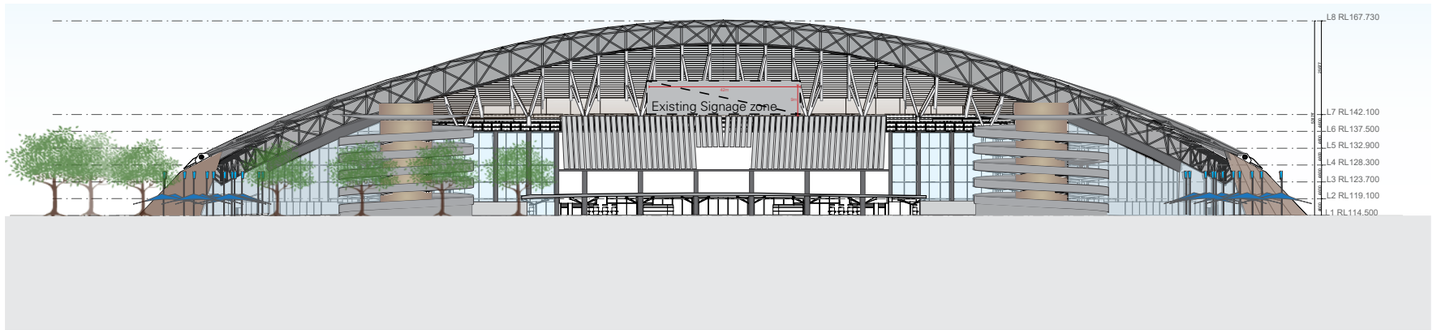



Figure 23: Proposed East & West Elevation

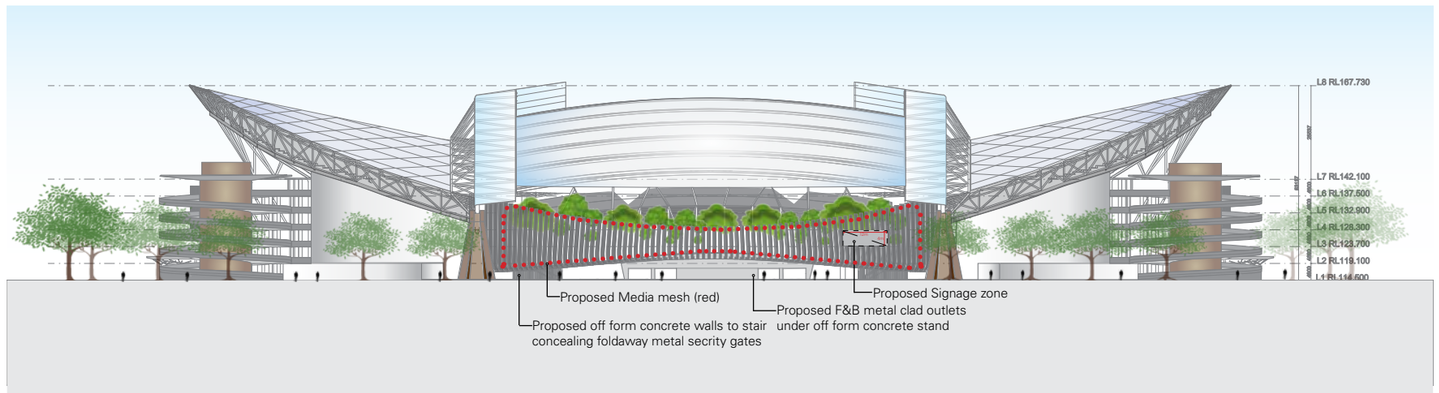



Figure 24: Proposed North & South Elevation

# 3. The Proposal

## 3.11 Public Domain

The Stadium Australia Refurbishment will be confined to the existing building footprint and does not include works in the surrounding public domain. The Sydney Olympic Park Master Plan 2030 (2018 Review) denotes the area around the stadium as a site for medium term development. It is understood that SOPA is planning future development surrounding the stadium, including upgrades to the public domain.

### 3.11.1 Sydney Olympic Park Urban Elements Design Manual

The Sydney Olympic Park Urban Elements Design Manual, 2009 outlines quality and performance standards for public domain upgrades associated with developments within SOPA lands. The Stadium Australia Refurbishment does not include any works within the public domain and will not change any aspects of the access to or surrounding the stadium. As such the requirements of the Urban Elements Design Manual do not apply to the proposed works.

### 3.11.2 Ground Level Interfaces

The following sections through the stadium highlight the interface between the facade of the building and the external concourse. Comfortable, human-scaled spaces are provided around the podium level of the stadium using appropriately scaled openings into the stadium. The louvred façade generally starts above the podium level and lifts up within the areas of activated public spaces to accentuate the public space.

Figure 25: Master Plan with Public Domain (ref.- SOPA Master Plan 2030 - Review 2018).

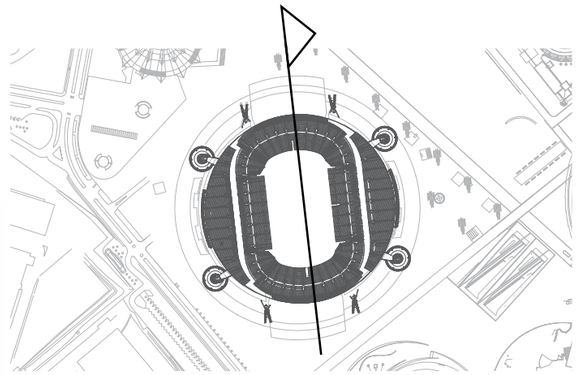


Figure 26: Plan diagram with section line

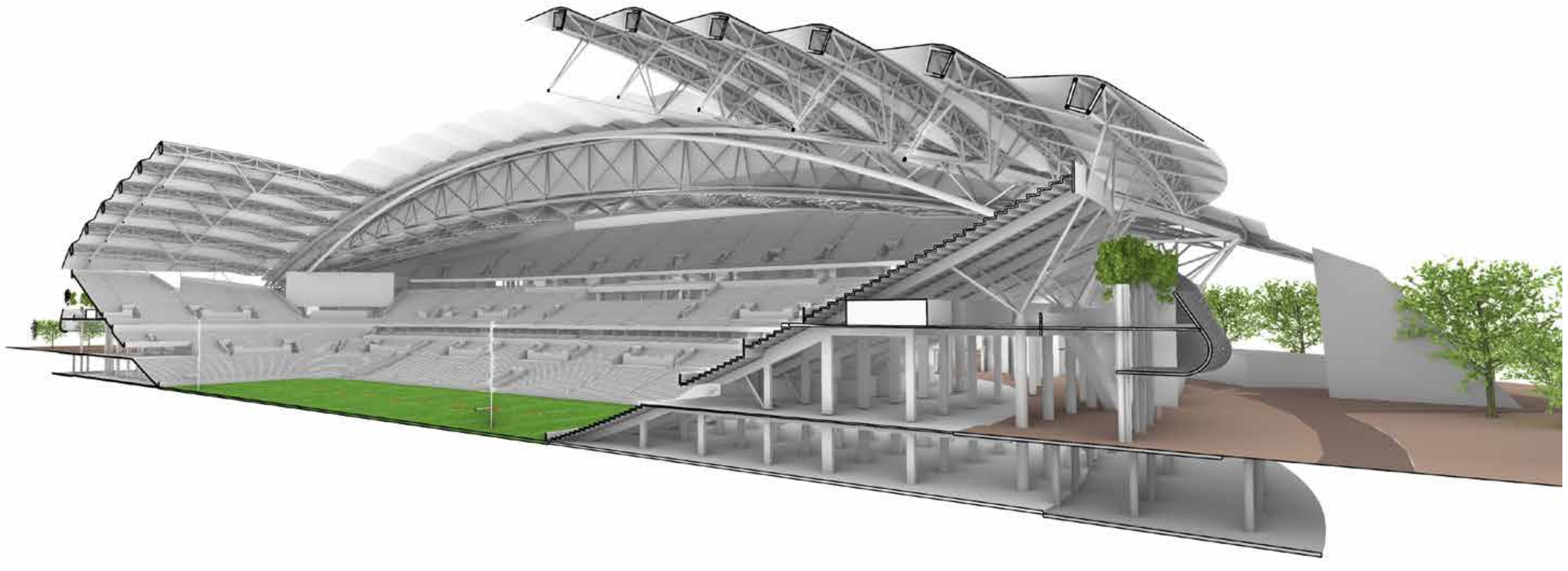


Figure 27: Longitudinal Section Looking at the West Stand


STATE OF ORIGIN
NSW
BLUES

# 4. Design Excellence

Artist's Impression

# 4. Design Excellence

## 4.1 SOPA - Design Excellence Policy

The Sydney Olympic Park Authority (SOPA) Design Excellence Policy establishes a framework for ensuring exemplary design is considered in the assessment of all proposals within the SOPA area. The policy sets out the process by which projects can achieve design excellence through either design competitions or the SOPA Design Review Panel (DRP).

The policy requires design competitions to be held on certain sites within the SOPA area as outlined by the Sydney Olympic Park Master Plan 2030. The Stadium Australia building is excluded from the requirement to host a design competition, however the zone around the stadium is designated a 'Design Competition Site.' As the proposed project involves refurbishment of the existing stadium, within the boundaries of the stadium footprint a competition is not required.

For sites not requiring a design competition, the policy creates a framework for ensuring design excellence through the SOPA DRP. In accordance with the policy, State Significant Development projects not subject to a design competition are required to be assessed by the SOPA DRP. Stadium Australia qualifies as a project required to be assessed by the DRP.

## 4.1 Design Excellence Strategy

The following strategy has been developed in consideration of the SOPA Design Excellence policy and in relation to the scope of the proposed Stadium Australia refurbishment.

- External changes to the Stadium will be limited to the creation of new north and south stands with associated new roofs. In designing the changes to the Stadium, the following process is being followed:

- Analysis of the existing stadium design in relation to scale, form, materials and detailing (refer to section 3.2 & 3.3 of this report).

- Review of design changes in accordance with the objectives of Better Placed: An integrated design policy for the built environment of NSW (refer to Appendix A of this report).

- Review of the design with the Sydney Olympic Park Authority Design Review Panel prior to lodgement of the development application (refer to Appendix C of this report).

- Review of the design at regular points during design development with the Sydney Olympic Park Authority Design Review Panel.

The process outlined above has been followed prior to the lodgement of this application. The outcomes of the SOPA DRP meeting held on 3 September 2019 are detailed in Appendix C. The Strategy for maintaining design excellence will be to undertake an iterative review process with the SOPA Design Review Panel. Following an initial meeting on 3 September 2019, it was agreed that further design development, particularly in relation to the northern and southern facades and integration with the public domain would be the key areas of focus for the panel. As the design evolution of these elements progresses input into the design through will be undertaken in accordance with:

- Amendments in relation to any conditions of consent.

