BCA Assessment Report

Precision Golf, Unit 11, 4-10 Inman Road, Cromer

Project:	Precision Golf, Unit 11, 4-10 Inman Road, Cromer
Reference No:	116746-BCA-r1
Date:	27 September 2022
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Document Control

Revision	Date	Description	
116746-BCA-r1	27 September 2022	Development Application BCA Assessment Report	
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EXECUTIVE SUMMARY

This document provides an assessment of the architectural design drawings for the proposed mixed-use development at Precision Golf, Unit 11, 4-10 Inman Road, Cromer, against the Deemed-to-Satisfy provisions of the Building Code of Australia (BCA) 2019, Volume 1 Amendment 1.

Part 3 ‘Matters for Further Consideration’ of this report outlines the identified BCA compliance issues that require further information or consideration and/or assessment as Performance Solutions.

1 ADOPTION OF BCA 2022

1.1. Proposed Introduction

The ABCB will first release a preview of the new energy efficiency and condensation requirements on 1 September 2022. This will be available to download as a pdf from ncc.abcb.gov.au.

Building Ministers agreed to publish NCC 2022 on 1 October 2022. The full and final version of NCC 2022, in its entirety, will go live on NCC online from this date. Printed copies will then also become available for sale from commercial providers from 1 October.

The States and Territories will bring the majority of NCC 2022 into full effect from 1 May 2023, to allow industry time to learn and adapt to the new requirements.

There will also be transition periods for specific requirements. These include:

- New livable housing requirements, new energy efficiency and condensation mitigation requirements – 1 October 2023
- New low lead in plumbing product requirements – 1 September 2025.

These provisions of NCC 2022 will be considered voluntary until then.

1.2. Major Changes known to date

Below is a summary of the proposed changes which were released in the May 2022 draft preview. We have also provided a table below for quick reference. Your project has been assessed against the proposed changes where applicable.

Consistent volume structure

BCA2022 uses a new structure and clause referencing system to create better consistency across all volumes. While the new Section-Part-Type-Clause system makes the NCC look different at first, it's intended to improve user experience and make it more web accessible.

The new structure results in a reorganisation of specifications and parts, some of which are contained in the table below.

Fire safety of external walls

Volume One contains a number of amendments to the fire safety of external walls. This clarifies interpretation of concessions from non-combustibility requirements. Also included is a new provision that prevents fixing of certain bonded laminated cladding panels by adhesive only.

Waterproofing

There are new DTS Provisions in Volume Two for waterproofing of wet areas, not previously covered by an acceptable construction practice or manual.

Waterproofing in Volume One is restructured into three parts to enhance readability and accommodate future changes.

Weatherproofing

Volume One contains additional DTS Provisions, providing new solutions for weatherproofing of external walls. These include references to weatherproofing provisions in Australian Standards for masonry, autoclaved aerated concrete and metal wall sheeting.

Falls for floor wastes

Volumes One and Two are amended to require bathrooms and laundries where a floor waste is installed, to have a fall of the floor in order to help drain the surface. This also applies to floor wastes included voluntarily.

Number of exits

Some minor amendments to the required number of exits are in Volume One. This includes a new concession allowing a single exit for a part of a storey in some circumstances, where previously at least two exits were required.

1.3. Summary of Major Changes

Summary of Major Changes		
Clause Reference		Description of proposed changes
BCA 2019	BCA2022	
C1.9	C2D10	**Non-combustible building elements** Further exemptions to the non-combustible requirements of external walls added. Larger list of materials that can be used where non-combustible materials are required.
-	C2D15	**Fixing of Bonded Laminated Cladding panels**
C2.5	C3D6	Fire separation of **early childhood centres** and requirement for 2 fire compartments per storey.
D1.2	D2D3	**Number of Exits** • Ground floor can be provided with a single exit in lieu of 2 • 2 exits required from each storey and each fire compartment of an **early childhood centre**
D1.6	D2D7 – D2D11	**Dimensions of Exits** Clause split into multiple clauses
D1.11	D2D16	**Horizontal Exits** – New provisions relating to early childhood centres
D2.16	D3D17 - D3D21	**Barrier** clause split into multiple clauses
E1.5	E1D4 - E1D13	**Sprinkler** requirements split into separate clauses for each building class.
E2.2	E2D3 – E2D21	General Requirements – **Smoke Hazard Management** Tables removed and replaced with clauses for each building class
F1.7	Part F2	**Wet Area and Overflow Prevention**
F1.11	F2D4	**Floor wastes –** floor must be graded with a minimum fall of 1:80
FP1.4	Part F3	**Roof and Wall Cladding** Introduces DTS provisions for walls and roofs in lieu of the previous BCA requiring performance solutions for all weatherproofing

