mckenzie group

A Bureau Veritas Group Company

BUILDING CODE OF AUSTRALIA REPORT

Revision: E

The Sydney Swans & Swifts HQ at 1 Driver Avenue, Moore Park NSW 2021

Prepared for: APP Corporation Pty Ltd (Sydney)

Document Disclaimer

This document has been prepared solely for the use of our client in accordance with our current professional standards and as per our agreement for providing compliance consulting services. Although all due care has been taken in the preparation of this document, no warranty is given, nor liability accepted (except that required by law) in relation to the information contained within this document.

This document represents the opinions of McKenzie Group Consulting based on the facts and matters known at the time of preparation of this document. Opinions, judgments and recommendations detailed in this document, which are based on our understanding and interpretation of current statutory and regulatory obligations and standards, should not be construed as legal opinions.

Table of Contents

Date	Rev No	No. of Pages	Issue or Description of Amendment	Assessed By	Approved By	Date Approved
18/02/2019	A	27	Preliminary	Charbel Gabriel	Aaron Celarc	26/02/19
18/03/2019	B	27	Draft Preliminary	Charbel Gabriel	Aaron Celarc	27/04/19
20/03/2019	C	27	DA	Charbel Gabriel	Aaron Celarc	28/04/2019
05/03/2019	D	28	DA	Charbel Gabriel	Aaron Celarc	09/04/2019
03/05/2019	E	29	DA	Charbel Gabriel	Aaron Celarc	03/05/2019

Executive Summary

Development Overview

The proposed development is The Sydney Swans HQ & Sydney Swifts HQ at 1 Driver Avenue, Moore Park.

Compliance Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Populous (refer appendix A) for compliance with the Building Code of Australia 2019

In this regard the following areas in particular require further review as the project develops:

No.	Items for review	Responsibility
2.	Final stair details and handrails required to be provided for review	Architect
3.	Balustrade and barrier details required to be provided for review	Architect
4.	Section J Report or JV3 assessment report required to be submitted for review	ESD consultant
6.	Fire Service plan to indicate the location of all essential fire services to allow of complete coverage throughout the whole building.	Fire Service Engineer
7.	Detailed lift drawings for the construction of the proposed lifts.	Architect

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

No.	Alternative Solution Description	DTS Clause	Performance Requirement
Fire Safety Items			
1.	**Non-combustible building element** Parts of the external walls of the Sydney Swifts building is being proposed to be cladding in the Dampalon product which is deemed combustible. Performance solution to address the combustible façade covering, framing and insulation.	C1.9	CP1 & CP2
2.	**Reduction of Fire Resisting Level** External wall on the Lang road will not be proposed to have the fire resisting 120/30/- as required for type B construction for façade within 9m and 18m. This will be addressed as a performance solution.	C1.1	CP1 & CP2
3.	**General Floor Area limitations**	C2.2	CP1, CP2 & EP2.2

	A performance based solution has been proposed to treat the entire building as an oversized compartment. The development is considered as a single fire compartment which has a total area of approximately 12,881m^2 and exceeds the 5,500m^2 permissible for Type B Construction as outlined in Table C2.2. A performance based solution is required to address the development as an oversized compartment.		
4.	**Exit Travel Distances** The below extended travel distances will be required to be addressed as part of the fire engineered solution for the proposal: ▪ **Ground Floor Altitude Room:** o Travel distance to an exit is 45m in lieu of 40m. ▪ **First Floor roof terrace:** o Travel distance to a point of choice is 28m in lieu of 20m. ▪ **First Floor office area:** o Travel distance to an exit is 42m in lieu of 40m. This will be required to be addressed as a performance based solution.	D1.4	DP4 & EP 2.2
5.	**Distance between alternative exits** The following distances between alternative exits will be required to be addressed through a performance solution in the event that they are not reduced through design. ▪ **Ground Floor:** o Up to 76m between alternative exits in lieu of 60m. ▪ **First Floor:** o Up to 83m between alternative exits in lieu of 60m.	D1.5	DP4 & EP 2.2
6.	**Fire Hydrant** The hydrant booster will not be located within sight of the main entrance as a result of the building having multiple entrances. This is required to be assessed through a performance solution if not address through design.	E1.3	EP1.3
7.	**Fire Hose Reel** Fire hose reels are to be omitted throughout the Sydney Swan Head Quarters and Sydney Swifts building.	E1.4	EP1.1
8.	**Smoke Hazard Management**	E2.2, Spec E2.2	EP2.2

	It is proposed that the smoke exhaust requirements will be omitted, this is to be addressed as a fire engineered solution

The fire engineered solution relating to CP2, EP1.3 and EP 2.2 will be subject to consultation with the NSW Fire Brigade as part of the Construction Certificate process under Clause 144 of the Environmental Planning & Assessment Regulation 2000

1.0 Introduction

The proposed development comprises of an internal fit out to the Sydney Swans HQ and an extension to include a new Community Centre.

The site is located on the Entertainment centre at 1 Driver Avenue, Moore Park NSW 2021.