- Reassessing the design against the objectives of Better Placed: An integrated design policy for the built environment of NSW throughout development.

- Regular and iterative meetings with the SOPA Design Review Panel.

## 4.3 Moral Rights

Stadium Australia was originally designed by Bligh Lobb, a joint venture between the UK architects Lobb Partnership and the Australian firm of Bligh Voller ( in 1999 became Bligh Voller Nield) . Lobb Partnership merged with HOK Sport in 1998 prior to the Stadium's completion and the company is now known as Populous. Rod Sheard & Paul Henry from Lobb Sports Architects and John Whatmore from Bligh Voller were the architects in charge.

The Stadium was originally designed to serve the Sydney 2000 Olympic Games for approximately 110,000 spectators. The design was also predicated on being able to remove the Games event overlay, reducing capacity after the Games to approximately 85,000 spectator capacity.

Refurbishment of Stadium Australia as proposed under this application will require the owner to adhere to obligations in relation to moral rights held by the original architects of the facility. Under the Copyright Act 1968, the architects of the Stadium ('authors') maintain rights to the integrity of the building. The works as proposed under this application would comprise a change in the building and thus require a process to be undertaken by the owner of the building. This process would include:

- Identifying the author/s or person representing the author/s.
- Providing the author/s or person representing the author/s with written notice stating the intention to carry out the change.
- Provide the author/s or person representing the author/s access for making a record of the work and/or consulting in good faith about the change.

The above process would be undertaken in the event that the project receives planning approval and prior to any physical works commencing in accordance with timing outlined in the Act.

Figure 28: Aerial view of the stadium highlighting the new roof  between the existing structural arches.

# 5. Signage. Lighting and Reflectivity

Artist's Impression

# 5. Signage. Lighting and Reflectivity

## 5.1 Signage

### 5.1.1 Sydney Olympic Park Commercial Signage Policy

The Sydney Olympic Park Authority (SOPA) Commercial signage policy 'seeks to encourage business identification signs, on-premises and third-party advertising (signage) in a manner that contributes positively to the public domain and is of a high design quality.'

An assessment of the proposed signage in accordance with the SOPA Commercial Signage Policy is included in the Environmental Impact Statement prepared by Ethos Urban.

### 5.1.2 Signage Proposal

New signage has been located to define the new entries on the North and South facade, located strategically to maximise their visibility.

Two 12m x 4m (48 square metre) signs are proposed on the right side of the facade structure on both the North and South facade. These proposed signs will be integrated with the façade detailing. The proposed signs will be digital offering the opportunity to respond to event requirements as well as be utilised outside of event times to promote activities within the stadium. The position of the signs ensures they are unobtrusive to neighbouring developments and are 'read' as a component of the overall stadium design.

The content of the signs will include:

- Promotional information for upcoming or current events.
- Event sponsor content.
- Wayfinding and other information such as transport timetables.

## 5.2 Lighting

In addition to the existing lighting within and external to the stadium, feature lighting has been proposed on the roof to illuminate the roof canopy at night as well as incorporating LED lighting into the facade structure.

LED lighting has the ability to change colours to suit the various events at the stadium. The lighting system is respectful to the surrounding properties and public domain.

## 5.3 Reflectivity

The primary materials of the roof and façade have been selected to limit solar reflections off the building. The PTFE Tenara material of the roof is a known UV blocker, and is a substantially matt texture. Concrete-like materials and anodised aluminium panels form much of the new façades. Highly reflective elements such as glass will be limited in their application and where required, will be partially shaded by the louvres or the roof edge and contain a spectral reflectivity of less than 20%.

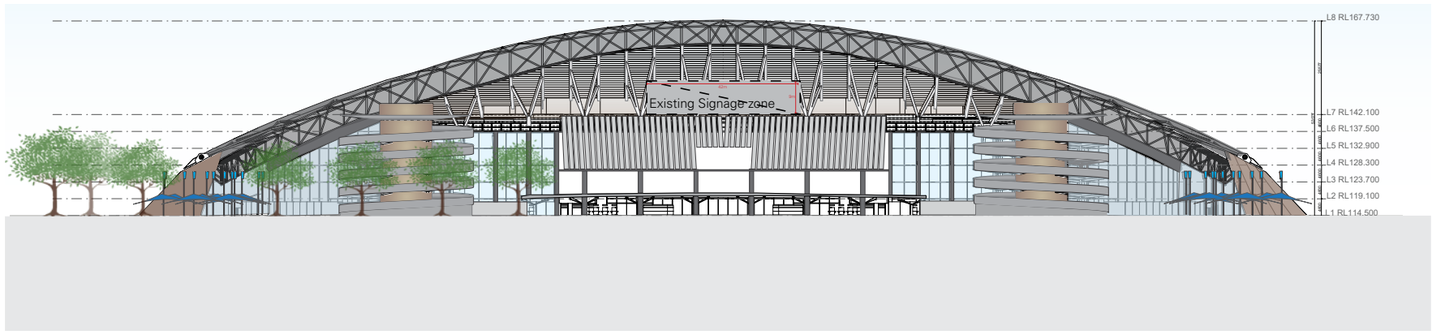



Figure 29: Proposed East & West Elevation

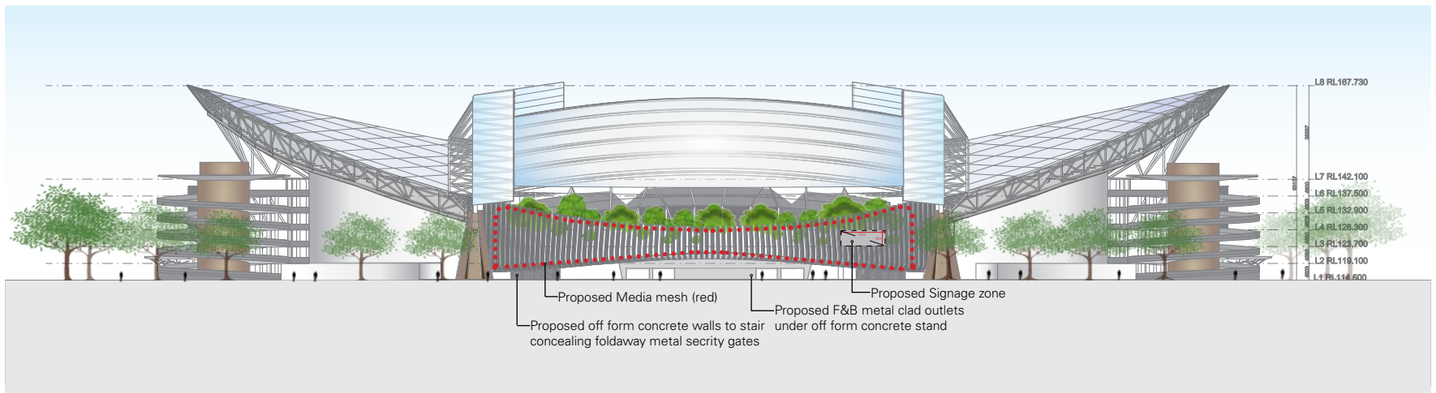



Figure 30: Proposed North & South Elevation

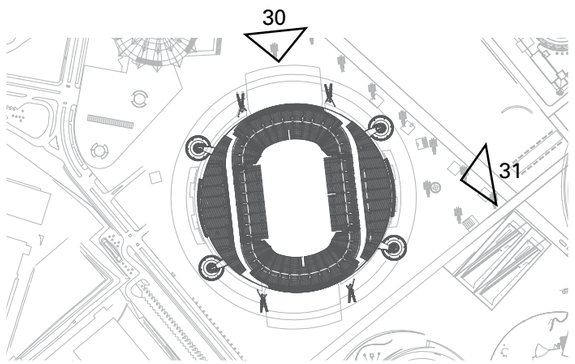



Figure 31: Proposed North & South Elevation


AUSTRALIA
AUSTRALIA

# 6. Solar Access

Artist's impression

# 6. Solar Access

## 6.1 Solar Access and Overshadowing

The following shadow diagrams have been prepared to indicate solar access and overshadowing of the Stadium on the surrounding precinct. The diagrams are taken between 9am and 3pm during the winter solstice, equinox and summer solstice.

The solar studies indicate that there will be no impact on neighbouring buildings. The shadow cast during the winter solstice indicates minor additional overshadowing to the public domain to the south between the hours of 9am and 12pm. This impact is caused by the additional roof form proposed for the southern stand and considered negligible in relation to both the existing shadows cast by the stadium and the remaining areas of public domain that are not impacted.

The proposed materials for the stadium refurbishment have been selected to allow diffused sunlight through the translucent roof fabric / louvred facade, and providing soft shadows and filtered natural daylight to penetrate through.