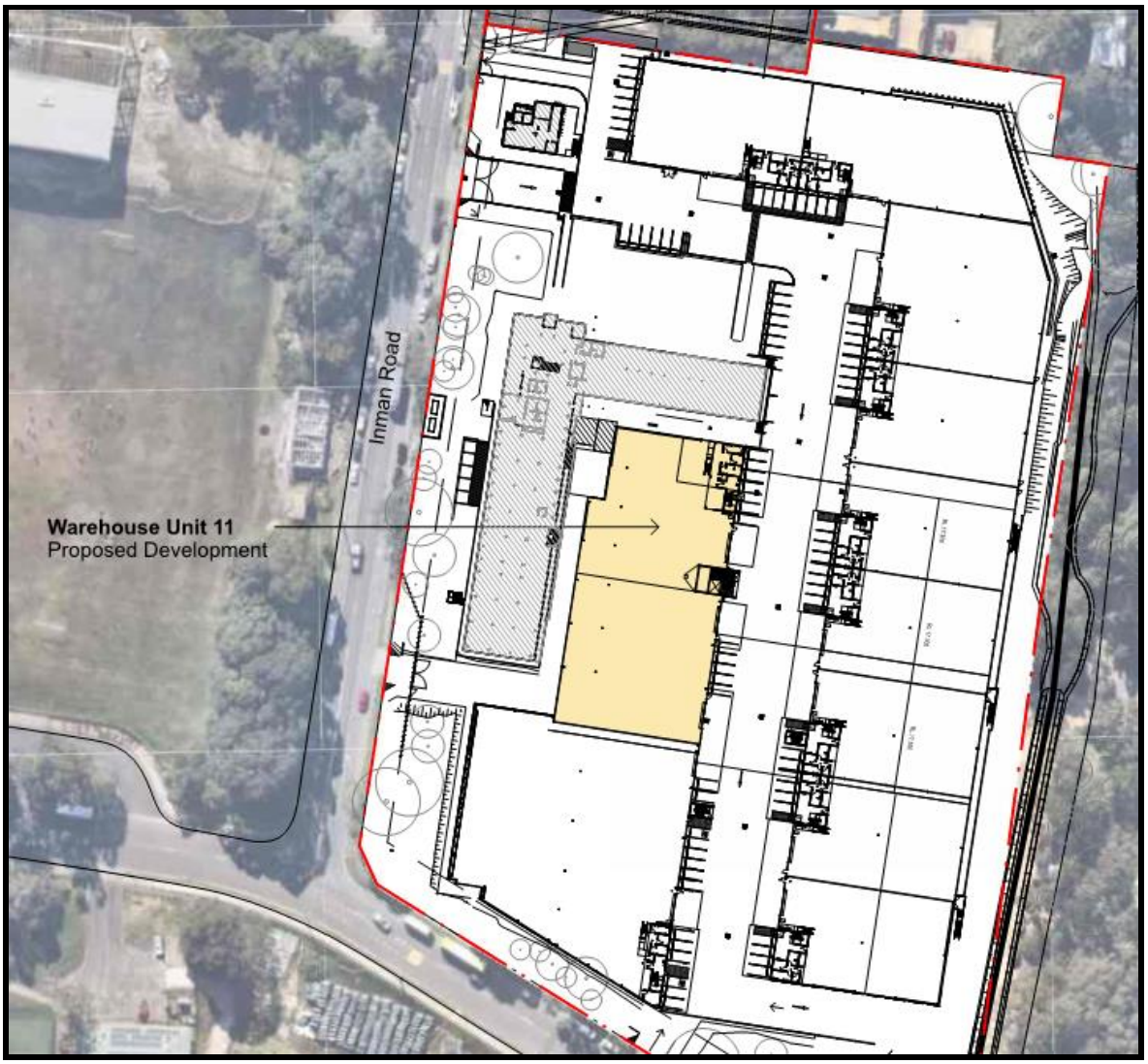
2 BASIS OF ASSESSMENT

2.1. Location and Description

The building development, the subject of this report, is located at Precision Golf, Unit 11, 4-10 Inman Road, Cromer. The existing building contains a two (2) storey club building containing entrance at ground floor level and the main club facilities at first floor level.

The club has an existing passenger lift at the front of the building with external access and it is proposed to provide an internal passenger lift and internal alterations to accommodate the lift and change of use of some areas.

The change in use includes the relocation of gaming area to ground floor level and the provision of a sports bar and TAB area at first floor level.



2.2. Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019, Amendment 1, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

2.3. Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2019, Amendment 1 (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

2.4. Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the National Construction Code – Plumbing Code of Australia Volume 3

(b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010)

(c) The provisions of disabled access to the subject development against the deemed to satisfy provisions of Part D3, E3.6 and F2.4 of BCA2019;