This report is based upon the review of the design documentation listed in Appendix A of this Report

The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

This report has been prepared on behalf of the Sydney Swans Limited in support of a State Significant Development (SSD) application for the proposed adaptive reuse of the Royal Hall of Industries for a high-performance sport and community facility. The facility will enable a range of land uses, including a new home for the Sydney Swans and NSW Swifts. It will accommodate a multi-purpose facility available for community uses, sporting, medical and rehabilitation areas, administration and office spaces and associated plant and store rooms.

1.1 Site:

The site is located at 1 Driver Avenue, Moore Park and comprises a portion of two separate lots, legally described as Lot 3, DP861843 and Lot 52 of DP1041134. The site is owned by the Centennial Park and Moore Park Trust and is leased to the Sydney Swans for the purposes of the development.

The proposed application will relate to the Royal Hall of Industries (RHI) building, and the associated courtyard area to the immediate south of the building. The development area is located in the south-western corner of the Entertainment Quarter precinct and has a direct frontage to Driver Avenue to the west, Lang Road to the south and Errol Flynn Boulevard to the east, an access road within the Entertainment Quarter precinct.

The RHI has in recent times been utilised as an exhibition space. The building has a rectilinear plan form with symmetrically placed entrances on all four sides, four to the east and west, and two to each of the north and south facades. The building has a gross floor area of approximately 5,700sqm at ground level with basement toilets at the southern end of the building.

The courtyard to the south of the building currently accommodates loading and general plant services associated with the RHI building and storage sheds. The building and courtyard area is surrounded by a 6.95m high brick wall. The total area of the subject site extends to approximately 1.9ha and is illustrated at Figure 1 below.

1.2 Regional Context

The site is located within the southwestern corner of the Moore Park Showground Precinct, a major recreational area in the eastern suburbs of Sydney. Measuring approximately 28.7 hectares in area, the precinct includes a range of passive and active recreational areas with a focus on cultural, entertainment, and sporting uses. Key land uses include the Entertainment Quarter, Centennial Parklands Equestrian Centre and Fox Studios.

The location of the site is strategically significant due to its proximity to a number of key land uses within Sydney, including:

- Royal Randwick Racecourse – 1.8km
- UNSW and Prince of Wales Hospital – 3.7km
- Sydney CBD – 4.5km
- Sydney Airport – 11.9km

1.3 Local Context

The site is located in the City of Sydney Local Government Area (LGA). The predominant character of the area is associated with entertainment, leisure and recreational land uses, with infrastructure changes associated with the CSELR (CBD and South East Light Rail) construction.

The site has a direct frontage to Driver Avenue to the west, Lang Road to the south and Errol Flynn Boulevard to the east, an internal access road within the Entertainment Quarter precinct. Mature fig trees are located along Lang Road, Driver Avenue and Anzac Parade.

The land uses in the immediate surrounding area comprise the following:

- The Hordern Pavilion is located to the immediate north of the site, which operates as a live music and entertainment venue with an associated pedestrianized forecourt area.
- The Entertainment Quarter, to the immediate east of the site, is an entertainment, dining and leisure precinct with cinemas, restaurants, and bars and an outdoor sporting, performance and event space. A 2,000-space car park is also provided.
- To the immediate south of the site is the Centennial Parklands Sports Centre, comprising netball and tennis courts with a large area of open space.
- The SCG and Allianz Stadium is located further north of the site. Allianz Stadium is currently undergoing demolition associated with the construction of a new sports stadium on the site, expected to be completed by mid-2022.
- Moore Park is located on the west and east of Anzac Parade, and Centennial Park and Queens Park are located to the south-east of the site. Collectively known as the Centennial Parklands, the parks measure 360ha in area.

1.4 Overview of Proposed Development

This application seeks approval for the proposed adaptive reuse of the Royal Hall of Industries (RHI) for a high-performance sport and community facility. The development will maintain the structural integrity and façade of the RHI, whilst re-purposing the interior of the building to support a number of compatible uses and utilise the space effectively.

In addition to the repurposing of the RHI, an extension of the building will be constructed to the south of the building in the current service and courtyard area. The built form of the extension is consistent in height, scale and material with the RHI and will be largely concealed behind the existing courtyard wall.

The facility will include:

- Home of the Sydney Swans;
- Home of the NSW Swifts;
- Multi-purpose indoor facility available for community use and public events such as junior club nights, school graduations, functions
- An indoor netball court for the NSW Swifts Netball Team and netball community
- Facilities for a Swans team in the AFL National women's competition
- Player change areas, lockers and wet areas;
- Wet recovery – pool and hot/cold hydrotherapy;
- Go Foundation and Clontarf Foundation for indigenous education;

- Australian Red Cross Blood Service Donation Centre;
- Medical, rehabilitation and sport science areas;
- Gymnasium, museum, media centre and auditorium
- Back of house offices and café/canteen;
- Entry foyer and retail/shop units;
- Plant and store rooms; and
- Sydney Swans Academy.