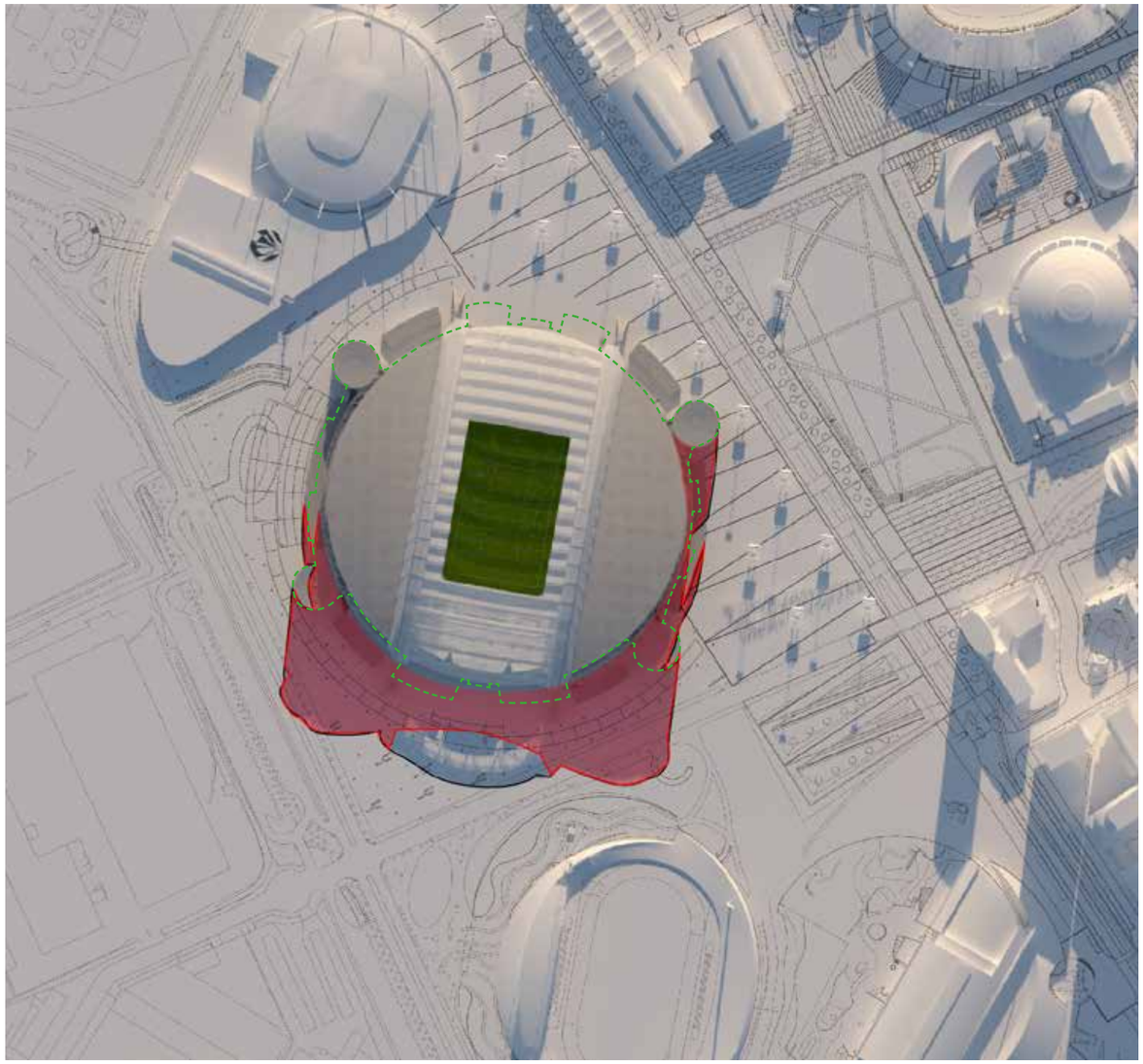



Figure 32: 21st June, 9am

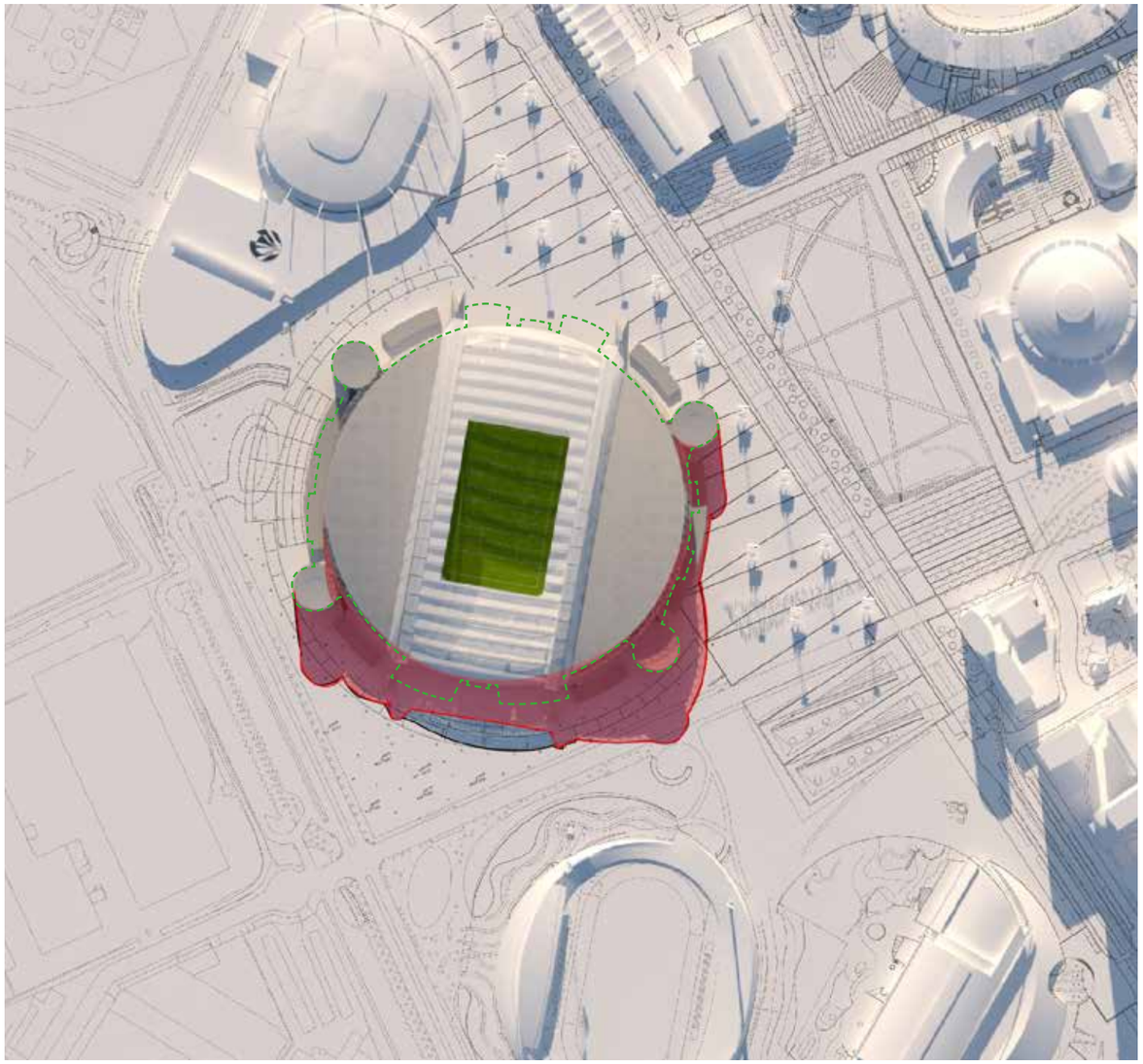


Figure 33: 21st June, 10am

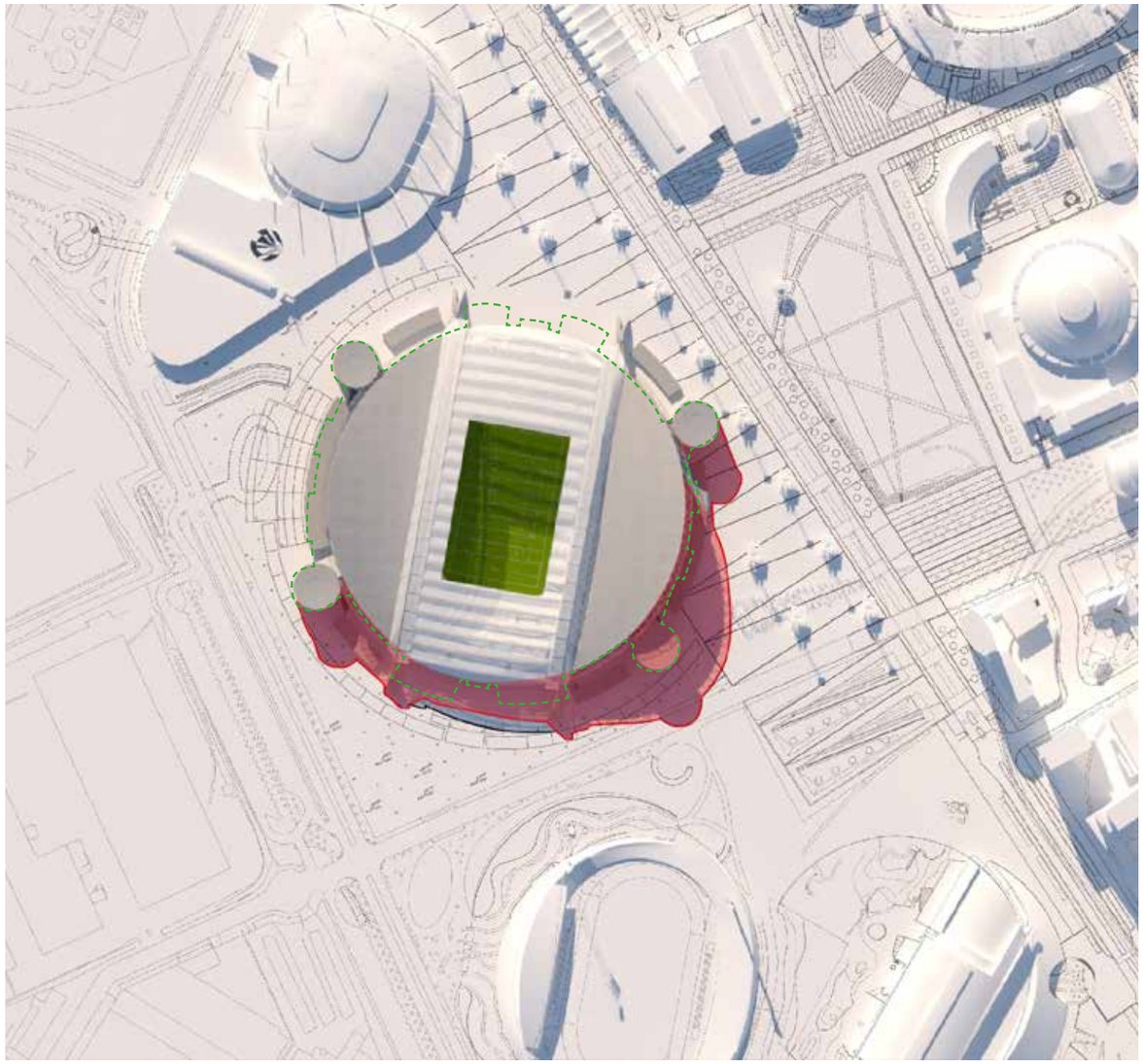


Figure 34: 21st June, 11am