(d) Demolition Standards not referred to by the BCA;

(e) Work Health and Safety Act 2011;

(f) Requirements of Australian Standards unless specifically referred to;

(g) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and

(h) Conditions of Development Consent issued by the Local Consent Authority.

2.5. Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

3 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

3.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys of three (3).

3.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Description
5	Mezzanine Level	Commercial (offices)
7a	Lower Ground	Carpark
7b/8	Part Lower Ground & Ground Level	Warehouse/Industrial
9b	Part Ground Floor	Assembly Building (Unit 11 Indoor Golf) (& Unit 1 Indoor Pool)

3.3. Effective Height (Clause A1.0)

Building 1 & 2 has an effective height of less than 25 metres and less than 12 metres.

3.4. Type of Construction Required (Table C1.1)

Building 1 (Units 1-4) is required to be of Type A Construction.

Building 2 (Units 5-11) is required to be of Type A Construction.

Note: For the purpose of this assessment buildings 1 & 2 are considered a United Building

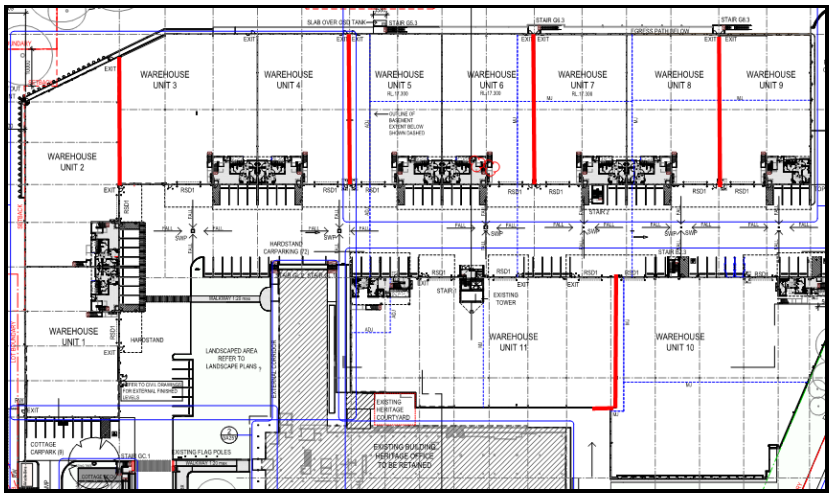
3.5. Fire Compartmentation

The following *fire compartments* have been provided:

(a) Fire Compartment G-10

(b) Fire Compartment G-11

Note: Fire Compartment **walls** between warehouses shown below:-



3.6. Floor Area and Volume Limitations (Table C2.2)

The building is subject to maximum floor area and volume limits of:-

Class 6/7b/8	Maximum Floor Area	5 000 m^2
	Maximum Volume	30 000 m^3
Class 5/9b	Maximum Floor Area	8 000 m^2
	Maximum Volume	48 000 m^3

3.7. Exits

The following points in the building have been considered as the exits:

(a) Each Warehouse tenancy is provided with an egress door, discharging to the central podium which is deemed to be ''roof as open space'' in accordance with D2.12. Base Building Fire Engineering Report addresses egress from the central podium/driveway.

(b) Mezzanines to units 1-11 have internal non-fire isolated stairs

3.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 5

3.9. Location of Fire-source features

The fire source features for the subject development are:

North: The allotment boundary adjoining Lot 2 DP 1220196

South: The far boundary of South Creek Road

West (Building 2): The Existing Heritage Cottage

East : The side allotment boundary (Note: units 3-9 are not fire source features to unit 11)

In accordance with Clause 2.1 of Specification C1.1, a part of a building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that–

(a) has an FRL of not less than 30/–/–; and

(b) is neither transparent nor translucent.

4 BCA ASSESSMENT

4.1. Introduction

The assessment undertaken is in relation to the plans prepared for the development consent application. The technical details required for a development consent are far less than that required for a construction certificate and as such, this assessment is designed to address a higher level assessment of the building against the provisions of the BCA.

The main purpose of this report is to address any major design changes required to the building, services required to be installed, and the fundamentals of design required by sections C, D, E, F, G and H (where applicable) of the BCA. This report does not address the design requirements for the structure of the building (Section B), or for the detailed design of services (Section E).

The summary below is to be read in conjunction with the BCA specification contained in Annexure F of the report.

4.2. Fire Resistance and Stability – Part C1 & Specification C1.1

The existing building is constructed of the following elements:

Element	Method of Construction
External Walls	• Tilt up concrete • Aluminium cladding panels to upper level
Floors	• Concrete slab
Roof	• Metal
Loadbearing elements	• Brick walls • Steel columns

The required fire resistance levels for the building elements are outlined in **Annexure C** of this report.

The external walls and all components of the wall, in a building of Type A construction, are required to be non-combustible. The plans indicate the existing external walls will remain unchanged from the base building design.

Where the change of use to the ground floor level results in the space being a ‘’conditioned space’’ it will be necessary to install insulation to the external walls and will require stud wall construction to accommodate. Further design development of external walls will be required at Construction Certificate stage to ascertain actual wall make up.

Further details will be required to be submitted at CC stage for assessment, however compliance is readily achievable by a number of common wall types.

All internal wall and floor coverings to have fire hazard properties complying with BCA Specification C1.10.

4.3. Compartmentation and Separation – Part C2

The current building has been designed to ensure that the base building development complies with the fire compartmentation requirements of Part C2. The proposed development to accommodate Precision Golf will not alter the maximum fire compartment floor area or volume as the fitout works are internal only with the existing wall construction.

The tenancy (Unit 11) is considered a single fire compartment and when assessed the floor area and volume of this compartment is less than that permitted by Clause C2.2 of the BCA As such compliance with the provisions of the BCA for compartmentation is readily achieved.

No additional fire separation is required between the ground floor level and the upper level office/physio room.

4.4. Protection of Openings – Part C3

4.4.1. Openings in external walls

The building (namely Unit 11) is setback less than 6 metres from the fire source feature of the existing heritage building. This has been captured within the base building fire engineering report prepared by Affinity Fire and the external wall was required to achieve FRL120/120/120 and window openings to be drencher protected. As a result of the proposed development there will be no change to the external wall construction.

4.4.2. Openings in Floors for Services and Service Installations

Where electrical, plumbing, mechanical or other services pass through an element of construction that is required to achieve a fire resistance level (FRL), the service installation shall not compromise the fire resistance level of the element.