1.5 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate. BCA 2019 depending on when the application form for construction certificate is completed has been utilised as the version of the BCA applicable at the time of preparation this Report.

1.6 Upgrade to Existing Buildings

The local authority when assessing the development application may require that the existing building be brought into partial on full compliance with the current provisions at the BCA. The trigger for upgrade includes:

- Where the building works, together with any other works completed or authorised within the previous 3 years, represents more than half the total volume of the building.

Further investigations, including a site inspection will be required to ascertain the extent of the upgrade works required for the existing building to ensure that a suitable level of life safety, health and amenity for the occupants within the building is maintained. The upgrade works will be based upon using the current regulations as an applicable benchmark and our expertise to judge what is considered to be suitable.

Notwithstanding the above, where practical benefits and improvements to fire and life safety can be achieved without major cost or disruption, it is recommended that the relevant compliance parameters be upgraded to meet current requirements where possible.

2.0 PRELIMINARIES

2.1 Building Assessment Data

Summary of Construction Determination: -

Part of Project	Sydney Swans HQ & Community Centre (SSHQCC)
Classification	5 and 9b
Number of Storeys	3
Rise In Storeys	2
Type of Construction	Type B
Effective Height (m)	<12m

Summary of the floor areas and relevant populations where applicable: -

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approx. Floor volume (m^3)
Basement Floor	TBA	519m^2	1,639m^3
Ground Floor	5 & 9b	7,769m^2	31,076m^3
Level One	5 & 9b	5,112m^2	19,400m^3
Total		**19,276m^2**	**52,115m^3**

Notes:

- The estimated Population has been provided from the SSHQCC Project Population Schedule indication a total of 197 occupants which was confirmed from an email by APP Pty Ltd.

- Based upon the rise in storeys and use of the Building, the building is required to be Type B Construction in accordance with Table 4 & 4.9 of Specification C1.1 of the BCA 2016. It is noted, however, that the anticipated compartment size of the SSHQCC exceed the maximum compartment floor area of 5,500m2 and maximum volume of 33,000m3 permitted for Type B Construction. The following options are therefore available to achieve compliance:
  The building can be compartmented to allow parts of the building be separated from the remainder of the building by fire walls. The fire walls are to be constructed in accordance with the appropriate Fire Resistance Level (FRL) of Spec C1.1 of BCA. Also, please note that any openings of the fire walls are not to reduce the level of FRL required. If the building is not proposed to be compartmented in accordance with BCA, than a performance solution is required to be obtain by a Fire Safety Engineer to address BCA Performance Requirement CP1

2.2 Structural Provisions (BCA B1)

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided, including determination of the importance level of the development.

This is to include assessment against the provisions of BCA Clause B1.6 – Construction of Buildings in Flood Areas.

2.3 Development Approval

A Development Approval will be required from the Local Authority for the development or department of planning. A copy of the Development Permit conditions and approved drawings will be required prior to the issuing of the Building Approval for that component of works.

The proposed development must not be inconsistent with the endorsed drawings and all relevant conditions will need to be satisfied and accurately reflect the construction issue drawings.

2.4 Copy of Certificate of Title:

A copy of the current Certificate of Title and Registered Plan. Where it is proposed to construct any part of the building work within an easement, the consent of the relevant authority and /or Council is required prior to the issue of the Construction Certificate

3.0 FIRE PROTECTION

3.1 Fire Compartmentation (BCA C1.1)

The BCA stipulates three levels of fire resistant construction, which is based upon the rise in storeys and classification of the building. Each of these types of construction has maximum floor area and volume limitations as per BCA Table C2.2.

Based upon the rise in storeys and use of the Building, the building is required to be Type B Construction in accordance with Table 4 & 4.9 of Specification C1.1 of the Building Code of Australia 2016 Amendment 1.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development and it has been noted that the building has been designed as a single oversized compartment.

The maximum floor area and volume limitations of a fire compartment as nominated in the deemed to satisfy provisions are as follows:

Type B Construction maximum compartment sizes	BCA Classification	Maximum Floor area (m^2)	Approximate Volume (m^3)
	5 & 9b	5,500m^2	33,000m^3

The following item are required to be assessed as part of the fire engineered solutions:

- The entire building is to be treated as one oversized fire compartment with a total floor area of 12,881m^2, exceed the maximum floor area in accordance with Clause C2.2 of 5,500m^2.

3.2 Fire Resistance (BCA C1.1)

The building should be constructed generally in accordance with the relevant provisions of Specification C1.1 of the BCA applicable to Type B Construction, Please refer to Appendix 1 which outlines the required fire rating to be achieved by the development. These fire ratings are summarised below:-

Building Element	5 & 9b

External Walls	Loadbearing Non-loadbearing	120/120/120 -/120/120
External Columns	Loadbearing Non-loadbearing	120/-/- -/-/-
Fire Walls	Loadbearing Non-loadbearing	120/120/120
Fire Stair / Shaft Walls	Loadbearing Non-loadbearing	120/120/120 -/120/120
Public Corridors	Loadbearing Non-loadbearing	120/-/- -/-/-
Walls, Beams, Columns Supporting Floors		120/-/-
Walls, Beams, Columns Supporting Roof		-/-/-
Roof		-/-/-

As the existing wall are within 18 metres of the site boundary, The following FRL are to be implemented;

- External wall facing Lang Road is between 9m and 18m, this will require all fire-source features to have 120/30/-.