# 6. Solar Access

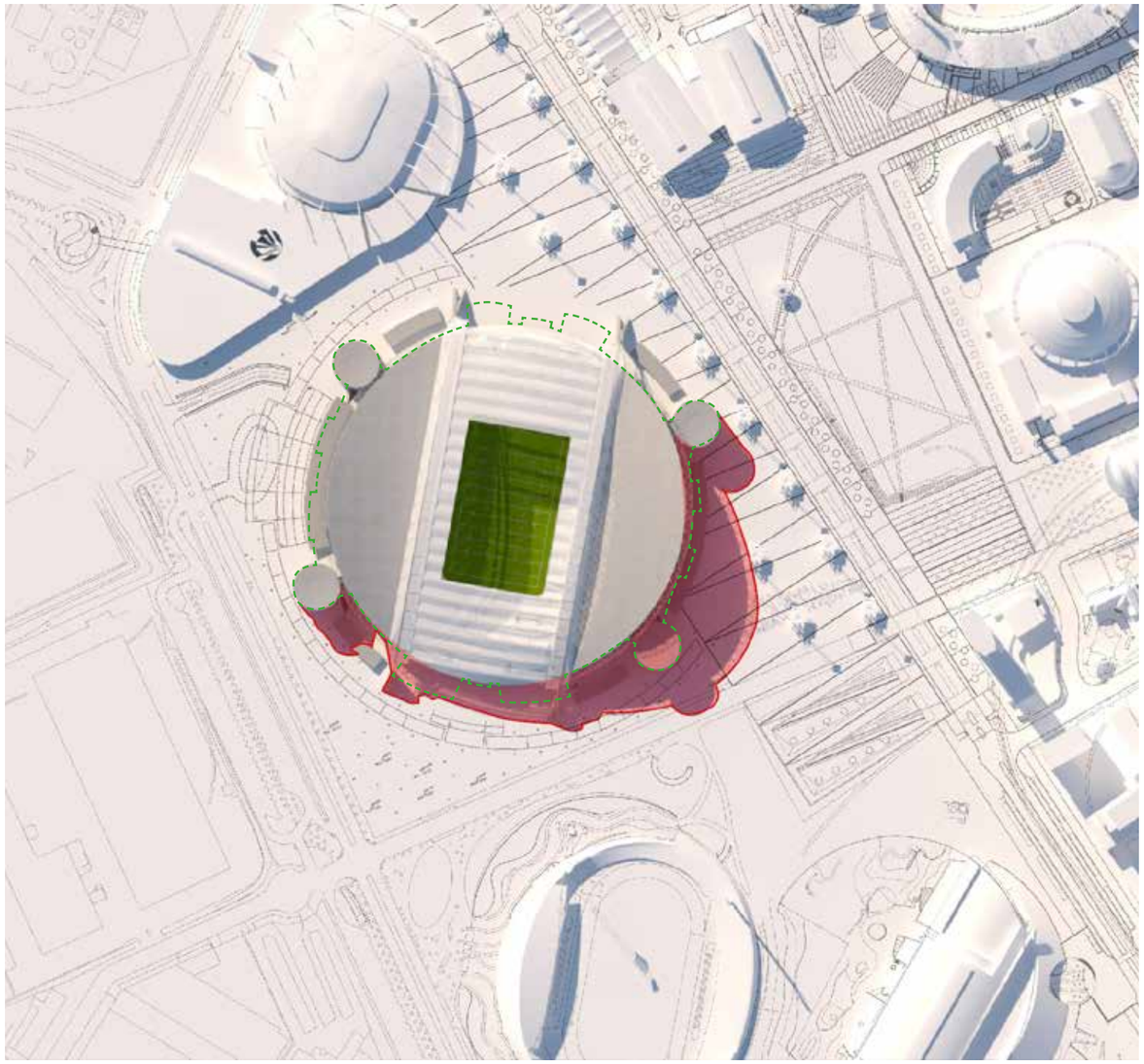


Figure 35: 21st June, 12pm

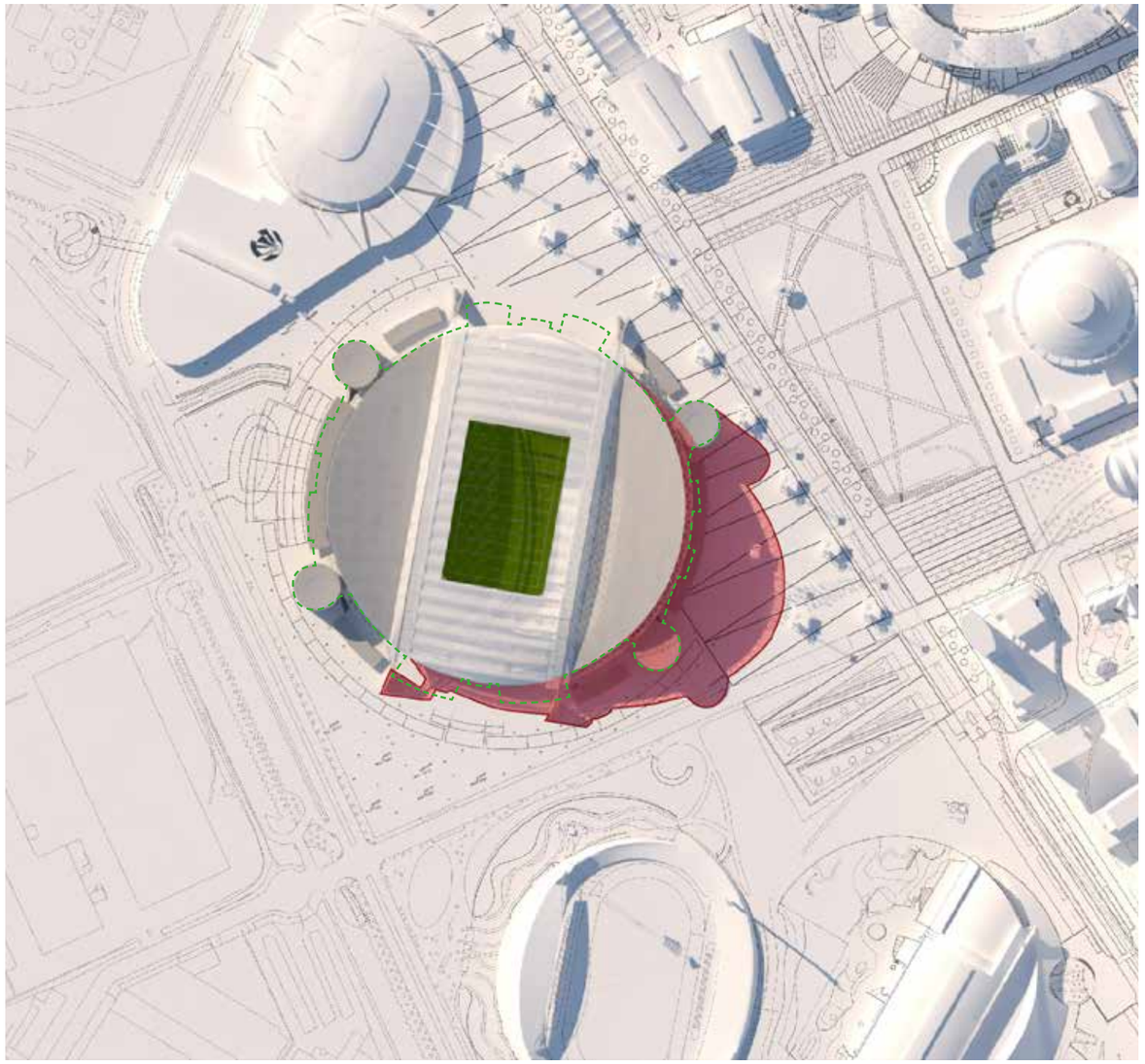


Figure 36: 21st June, 1pm

0 20 40 100 200

Figure 37: 21st June, 2pm