As most of the proposed development relates to cosmetic changes it is unlikely that fire sealing of services will be necessary. However, where internal alteration works result in new services penetrating the floor, all new service installations must be fire sealed with a compliant system such as a fire collar on PVC pipes or fire rated mastic around electrical cables.

Compliance with Part C3 of the BCA can be readily achieved by the proposal subject to further design development at Construction Certificate stage.

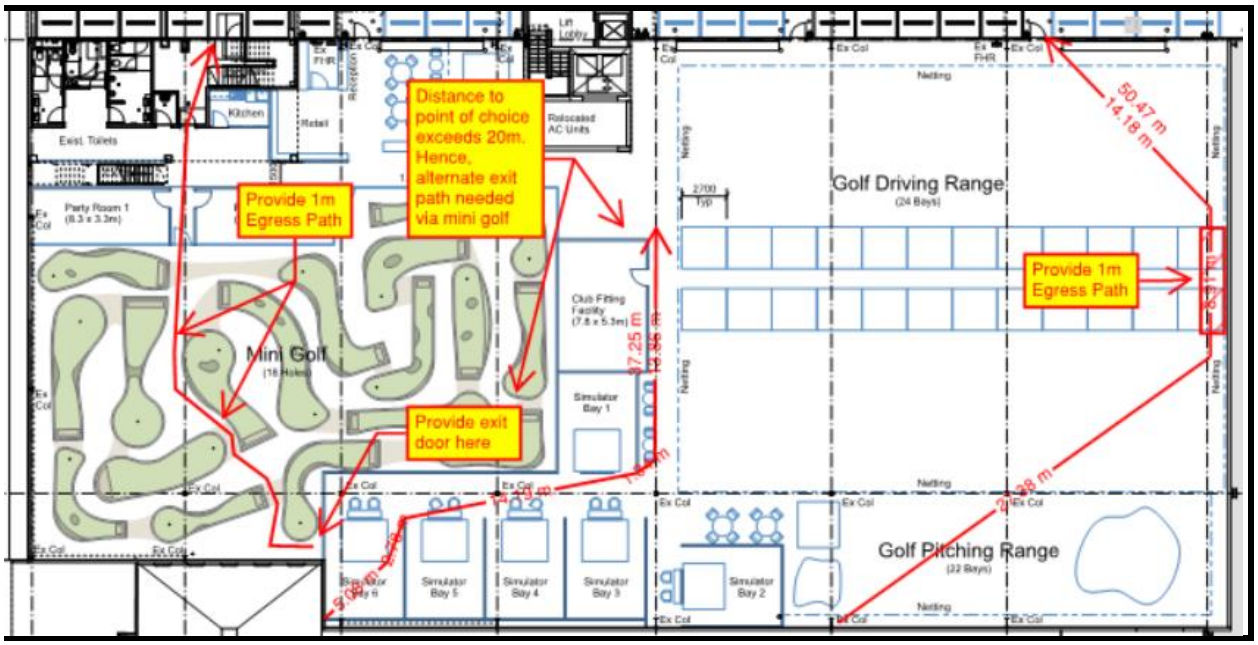
4.5. Occupant Access and Egress – Section D

4.5.1. Egress from the building

Ground Floor – Unit 11

The base building fire engineering report permitted increased exit travel distance to Unit 11 of up to 50 metres in lieu of 40 metres. And distance between alternative exits of up to 90 metres in lieu of 60 metres.

As a result of the proposed internal change of use and fit out the internal exit travel distance will increase to account for the driving range and mini golf and therefore, it will be necessary to provide additional corridors and passageways to achieve compliance with the distances permitted by the base building fire engineering report from Affinity Fire Engineering. The specific locations where additional corridors and accessways is indicated in the following marked up drawing and subject to further design development at Construction Certificate stage it is considered that compliance will be readily achievable.



The final exit doors leading from the building are existing outward swinging doors and these are permitted to remain with single action lever hardware due to the proposed maximum population being up to 35 persons with up to 5x staff. Therefore, due to population below 100 persons it is not necessary for panic bars to be installed.