The building will be subject to the performance solution to omit the requirements of above. Fire source features will be assessed and approved by a Fire safety engineer under the performance solution report.

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Lift Motor Rooms,
- Electricity Supply,
- Hydrant Pump Rooms,
- Sprinkler Pump Rooms,

The above areas are to be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

3.3 Fire Hazard Properties (BCA C1.10 and BCA C1.12)

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia. The following requirements apply:

Sprinkler Protected Areas

a) Floor Coverings – Critical radiant Flux not less than 1.2 kW/m2
b) Wall and Ceiling Linings – Material Group No. 1,2 & 3
c) Other Materials – Spread of Flame Index not exceeding 0 and Smoke Developed Index not exceeding 5.

Rigid and flexible air handling ductwork must comply with AS4254 parts 1 & 2 2012.

Floor linings and floor coverings used in lift cars must have a critical radiant flux not less than 2.2, and wall and ceiling linings must be a Material Group No. 1 or 2.

External Wall Cladding

As the building is of B construction the external walls, including any external and internal claddings & linings must be non-combustible as determined by AS1530.1. 1994.

The following materials may be used wherever material is required:

a) Plasterboard.
b) Perforated gypsum lath with a normal paper finish.
c) Fibrous-plaster sheet.
d) Fibre-reinforced cement sheeting.
e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
f) Bonded laminated materials where—
    i. each lamina, including any core, is non-combustible; and
    ii. each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2mm; and
    iii. the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole does not exceed 0 and 3 respectively.

The BCA does nominate that ancillary elements may be fixed to an external wall that is required to be non-combustible unless they comprise of the following:

a) An ancillary element that is non-combustible.
b) A gutter, downpipe or other plumbing fixture or fitting.
c) A flashing.
d) A grate or grille not more than 2 m² in area associated with a building service.
e) An electrical switch, socket-outlet, cover plate or the like.
f) A light fitting.
g) A required sign.
h) A sign other than one provided under (a) or (g) that—
    i) achieves a group number of 1 or 2; and
    ii) does not extend beyond one storey; and
    iii) does not extend beyond one fire compartment; and
    iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.

It is recommended that once material selections are made, copies of the fire test certificates/reports be provided for review and approval.

3.4 Protection of Openings in fire rated building elements (BCA C3.5 and BCA C3.10)

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

a) Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL of 120/120/120 (or 120/120/120 where it is a room such as a substation);

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

As the design develops, details will need to be included in relation to sealing of penetrations / construction of fire rated shafts. Also, a copy of the fire test report for all the artificial grass on the proposed football pitch is are required to be provided.

4.0 EGRESS PROVISIONS

4.1 Provisions for Escape (BCA D1)

The egress provisions from the proposed building are provided by:

- Required non-fire isolated stairways

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of the egress provisions to the Road.

The two current external stairs providing egress from the fire doors on Driver Avenue are required to be upgraded to contain the following amendments due to the following departures that have been identified;

- Both stairs have a landing with a drop of greater than one metre. The current balustrade height is less than the required one metre for D2.16 of the BCA 2019.
- Hand rails on both flight of both flight of stairs are less than the required 865mm. it is required in accordance with D2.16 of the BCA 2019 and AS 1428.1.
- Handrail and balustrade both have opening with a 125mm sphere can fit through. Creating a non-compliance with D2.16 of the BCA 2019.
- As the stairs are not fie isolated stairways, they require tactile indicator and non-slip nosing's in compliance with AS1428.1.
- Handrail does not have a consistent height as required by AS1428.1-200- clause 12. There are vertical sections.
- Handrails need to be on both sides in accordance with As 1428.1. Only currently on one side on the stairway.
- As the stairs are a non-fire isolated stair, it is required to have a handrail extension of 300mm in accordance with AS 1428.1. Currently no handrail extension.

4.2 Exit Travel Distances (BCA D1.4)

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be satisfied.

The travel distances to exits should not exceed:

<u>Class 5-9</u>

- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

The locations of the proposed exits indicate that the deemed to satisfy requirements in terms of travel distances would be satisfied, with the exception of the following:

- **Ground Floor Altitude Room:**
  - Travel distance to an exit is 45m in lieu of 40m.
- **First Floor roof terrace:**

- Travel distance to a point of choice is 28m in lieu of 20m.

- **First Floor office area:**
  - Travel distance to an exit is 42m in lieu of 40m.

Separation of exits does not fully comply in the following areas:

- **Ground Floor:**
  - Up to 71m between alternative exits in lieu of 60m.

- **First Floor:**
  - Up to 83m between alternative exits in lieu of 60m.