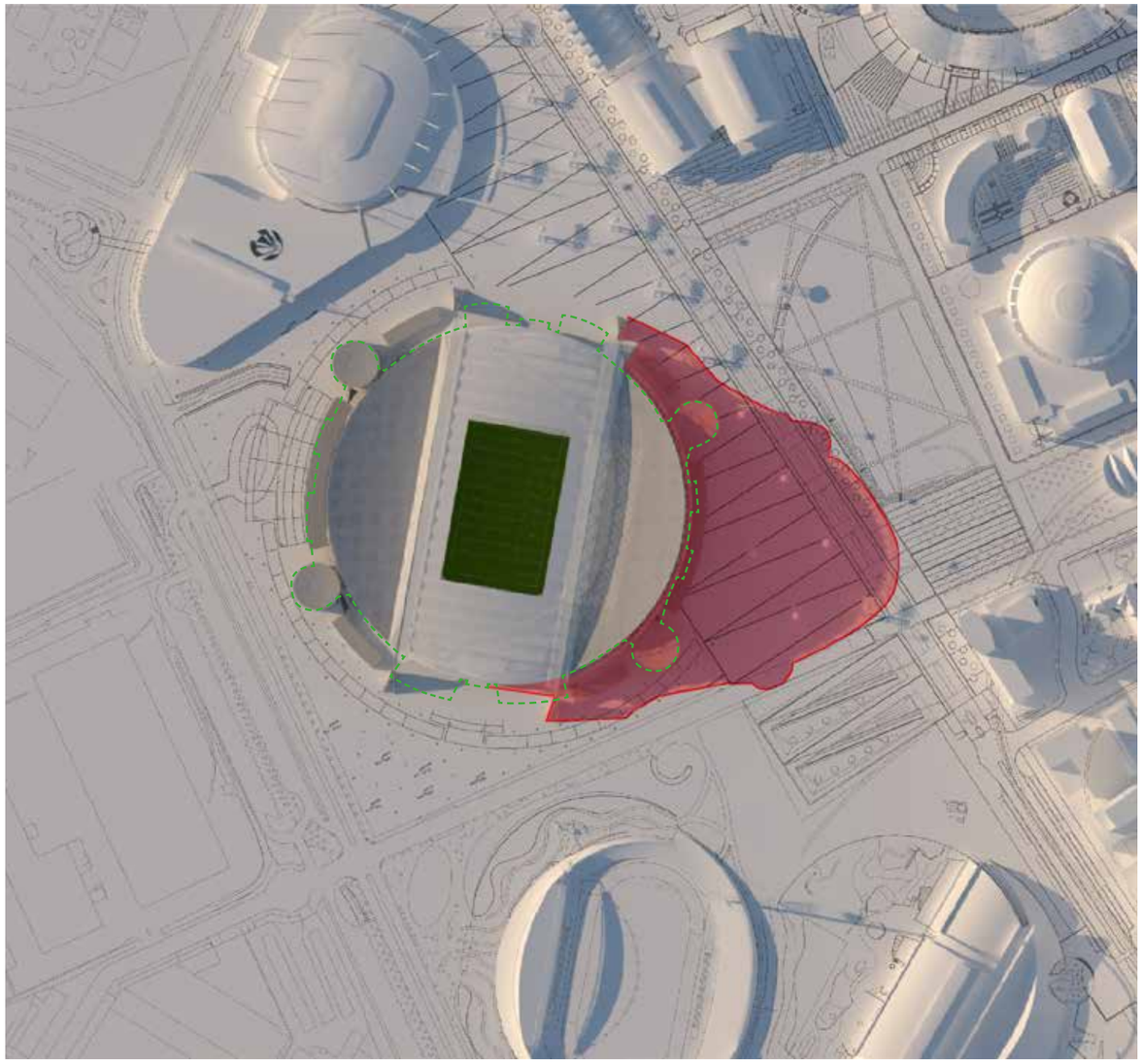


Figure 38: 21st June, 3pm

# 6. Solar Access

Figure 39: 22nd December, 9am

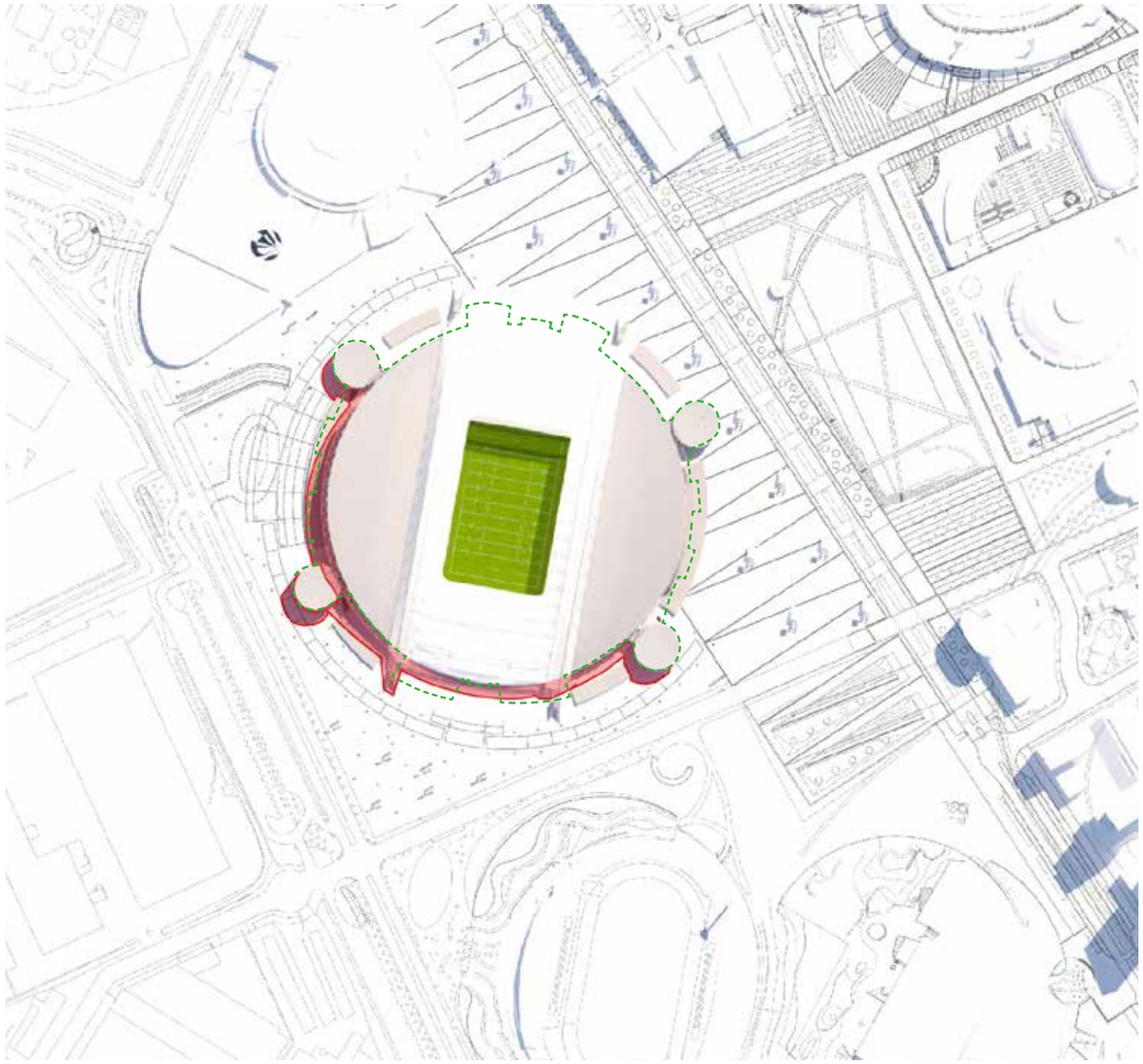
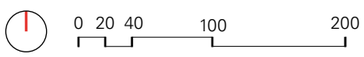