First Floor – Unit 11

Exit travel distance is less than 20 metres to the internal stairs as required by BCA Clause D1.4.

The base building design will include construction of stairs and barriers to the first floor level and the proposed development will not alter or change the compliance of the existing building.

External Egress

The external egress is to the central podium/driveway area which is deemed ‘’roof as open space’’. The base building fire engineering report considered egress from the roof as open space and the proposed development does not alter or change assumptions of the fire engineering report.

4.5.2. Access for people with disabilities

To be assessed within separate access consultants report.

4.6. Services and equipment- Parts E1, E2 and E4

The building is required to be provided with the services and equipment set out in Annexure B of this report. The annexure also outlines the standard of performance to be achieved by the services and equipment.

4.6.1. Fire Fighting Equipment – Part E1

Fire Hydrant

The building has a floor area in excess of 500m^2 and therefore is required to be served by a Fire Hydrant system in accordance with clause E1.3 of BCA and AS2419.1-2005 except as varied by the base building fire engineering report by Affinity Fire Engineering.

The proposed development does not extend existing fire hose coverage.

Fire Hose Reel
The building has a floor area in excess of 500m^2 and therefore is required to be served by a Fire hose Reel system in accordance with clause E1.4 of BCA and AS2441-2005.

There is currently an existing fire hose reel within the building. The proposed development does not extend existing fire hose coverage.

Portable Fire Extinguishers
Portable Fire Extinguishers are required to be installed to the building in accordance with clause E1.6 of the BCA and AS2444-2001.

4.6.2. Smoke Hazard Management – Part E2

There is currently a smoke detection and alarm system installed within the building in accordance with AS1670.1-2018 except as varied by the base building fire engineering report by Affinity Fire Engineering to permit detectors on a 20m x 20m grid spacing (and detectors not required to concealed spaces)

As a substantial class 9b type use (ie mini golf and driving range) it will be necessary for the mechanical ventilation system to shutdown upon activation of smoke detectors in accordance with NSW Table E2.2b and Clause 5 of Specification E2.2a.

As a result of the proposed new fit out works the smoke detection and alarm system will need to be retained and modified as necessary to maintain compliance. Further details to be provided at Construction Certificate stage.

4.7. Lift Installations – Part E3

There is no existing internal passenger lift to Unit 11, As part of the base building design a performance solution was provided by BCA Logic due to the mezzanine office level being less than 200m2 and invoking the concessions of BCA Clause D3.3(f).

4.7.1. Visibility in an emergency, exit signs and warning systems – Part E4

The existing building has emergency lighting and exit signs installed throughout. As a result of the proposed internal alterations it will be necessary for emergency lighting and exit signs to be installed throughout to reflect the new arrangement and ensure EXIT signs are visible in all locations.

Further details to be provided at Construction Certificate stage.

4.8. Facilities in Class 3 to 9 buildings – Part F2

Clause F2.3 of the BCA requires facilities in accordance with BCA table F2.3.

From an assessment of the existing sanitary facilities which are located to the ground floor level the following populations will be served based upon a predominate Class 9b use (sports venue):-

Ground Floor

Males
2WC = 40
3x Urinal = 30 (Access WC counted here)
3x Handwash basins = 30 (Access WC counted here)

Females
3 WC's = 30 (Access WC counted here)
3 Handwash basins = 30 (Access WC counted here)

Based upon equal numbers and limiting factor of both male urinals (30) and female WCs (30) the ground floor amenities will serve up to 60 persons which is greater than the estimated population of 35 persons.

First Floor

From an assessment of the existing sanitary facilities which are located to the first floor level the following populations will be served based upon a predominate Class 5 office / medical centre use:-

Males
1WC = 20
1x Urinal = 25
1x Handwash basin = 30

Females
1 WC = 15
1x Handwash basin = 30

Based upon equal numbers and limiting factor of female WC's (15) the first floor amenities will serve up to 30 persons which is in excess of the staff population of x5. This will also serve patients/clients of the physio clinic where needed.