Further details are required to show path of egress from the proposed tenancy on the first floor. Further details designs are needed to access whether the tenancy is passing through another sole-occupant unit to an exit.

4.3 Dimensions of Exits (BCA D1.6)

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm.

The following table summarises the exit widths required by BCA Clause D1.6:

Storey	Number of People	Exit Width Required	Exit Width Provided
Sydney Swans Head Quarter	119	2 meters	6 meters
Sydney Swift & Community Centre	62	1 meters	3 metres
Pool area	50* number provided from architect	1 meters	1.80 metres

The exit width provided is 6m.

The total aggregate exit width within the building caters for 525 occupants.

In the scenario of an event within the 9b assembly element of the building, the proposed drawings show the following total number of exits for both the Sydney Swans and Sydney Swifts Head Quarters;

Storey	Number of People	Exit Width Required	Exit Width Provided
Sydney Swans Head Quarter	1,598	13.65 meters	13.65 meters

Storey	Number of People	Exit Width Required	Exit Width Provided
Sydney Swifts Head Quarter	251	2.85 meters	2.85 meters

In accordance to the tables above in the scenario of an event; both building can accommodate a total of 1,849 occupants.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 920 mm doors).

4.4 Balustrading and Handrails (BCA D2.16 and BCA D2.17)

Generally

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the surface below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing between 150 – 760mm above the floor.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The public stairs and ramps located along an accessible path of travel should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

4.5 Slip Resistance

The adoption of BCA 2014 introduced a requirement for slip resistance of stairway treads and ramp surfaces. The requirements are as follows:

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

Application	***Surface conditions***	
	Dry	***Wet***
Ramp steeper than 1:14	*P4 or R11*	*P5 or R12*
Ramp not steeper than 1:14	*P3 or R10*	*P4 or R11*
Tread or landing surface	*P3 or R10*	*P4 or R11*
Nosing or landing edge strip	*P3*	*P4*

5.0 ACCESS FOR PEOPLE WITH DISABILITIES

5.1 General Building Access Requirements (BCA D3.1)

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2016 Amendment 1. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4-2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

Access for persons with a disability is to be provided as follows:-

Office/shops (Class 5/Class 6 buildings)

To and within all areas normally used by the occupants, but as the uses of these areas could be deemed inappropriate, confirmation is required as the appropriateness of the areas in question by the owners or tenant.

Assembly Halls/Sporting venues

To all required wheelchair seating spaces and to all areas normally used by occupants except tiers or seating areas or platforms not containing accessible wheelchair seating areas.

Swimming Pools (Class 10b)

To and into swimming pools with a total perimeter greater than 40 m, associated with a Class 9 building that is required to be accessible.

5.2 Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

In buildings over 500m2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

And where a pedestrian entry contains multiple doors, the following is required;

- Entrance containing not more than 3 doors, at least one of the door leaves must be accessible.
- Where an entrance contains more than 3 doors, not less than 50% of the door leaves must be accessible.

A door is considered to be accessible if it is automatic (open and closing) or is more than 850mm in clear opening width and contains the required door circulation space.

5.3 Provisions for Access within Buildings (BCA D3.3)

A building required to be accessible is required to be equipped with either a 1428.1 compliant lift or 1428.1 compliant ramp, (but the maximum vertical rise of a ramp must not exceed 3.6m).

An exemption to not provide either a lift or ramp exists for class 5, 6, 7b, or 8 buildings, where a building contains;

a) Less than 3 storeys.

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3 and as attached in appendix 1;
- Doorways must have a clear opening of 850mm;
- Within 2.0m of end access ways/corridors, turning areas spaces are required to be provided.
- Carpet pile height of not more than 11mm to an adjacent surface
- Any glazed capable of being mistaken for a doorway or opening must be clearly marked (or contain chair rail, hand rail or transom as per AS 1288 requirements).

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

5.4 Car parking (BCA D3.5)

Accessible car parking spaces are required to comply with AS 2890.6-2009 at the rate of 1 every 100.

Civil drawings are to be provided to show the total number of car parking with the building.

A ‘shared zone’ of minimum 5400mm x 2400mm is required adjacent to accessible car parking spaces, protected with a bollard.

5.5 Tactile Indicators (BCA D3.8)

Tactile indicators are required to be provided to warn occupants of all stairs (except Fire Isolated stairs) and ramps regardless of public nature or private environment and where an overhead obstruction occurs less than 2.0m above the finished floor level.

5.6 Seating in Assembly Buildings (BCA D3.9)

The location of wheelchair seats must cater for a representative range of seating provided.

In an assembly building, when fixed seating is provided, the wheelchair spaces to the following are required to be provided:

Number of fixed seats in a room or space	Number of wheelchair seating spaces	Grouping and location
Up to 150	3 spaces	1 single space; and 1 group of 2 spaces

5.7 Swimming Pools (BCA D3.10)

Where pools exceed 40m in total perimeter, at least 1 means of accessible entry in the form of the following is required.

a) Fixed or movable ramps (and an aquatic wheelchair) or
b) Zero depth entry at a maximum gradient of 1:14 (and an aquatic wheel chair)
c) Platform swimming pool lift (and an aquatic wheelchair) or
d) A sling style swimming pool lift

Where the perimeter exceeds 70.0m in total, sling style lifts are not permitted.