Figure 40: 22nd December, 10am



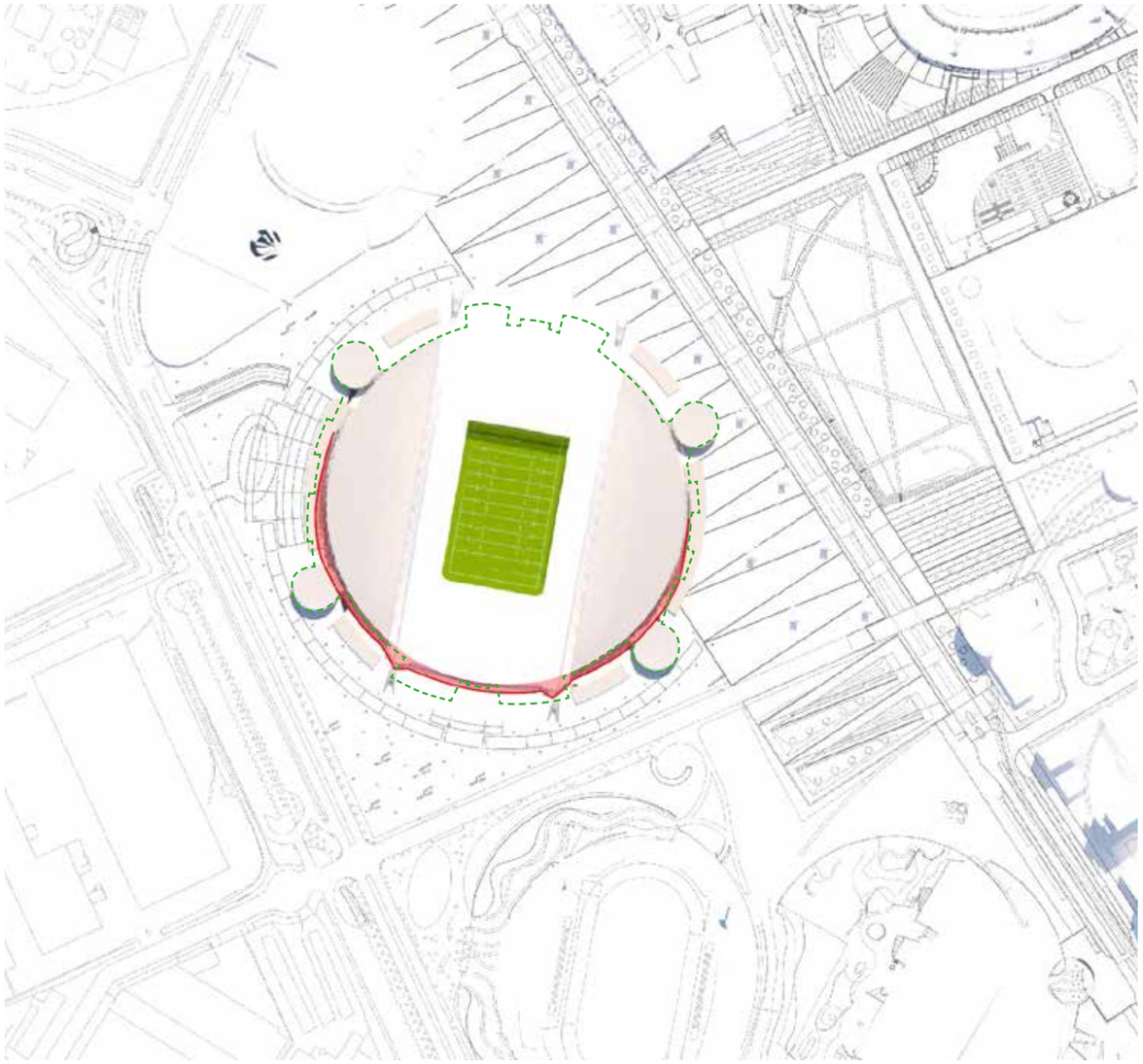


Figure 41: 22nd December, 11am

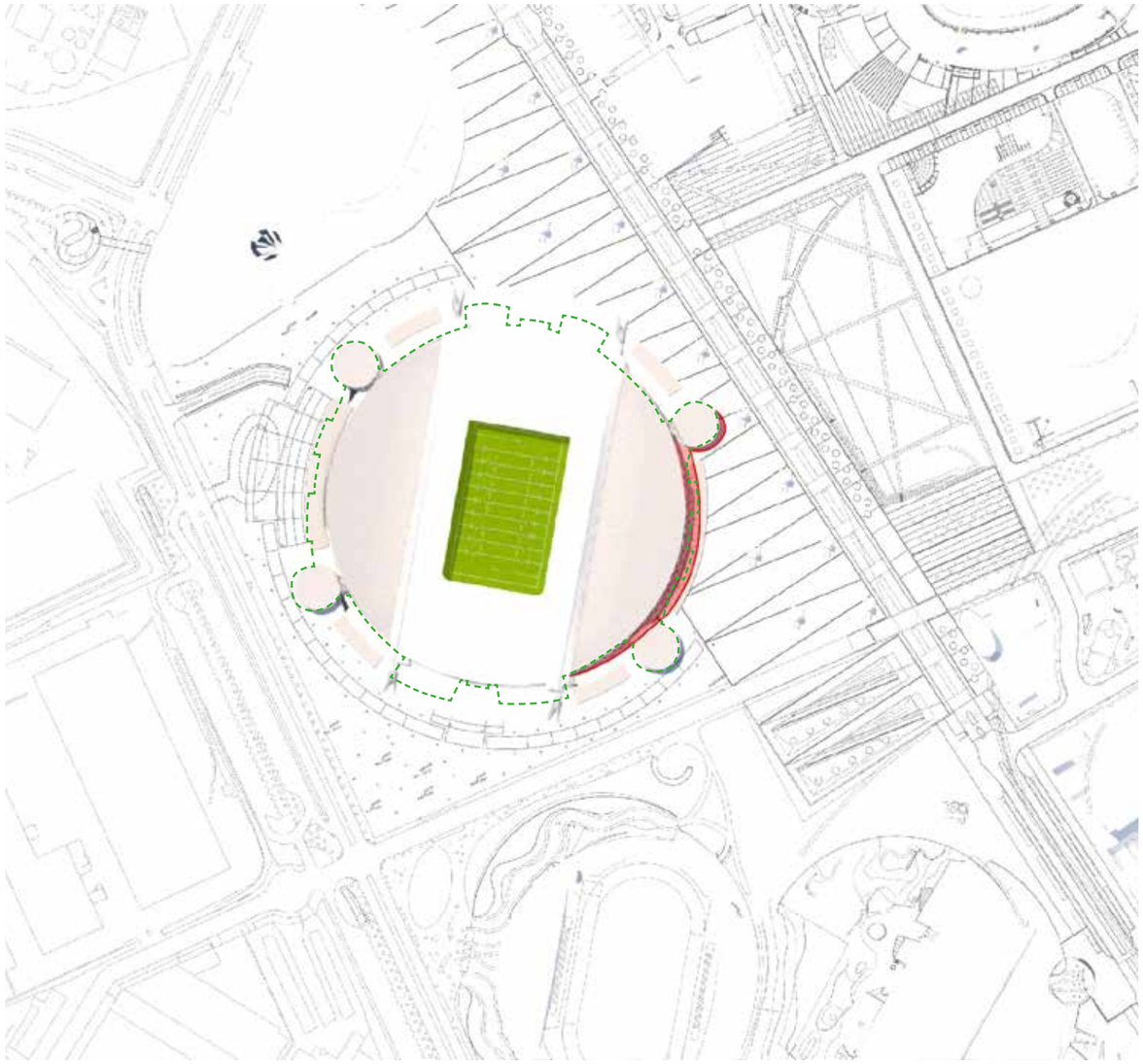


Figure 42: 22nd December, 12pm

# 6. Solar Access

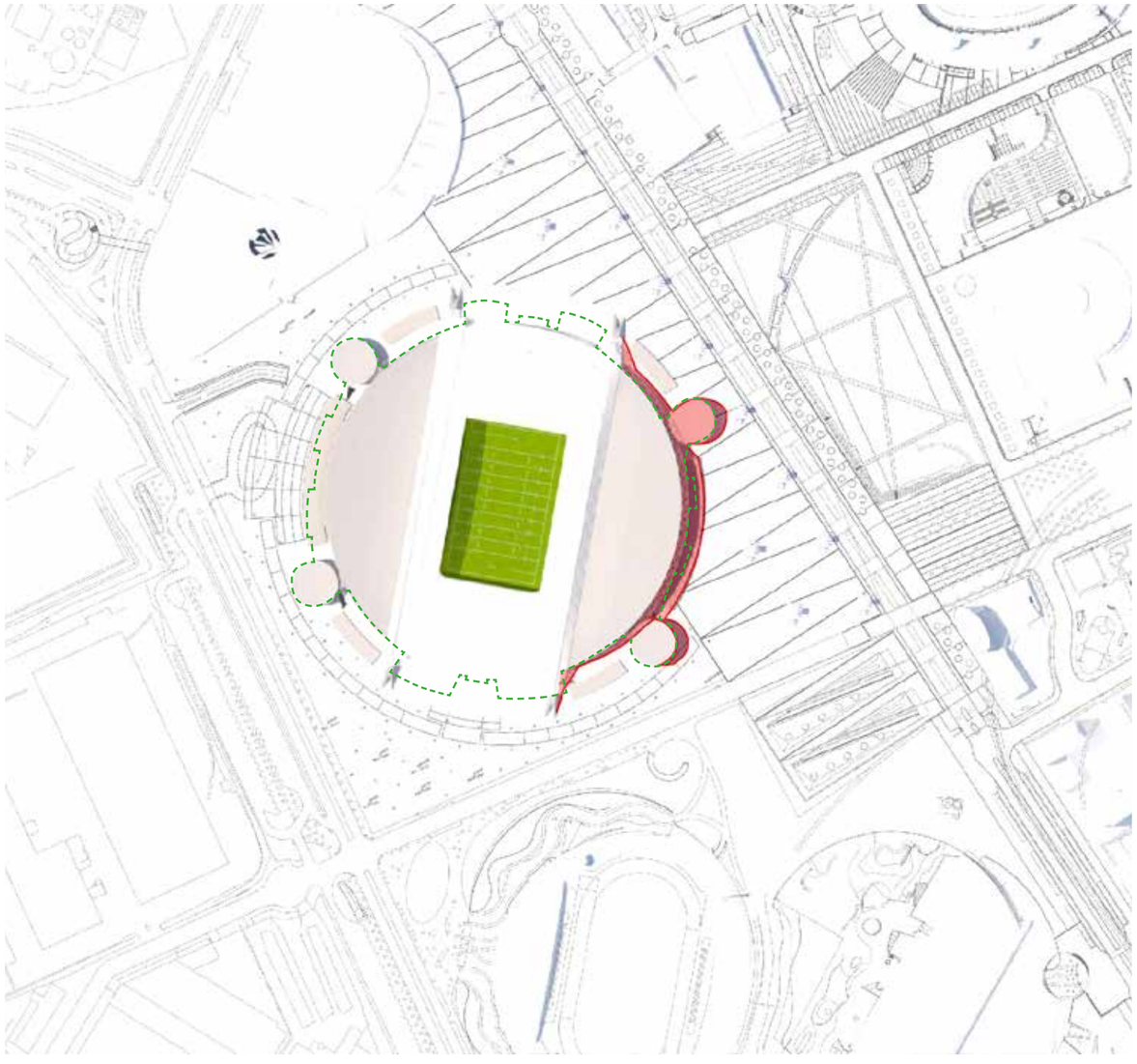


Figure 43: 22nd December, 1pm

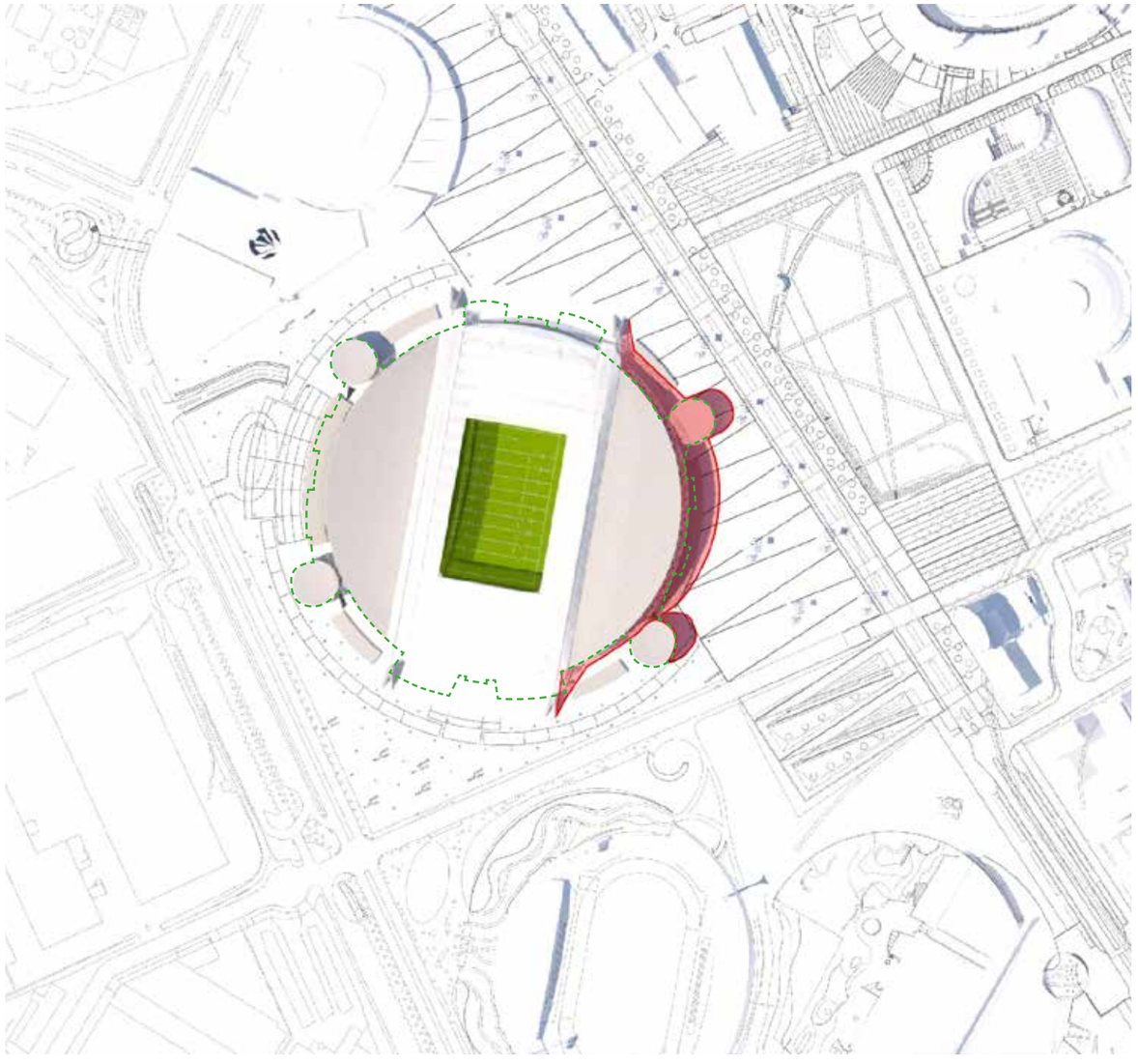
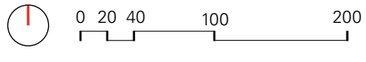