4.9. Room Heights – Part F3

The existing ceiling heights to the building are greater than 2400mm throughout and as a result of the proposed development there will be no reduction in ceiling height. All new rooms to be provided with at least 2400mm ceiling heights in accordance with BCA Clause F3.1.

4.10. Light and Ventilation – Part F4

Natural light is not required to the development.

The proposed change in use will introduce more populations to the ground floor level resulting in the requirement for mechanical ventilation in accordance with BCA Clause F4.5 and AS1668.2.

Where existing ducting is to be modified and additional ventilation provided due to varying occupant loads, the existing mechanical system will require an assessment by mechanical consultant to ensure compliance of the system with AS1668.2

4.11. Ancillary Provisions – Part G

The development does not contain any new works applicable to the provisions of Part G, therefore; this is not applicable to the subject development.

4.12. Energy Efficiency – Part J

Section J to be assessed separately by energy consultant. Consideration to be given to external wall insulation and total R-values where the proposed ground floor becomes a ‘’conditioned space’’. Where insulation is recommended it will need to be non-combustible in accordance with BCA Clause C1.9.

6 STATEMENT OF COMPLIANCE

The plans assessed were developed to a standard suitable for submission as a development application and do not contain all the details necessary to allow a CC to be issued. As such, this assessment was limited to the major items of the BCA with the view of identifying any items that may result in a modified development consent being required, or additional key items that need to be included in the design.

The architectural design documentation as referred to in report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying with that Code.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 3. Architectural Plans

Architectural Plans Prepared by SBA Architects Pty Ltd			
Drawing Number	**Revision**	**Date**	**Title**
DA01	A	10/08/2022	Location Plan
DA02	A	10/08/2022	Ground Floor Plan
DA02 (DA03)	A	10/08/2022	Ground Floor Plan (First Floor Plan)
DA04	A	10/08/2022	Elevation and Section

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

The following existing fire safety measures are those nominated in the fire safety schedule for the base building construction which is yet to be completed. Once an Occupation Certificate is issued it is likely that the fire safety schedule will again vary the following measures and will need to be re-considered at Construction Certificate stage for the Precision Golf change of use.

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Fire doors (including self closing non-combustible doors to warehouse front wall)	**BCA2019 C2.12** (Separation of Equipment) **BCA2019 C3.4** (Acceptable methods of Protection) **BCA2019 C3.5** (Doors in Fire Walls) AS1735.11- 1986 **BCA2019 C3.13** (Opening in Shafts) Spec C3.4 AS1905.1: 2015 **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
2.	Fire seals protecting openings in fire resisting components of the building	**BCA2019 C3.15** (Openings for service installations) **BCA2019 C3.16** (Construction joints) **BCA2019 Spec C3.15** **BCA2019 D2.12** AS1530.4:2014 & AS4072.1-2005 **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
3.	Fire shutters	**BCA2019 C3.4** (Acceptable methods of protection) **BCA2019 Spec. C3.4** AS1905.2-2005 **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
4.	Lightweight construction (including fire spray to steel columns)	**BCA2019 C1.1, Spec. C1.1** **BCA2019 C1.8, Spec C1.8** **BCA2019 C2.7** (Fire Walls) AS1530.4:2014

Item	Essential Fire and Other Safety Measures	Standard of Performance
		Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022
General		
5.	Fire control centre	**BCA2019 E1.8** **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
6.	Portable fire extinguishers	**BCA2019 E1.6** AS 2444–2001 **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
7.	Fire blankets	AS 2444–2001
General Egress		
8.	Warning & operational signs	**BCA2019 D2.23 (**Signs on Fire Doors) **BCA2019 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2019 E3.3** (Lift Signs)
Lifts		
9.	Access to Lift Pits > Located at lowest level or if >3m provided through an access door	**BCA2019 D1.17** (Access to Lift Pits) 'DANGER LIFT WELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'
Electrical Services		
10.	Automatic fire detection & alarm: > Incorporating a thermal detection system in the basement carpark	**BCA2019 E2.2**, NSW Table E2.2a, **Spec E2.2a** - Clause 4 (Smoke detection system) **Spec E2.2a** - Clause 7 (BOWS) AS 1670.1:2018 (Fire) – Section 7 (Detectors) **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
11.	Emergency lighting	**BCA2019 E4.2, E4.4** AS/NZS 2293.1:2018
12.	Exit signs	**BCA2019 E4.5** (Exit Signs)