5.8 Stairs (BCA D3.3 inter Alia AS1428.1)

Stairs shall be constructed as follows:

a) Where the intersection is at the property boundary, the stair shall be set back by a minimum of 900mm so that the handrail TGSIs do not protrude into the transverse path of travel.
b) Where the intersection is at an internal corridor, the stair shall be set back in 300mm, so the handrails do not protrude into transverse path of travel.
c) Stairs shall have opaque risers.

d) Stair nosing shall not project beyond the face of the riser and the riser may be vertical or have a splay backwards up to a maximum 25mm.
e) Stair nosing profiles shall-
   - Have a sharp intersection;
   - Be rounded up to 5mm radius; or
   - Be chamfered up to 5mm x 5mm
f) All stairs, including fire isolated stairs shall, at the nosing of each tread have a strip not less than 50mm and not more than 75mm deep across the full width of the path of travel. The strip may be set back a maximum of 15mm from the front of the nosing. The strip shall have a minimum luminance contrast of 30% to the background. Where the luminous contrasting strip is affixed to the surface of the tread, any change in level shall not exceed a difference of 5mm.

5.9 Provisions for Accessible Sanitary Facilities (BCA F2.4)

Unisex Accessible Sanitary Facilities

An accessible unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only and provided in accordance with AS 1428.1-2009 and must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels and as per following.

Building Type	Minimum accessible unisex sanitary compartments to be provided
Office & assembly building,	a) 1 on every storey containing sanitary compartments; and b) Where a storey has more than 1 bank of sanitary compartments containing male and female sanitary compartments, at not less than 50% of those banks.

Ambulant Facilities

At each bank of toilets where there is one or more toilets in addition to an accessible unisex sanitary compartment, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1-2009 must be provided for use by males and females.

Where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations.

An accessible unisex sanitary compartment or an accessible unisex shower need not be provided on a storey or level that is not provided with a passenger lift or ramp complying with AS1428.1-2009

Accessible unisex showers

Accessible unisex showers must be provided in accordance with 1428.1 and at the following rates

Building	Minimum accessible unisex showers to be provided
sporting venues or gyms	1 for every 10 showers or part thereof provided

Building Code of Australia 2019 takes effect as of the first of May this year. As part of the Building Code of Australia, there are new requirements for Accessible Adult Change Facilities (AACF) is only required for:

- **Class 6 shopping centres:** Class 6 is the NCC building classification applicable to shopping centres.
- **Class 9b assembly buildings:** a building where people may assemble for civic, social, political or religious purposes; entertainment, recreation or sporting purposes (including indoor swimming pools); or transit purposes, for example a railway station or an airport.

In regards to class 9b, the following building are being proposed to have AACF in BCA 2019;

- New museums or redevelopments with a design occupancy greater than 1,500.
- New theatres or redevelopments with a design occupancy greater than 1,500.
- New stadiums or redevelopments with a design occupancy greater than 35,000.
- New indoor aquatic facilities where the main swimming pool area's perimeter exceeds 70m (typically sufficient to capture a 25m swimming pool and above).

The Sydney Swans HQ & Sydney Swift building development is not classified as any of the above 9b buildings.

5.10 Signage (BCA D3.6)

As part of the detailed design package, specifications will need to be developed indicating:

- Sanitary Facility Identification Signs (note that they are to comply with BCA Specification D3.6 and include the use of Braille, Tactile, etc and be placed on the wall on the latch side of the facility);
- Directional / Way Finding signs to the Lifts, Sanitary Facilities, etc;
- Hearing Augmentation System;
- Identify each door required by BCA Clause E4.5 to be provided with an exit sign, stating 'EXIT' and 'Level" number.

5.11 Hearing Augmentation (BCA D3.7)

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA, where ever in a 9b building, auditorium conference room on ground floor, meeting room on both storeys etc contain a PA system not used for emergency purposed or any ticket office or teller's booth or reception where the public is screened from the service provider

5.12 Lifts (BCA E3.6)

Lifts compliant to BCA E3.6 and BCA E3.7 must be provided, where required to be provided, with a minimum size of 1400 x 1600mm or 1100mm x 1400mm (whichever is appropriate) in size – with appropriate handrails and auditory commands.

6.0 FIRE SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures. A draft essential fire safety schedule can be found in Appendix B.

The building has an existing fire safety schedule, many of these standards a required to be upgraded to comply with the new works being proposed within the building.

6.1 Fire Hydrants (BCA E1.3)

A system of Fire Hydrants is required to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005 is required to be provided, please provide pressure and flow calculations for review.