Figure 44: 22nd December, 2pm



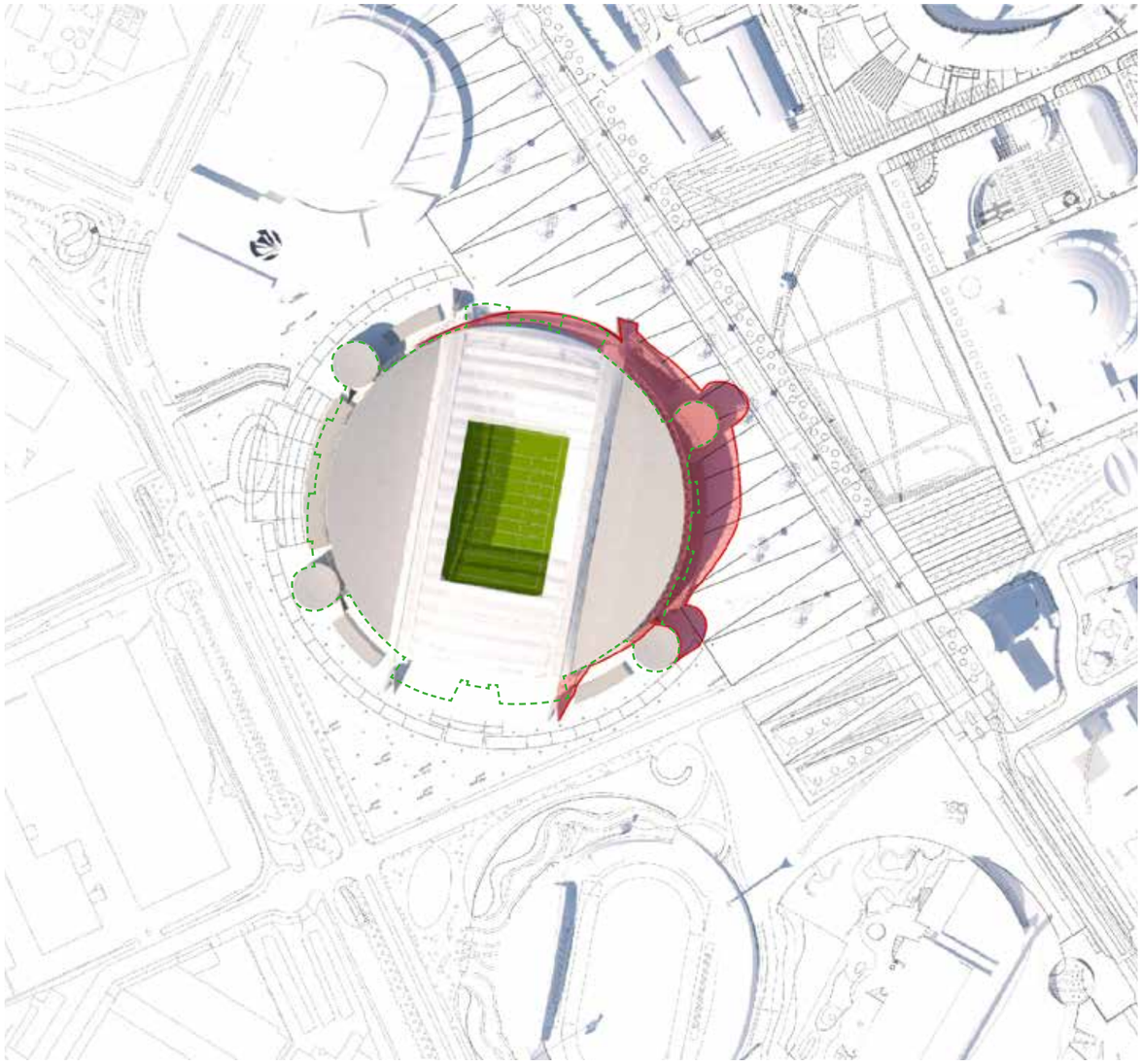


Figure 45: 22nd December, 3pm

# 6. Solar Access

Figure 58: 21st March, 9am

Figure 59: 21st March, 10am

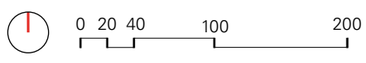


Figure 60: 21st March, 11am

Figure 61: 21st March, 12pm

# 6. Solar Access

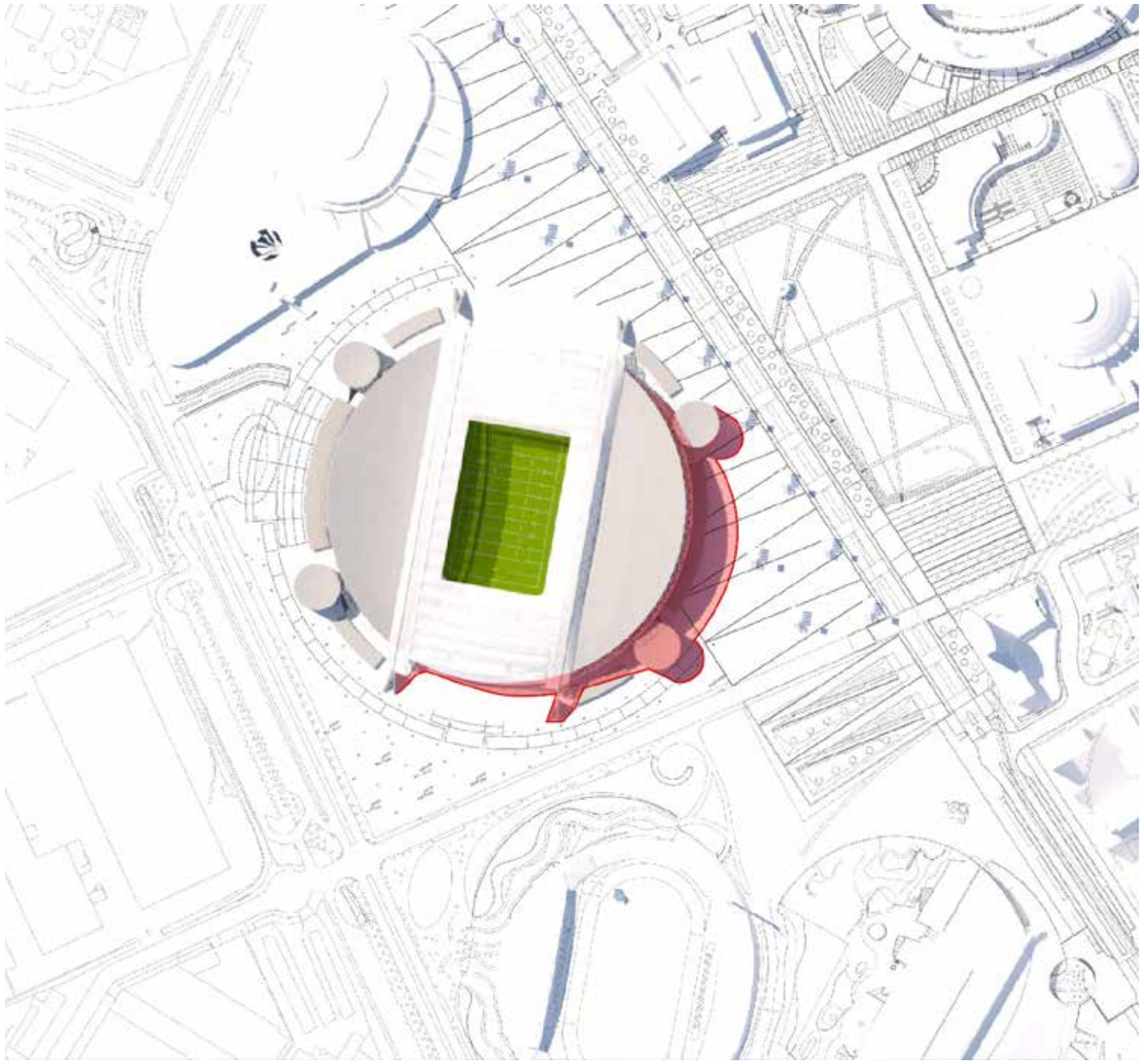


Figure 62: 21st March, 1pm

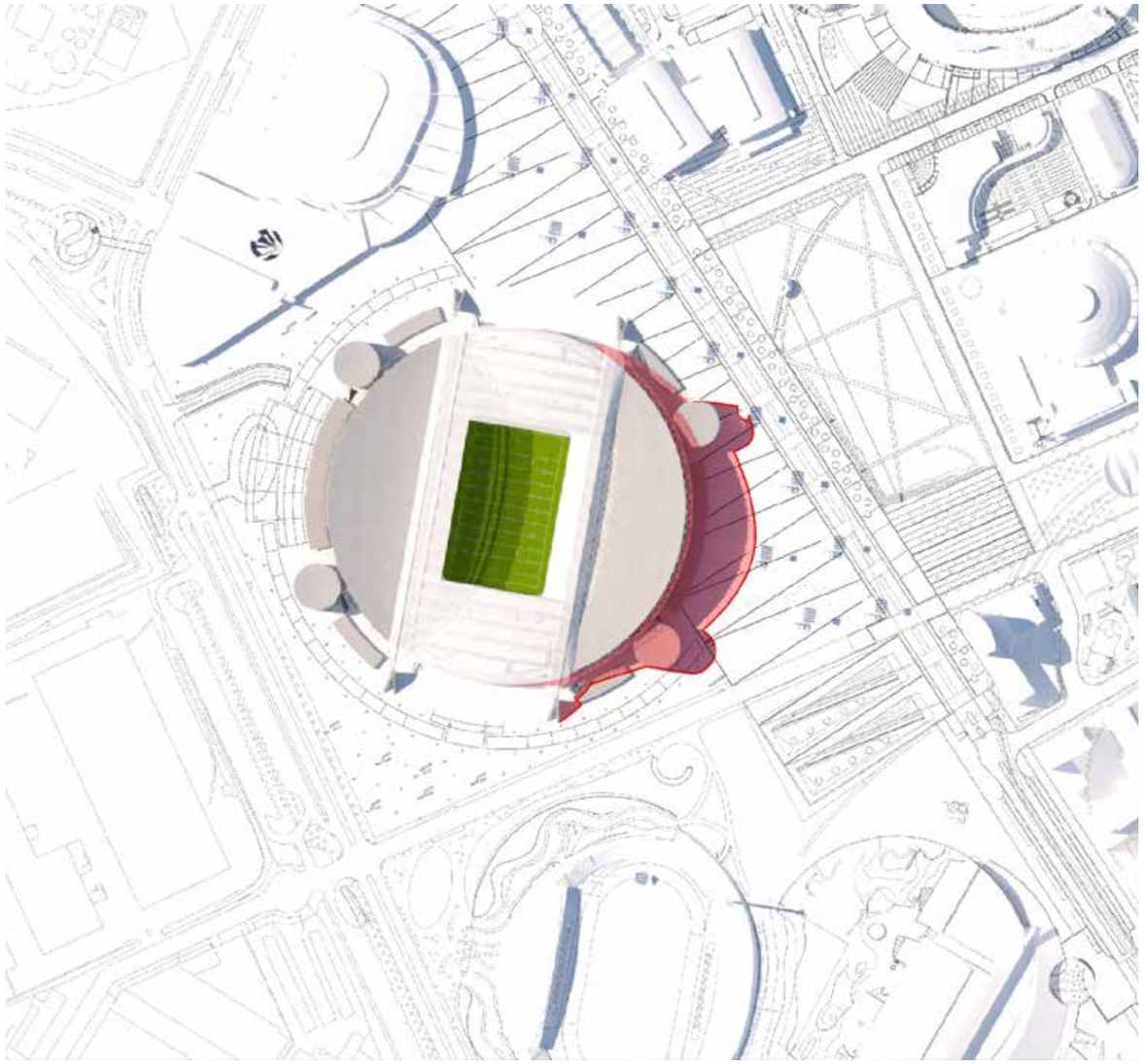
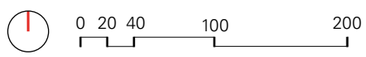


Figure 63: 21st March, 2pm



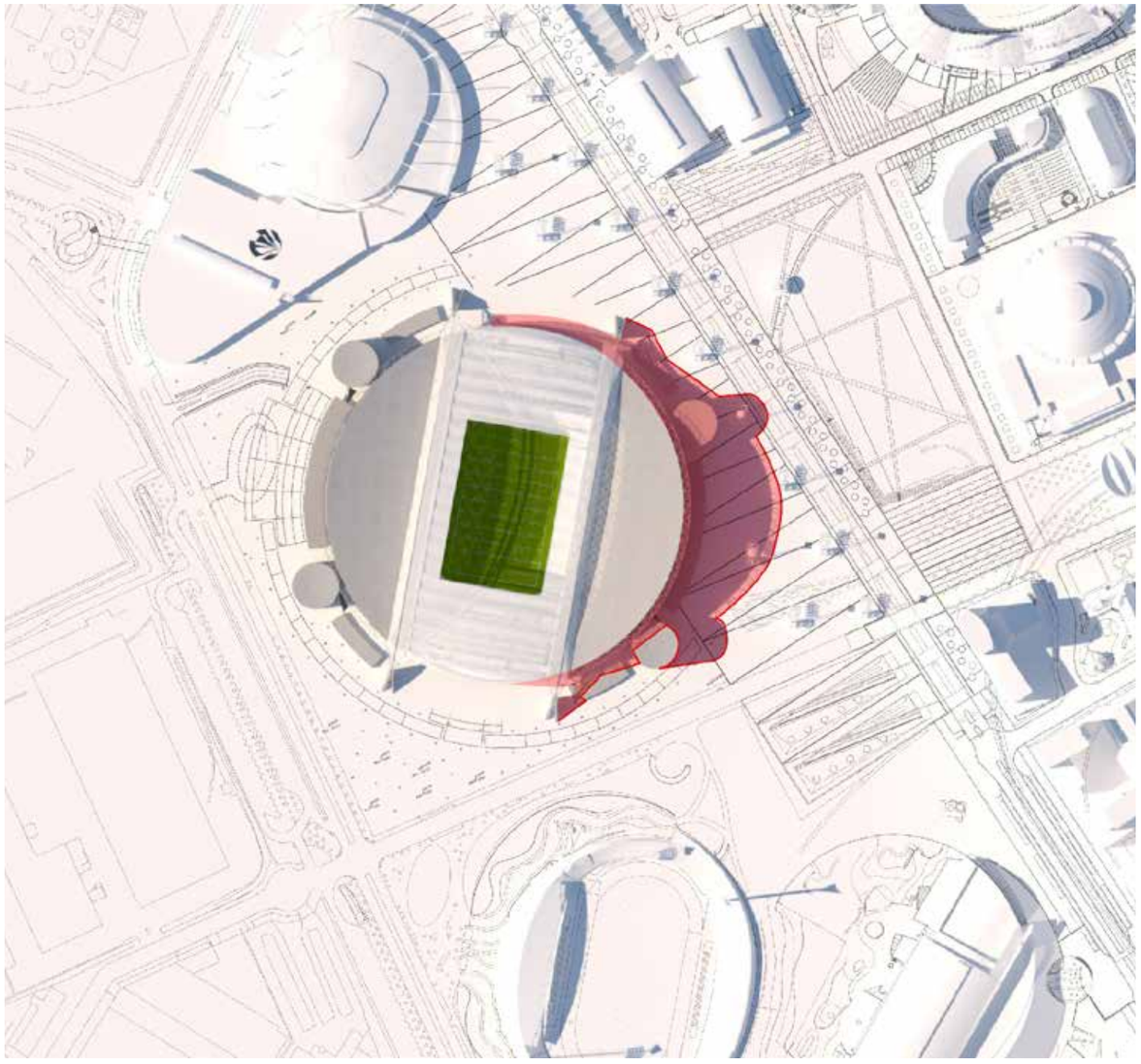


Figure 64: 21st March, 3pm

# 7. Conclusions and Recommendation

## 7.1 Conclusions and Recommendations

The design will continue to be refined during the design development focus. A mitigation measure is proposed to review the final design with the SOPA Design Review Panel prior to construction commencement.


STATE OF ORIGIN
NSW
BLUES

# 8. Appendices


Artist's Impression

# Appendix A
## Assessment against the objectives of Better Placed

| Better Placed Objective | Project Response |
|---|---|
| **Better fit**<br>▪ Contextual, local and of its place | As the central stadium of the of the Sydney 2000 Olympic and Paralympic Games the proposed design has been conscious of respecting the legacy and reinforcing the strength of the current design. This is evident in the form and design of structure and roof that takes clues from the arched support and compression ring of the main roof by repeating the arched forms and simple span trusses between in the new north and south roofs. The insertion is complementary to the existing forms and enhances the design through sympathetic material choice and composition. |
| **Better performance**<br>▪ Sustainable, adaptable and durable | The existing stadium is a model of green, functional, cost effective design and is still regarded as one of the most environmentally sustainable stadia in the world. As part of the design intent the environmental agenda has been enhanced by reinforcing existing environmental initiatives with the addition of solar photo voltaic panels and use of a long-lasting light transparent PTFE Tenara glass fibre fabric roof for the north and south stands. The new roof fabric to these stands lightens the internal environment and provides rain cover but most importantly ensures solar penetration for grass growth during winter. |
| **Better for community**<br>▪ Inclusive, connected and diverse | The addition of new northern and southern stands provides for easier access by general admission spectators and provides a new welcoming address to the stadium. These entry points will assist in supporting further development SOPA is intending around the stadium to assist in activation both pre and post event as well as on nonevent days. Sydney Olympic Park is one of the most accessible precincts in Australia. The ethos of inclusion and accessibility has been enhanced in the proposed design with upgrades to existing amenities for ambulant and disabled toilets, more and better located wheelchair and carer seating and enhancement of circulation spaces, particularly at the north and south stands. |
| **Better for people**<br>▪ Safe, comfortable and liveable | The proposed design builds on the existing structure by providing generous openings at the north and south facades affording views into the field of play. This will assist in activation outside of event times as people will be able to visit the precinct and view into and through the stadium. The redevelopment of the north and south stands and the lower seating bowl will place fans closer to the action on the field of play. This will create a more engaging fan experience and atmosphere within the stadium. |
| **Better working**<br>▪ Functional, efficient and fit for purpose | The primary purpose of the refurbishment is for the stadium to become a purpose-built rectangular stadium. As oval sports (cricket and AFL) no longer utilise the stadium, there is an opportunity for the redesign to better accommodate rectangular codes such as football, rugby and rugby league.<br>The refurbishment will enable the stadium to function for its current and proposed use in an enhanced manner. |
| **Better value**<br>▪ Creating and adding value | A variety of option exercises were undertaken to best provide a rectangular stadium with improved sightlines and requisite amenities – including minor and medium interventions as well as a three quarter and total rebuild which resulted in the current design as the most cost-effective solution and least damaging to the environment through the retention of a large component of the existing stadium. |
| **Better look and feel**<br>▪ Engaging, inviting and attractive | The refurbishment of the stadium provides the opportunity to refresh the stadium for its current and future purpose (i.e., rectangular sport). The refurbishment will provide an attractive environment that places fans closer to the action on the field of play, creating a more engaging atmosphere within the stadium for events of any size |

# Appendix B
## Assessment against principles of Greener Places

| Greener Places Principles | Project Response |
|---|---|
| | The redevelopment project has taken into consideration the current environmental infrastructure initiatives that occur within the Sydney Olympic Park Precinct. The client has undertaken a design intent that facilitates multi-agency cooperation - iNSW, SOPA, Office of Sport, Venues NSW and the Operator Venues Live: |
| **Integration**<br>▪ Combine green infrastructure with urban development and grey infrastructure. | *The longer-term transport plans form part of the SOPA and Transport NSW Master Plans for the area including the addition of a Metro and Light Rail network feeding into the Park and supplement the current public transport system to accommodate the large crowds attending events.* |
| **Connectivity**<br>▪ Create an interconnected network of open space | *The project retains the equitable access to district and local open space as part of the SOPA parkland and encourage alternative modes of transport such as walking, cycling and jogging and protects the existing green corridors.* |
| **Multifunctionality**<br>▪ Deliver multiple ecosystem services simultaneously | *The project ensures that the existing multifunctional open spaces continue to meet community needs, promote active and passive recreation.* |
| **Participation**<br>▪ Involve stakeholders in development and implementation | *The Infrastructure NSW has entered into a consultation processes which engages a broad section of the community that includes the general neighbourhood as well as members of the stadium and clubs.* |

# Appendix C

## The following advice was provided from the SOPA Design Review Panel.

**Detailed responses to this feedback is included at Table 12 of the EIS.**

SydneyOlympicPark

**SYDNEY OLYMPIC PARK AUTHORITY**
**DESIGN REVIEW PANEL – ADVICE SHEET**

| | | |
|---|---|---|
| **Project** | Stadium Australia Refurbishment | |
| **Presentation / Review Date** | 3 September 2019 | |
| **Panel Present** | Ben Hewett<br>Caroline Pidcock<br>Jason Perica | A/Government Architect (Chair)<br>Pidcock<br>Perica & Associates Urban Planning |
| **COI Declaration** | None | |
| **Also Present** | Sally Hamilton (SOPA), Alix Carpenter (SOPA), Dylan Sargent (SOPA), Richard Seaward (SOPA) | |
| **Presenters** | Tom Kennedy<br>John Ferendinos | GTK Consulting<br>Cox Architecture |

**PROJECT:**

The proponents presented the project to the Panel, highlighting the following key elements:

- The demolition and replacement of the northern and southern stands, including new stadium facades and new northern and southern public entrances;
- Internal reconfiguration of the lower bowl to reduce the distance between seating and the playing field and increase the pitch of seating for improved viewing experience;
- Comparisons of seating/field arrangements with other Stadiums, including internationally;
- Extension of the existing roofline to deliver 100% dripline coverage of all permanent seating;
- Partitioning off the upper rows of the eastern and western upper bowls to reduce overall seating capacity to 70,000, with flexibility to screen off upper levels to reduce capacity to 50,000-60,000 during less populated events;
- Construction of operable-ready roof infrastructure to allow a retractable roof to be installed at a later date;
- Updating concession stands, bathrooms, team facilities including gender neutral change rooms, members and corporate facilities and broadcast facilities; and
- Proposed work compound, including removal of three trees.

The proponent advised that Populous were in the process of taking over from Cox as the project architects and would be responsible for further design development moving forward.

SEARs have been received.

An SSD application has not yet been lodged.

**ADVICE:**

The Panel supported, in principle, the broader moves proposed as part of the stadium refurbishment along with the rationale for these works. The Panel qualified this support by noting that there were inconsistencies in the drawings, images and information presented by the proponents.

The Panel advised that the information provided was inadequate at this stage to sufficiently understand the proposed design and therefore to evaluate design quality and the achievement of design excellence, noting in particular:

a. The minimal, limited and at times conflicting information provided regarding the interface of the proposed works with the public domain, specifically with regard to the new northern and southern entrances;
b. The lack of identification or specification of materials for external elevations;
c. The lack of specification with regard to extent and materiality of signage;
d. Advice from the proponents that the design as presented was still subject to ongoing design,

SydneyOlympicPark

further resolution and value engineering; and
e. The likelihood of further design changes as a result of changing project architects.

**RESOLUTION:**

The Panel resolved that:

1. They could not provide comments or endorsement of the design based on the information provided;

2. To avoid delaying critical project deadlines, the design should be presented again to the Design Review Panel during the public exhibition stage of the State Significant Development (SSD) application, to allow sufficient time for Populous to further develop details of the interface of the design with the public domain, signage and façade materiality; and

3. The Design Excellence Strategy to be submitted as part of the SSD application should identify critical design milestones for the project to be re-presented to the Panel and acknowledge the benefit of early review input into the design.

Approved:

Ben Hewett
**Acting NSW Government Architect**
**Chair**

**12.09.2019**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