Pressure and flow information will be required to confirm the required pressures and flow to the system, depending on the type of hydrant to be utilized;

- Feed hydrants (within 20m of hard stand for pumping appliance), 150 kPa
- Attack hydrant (within 50m of hard stand) 250 kPa
- Hydrants on a pump station, 700 kPa

The flow requirements depend on the size of the fire compartment and type of building, for this project the requirements are 10L/s with 3 hydrants operating.

The building is required to be provided with a booster assembly as part of the fire hydrant requirements. The booster is required to be located attached to the building at the main entry. If remote from the building, the booster is to be located at the main vehicle entry and within sight of the main entry of the building within 20m of a hardstand area.

As the premises has multiple entries to the building the hydrant booster will not be located within the sight of the main entry as required by AS2419.1-2005, this will require Fire Engineering performance solution.

6.2 Fire Hose Reels (BCA E1.4)

A Fire Hose Reel System is required BCA Clause E1.4 and AS2441-2005

Fire hose reels are to be located within 4m of exits and provide coverage within the building based on a 36m hose length. Where required, additional fire hose reels shall be located internally as required to provide coverage.

Fire Hose reel are not to extend through Fire and Smoke Walls.

Fire services drawings are required to be provided to show the location of each fire hose reel to show the entire building has coverage.

Applicant has requested to not have the building be provided with a fire hose reel as required. This will require a performance solution prepared by a Fire safety engineer.

6.3 Fire Extinguisher (BCA E1.6)

Table E.6 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions – Class 2 to 9 buildings	(a) To cover Class AE or E fire risks associated with emergency services switchboards. (Note 1) (b) To cover Class F fire risks involving cooking oils and fats in kitchens

Fire extinguishers are to be located in accordance with AS 2444, often collocated with fire hydrants and/or fire hose reels.

Fire services drawings are required to be provided to show the location of each fire extinguisher.

6.3 Automatic Sprinkler Protection (BCA E1.5)

Automatic sprinkler protection is required to Specification E1.5 and AS2118.1-2017 to the following areas:

- Throughout any fire compartment that exceeds 2,000m2 in floor area or 12,000m3 in volume where occupancies of excessive hazard are proposed.

Location of pumps, tanks, FIP, control valves and booster assemblies will be subject to review.

An occupant warning system should be provided in accordance with BCA Specification E1.5.

6.4 Exit Signs and Emergency Lighting (BCA E4.2 and BCA E4.5)

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2005

6.5 Smoke Hazard Management (BCA E2.2)

Smoke hazard management shall be provided throughout the building by means of the following systems:

- As building has a fire compartment greater that 5000m^2 an Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2015.
  - Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2015, or
  - A sprinkler system complying with Specification E1.5, and

The smoke detection are required to have automatic shutdown of air-handling system, in accordance with Spec E2.2b and AS 1670.1 for a class 9b building.

A fire indicator panel is required as part of the detection system. This panel is to be located in accordance with Section 3.9 of AS 1670.1, at an unobstructed location within the main entry and should be incorporated within the fire control room. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

It is proposed that the smoke exhaust requirements will be omitted, this is to be addressed as a fire engineered solution.

6.7 Lift Services (BCA E3.42 and BCA E3.6)

The passenger lifts to be installed are to be: -

- Fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA.

Be provided with the following: -

- A handrail in accordance with AS 1735.12;
- Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm;
- Minimum clear door opening complying with AS 1735.12;
- Passenger protection system complying with AS 1735.12;
- Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12;
- Lighting in accordance with AS 1735.12;
- Automatic audible information within the lift car to identify the level each time the car stops; and
- Audible and visual indication at each lift landing to indicate the arrival of the lift car.

7.0 HEALTH AND AMENITY

7.1 Sanitary Facilities (BCA F2.2 and BCA F2.3)

<u>Retail</u>

Sanitary facilities are required to be provided for employees. In relation to the public, sanitary facilities are required to be provided for café / restaurant where there are more than 20 seats.

<u>Offices</u>

Facilities for staff should be provided at a rate at the following 1-20.

The sanitary & other facilities within the development would generally consist of: -

Sanitary Facilities Provided			
	WC	Urinals	Basins
Ground Floor office area:			
Male	2		3
Female	2		2
Accessible	2		2
Café and Blood Bank:			
Male	2		2
Female	2		2
Accessible	2		2
Level One office area:			
Male	5	3	5
Female	6		6
Accessible	2		2
Community Centre & Swimming Pool			
Male	3	0	3
Female	3		3
Accessible	2		2
Ground Floor 9b portion:			
Male	3	0	3
Female	3		3
Accessible	1		1
AFL Players Facilities:			
Male	6	6	5
Female	3		3
Sydney Swift Facilities:			
Male			
Female	3		3
Assessable			
Sydney Swift Level One:			

Male	2		2
Female	2		2
Assessable	1		1
The Above Facilities are adequate for 270 males & 270 females			

Note:
1. The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

Bathroom Construction

Where bathrooms or rooms containing water closets have the WC within 1200mm of the doorway, the door shall be either sliding, open outwards, or be provided with removable hinges.

7.2 Floor Wastes (BCA F1.11)

Floor wastes to be provided within bathrooms and laundries where located above another sole occupancy unit. The floor shall be sloped towards these wastes.

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

7.3 Light and Ventilation (BCA Part F4)

Class 5 & 9

Artificial lighting complying with AS/NZS1680.0-2009 is to be incorporated with the final detailed design to be developed to confirm this.

8.0 ENERGY EFFICIENCY

The proposed development shall comply with Part J of the BCA 2016 Amdt 1. This is acceptable as BCA 2019 section J allows for a 12 month transition period.

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:

    - Building Fabric
    - Glazing
    - Building Sealing
    - Air Conditioning & Ventilation Systems
    - Artificial Lighting & Power
    - Hot Water Supply

Please note, the building fabric my exceed 5% allowance for skylights. Location of proposed roof skylights are to be confirmed.

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a climate zone 5.

Due to special nature of the building some energy provisions may not be appropriate.

8.1 Interior Artificial Lighting

The maximum design illumination load is not to exceed;

Office	9W/m2
Retail	22W/m2
Auditoriums	10W/m2

Artificial Lighting must be controlled by a time switch, occupant sensor or a security swipe pass system.

Each light control in a building must not operate lights within an area of more than;

- 250m2 for a space of not more than 2000m2
- 1000m2 for a space of more than 2000m2

Artificial lighting around the lighting. If it exceeds a total of 100W must;

- Be controlled by a day light sensor or time switch and
- Be controlled by motion detection or have an average light source efficiency of not less than 60 Watts / Lumens.

8.2 Access for Maintenance

Access if to be provided to all plant, equipment and components associated with the provision of the above energy requirements i.e.

- Adjustable or monitored shading devices
- Time switches and motion detectors
- Room temperature thermostats
- Plant thermostats such as boilers or refrigeration units
- Motorised air dampers and central valves
- Reflectors, Lenses and Diffusers of light fittings
- Heat transfer equipment.

Appendix A - Design Documentation

The following documentation was used in the assessment and preparation of this report: -

Drawing No.	Title	Date	Drawn By	Rev
AT.40.0002	RHI Section – North South	15/03/19	Populous	A
AT.42.0001	RHI Elevations – East & West	15/03/19	Populous	A
AT.42.0002	RHI Elevations – North & South	15/03/19	Populous	A
AT.20.0200	GA PLAN - LEVEL 01 MEZZANINE	11/04/19	Populous	B
AT.20.0500	GA PLAN - ROOF	11/04/19	Populous	C
AT.20.0000	GA PLAN - GROUND FLOOR	11/04/19	Populous	C
AT.20.0100	GA PLAN - LEVEL 01	11/04/19	Populous	C

Appendix B – Draft Fire Safety Schedule

No.	Measure	Particulars of Measure *(including where the requirement for the measure is set out or described i.e. in building plans or in a performance solution report)*
1.	Automatic Fire Detection and Alarm System	BCA 2016 Amendment 1 Spec. E2.2a & AS 1670.1 – 2015, AS/NZS 1668.1 - 2015
2.	Automatic Fire Suppression System (sprinklers)	BCA 2016 Amendment 1 Spec. E1.5 & AS 2118.1 – 2017,
3.	Emergency Lighting	BCA 2016 Amendment 1 Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005 Amdt 1 & 2
4.	Exit Signs	BCA 2016 Amendment 1 Clauses E4.5, NSW E4.6 & E4.8 and AS/NZS 2293.1 – 2005 Amdt 1 & 2
5.	Fire Hose Reel Systems	BCA 2016 Amendment 1 Clause E1.4 & AS 2441 – 2005 Amdt 1
6.	Fire Hydrant Systems	BCA 2016 Amendment 1 Clause E1.3 & AS 2419.1 – 2005 Amdt 1
7.	Fire Seals protecting fire resisting components of the building	BCA 2016 Amendment 1 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014
8.	Lightweight Construction	BCA 2016 Amendment 1 Clause C1.8, C3.17 & AS 1530.3 – 1999
9.	Portable Fire Extinguishers	BCA 2016 Amendment 1 Clause E1.6 & AS 2444 – 2001
10.	Smoke Detectors and Heat Detectors	BCA 2016 Amendment 1 Spec E2.2a & AS 1670.1-2015, AS/NZS 1668.1-2015
11.	Emergency Evacuation Plan	AS 3745 – 2002
12.	Fire Collars protecting fire resisting components of the building	BCA 2016 Amendment 1 Clause C3.12, C3.15, C3.16 & AS 1530.4 – 2014
13.	Paths of Travel	EP&A Reg 2000 Clause 183, 184, 184 & 186

Appendix C - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016 Amendment 1:

Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes) *Structural adequacy/Integrity/Insulation*			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/ 30/ 30	120/ 30/ 30	180/ 90/ 60	240/ 90/ 60
9 to less than 18 m	90/ 30/–	120/ 30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90 / 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Fire-resisting stair *shafts*				
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
OTHER LOADBEARING INTERNAL WALLS				

and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–