Item	Essential Fire and Other Safety Measures	Standard of Performance
		BCA2019 E4.6 (Direction Signs) **BCA2019 E4.8** (Design and Operation - Exits) AS/NZS 2293.1:2018
Hydraulic Services		
13.	Automatic fire suppression systems > General Sprinklers > Combined Sprinklers and Hydrant	**BCA2019 E1.5** AS 2118.1:2017 (Sprinklers) AS 2118.6:2012 (Combined Sprinklers/Hydrant) **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
14.	Wall wetting drenchers (Unit 11 windows)	**BCA2019 C3.4** **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
15.	Fire hydrant systems > NSW Storz Couplings	**BCA2019 E1.3** AS 2419.1:2005 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections' **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
16.	Hose reel systems	**BCA2019 E1.4** AS 2441:2005 **Fire Engineering Report prepared by Affinity –Report 212018_FER_02 dated 24/5/2022**
17.	System Monitoring Monitoring Required for any: > Any Sprinkler System	**BCA2019 E1.5, Spec E1.5** AS2118.1-2017 AS 1670.3:2018
Mechanical Services		
18.	Fire dampers	**BCA2019 E2.2, Spec E2.2a** **BCA2019 C3.15** AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015

Item	Essential Fire and Other Safety Measures	Standard of Performance
19.	1. Mechanical air handling systems 2. Mechanical ventilation to carpark. 3. Shutdown of mechanical ventilation system to Unit 11	**BCA2019 E2.2, Table E2.2a, NSW Table E2.2b** AS 1668.1:2015 (Amdt 1) **Note: 5.5.3 Override control** To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. **Note:** Signage should be located at the car park entry indicating the location of the control switches.

ANNEXURE C FIRE RESISTANCE LEVELS

Annexure C - Fire Resistance Levels

The following fire resistance levels (FRL's) are required for the various building elements, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction

Table 4. Type A Construction

Item	Class 7b	Class 5 & 7a
Loadbearing External Walls (including columns and other building elements incorporated therein) - Less than 1.5m to a *fire- source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire source feature*	240/240/240 240/240/180 240/180/90	120/120/120 120/90/90 120/60/30
Non-Loadbearing External Walls - Less than 1.5m to a *fire-source feature* - 1.5 – less than 3m from a *fire-source feature* - 3m or more from a *fire-source feature*	-/240/240 -/240/180 -/-/-	-/120/120 -/90/90 -/-/-
External Columns - Loadbearing - Non-loadbearing	240/-/- -/-/-	120/-/- -/-/-
Common Walls & Fire Walls	240/240/240	120/120/120
Stair and Lift Shafts required to be fire-resisting - Loadbearing - Non-loadbearing	240/120/120 -/120/120	120/120/120 -/120/120
Internal walls bounding sole occupancy units - Loadbearing - Non-loadbearing	240/-/- -/-/-	120/-/- -/-/-
Internal walls bounding public corridors, public lobbies and the like: - Loadbearing - Non-loadbearing	240/-/- -/-/-	120/-/- -/-/-
Ventilating, pipe, garbage and like shafts: - Loadbearing - Non-loadbearing	240/120/120 -/120/120	120/90/90 -/90/90
Other loadbearing internal walls, beams trusses and columns	240/-/-	120/-/-
Floors	240/240/240	120/120/120
Roofs[1]	240/90/60	120/60/30

ANNEXURE E DEFINITIONS

Annexure E - Definitions

Average specific extinction area

Average specific extinction area means the average specific extinction area for smoke as determined by AS 5637.1:2015.

Critical radiant flux

Critical radiant flux (CRF) means the critical heat flux at extinguishment (CHF in kW/m2) as determined by AS ISO 9239.1:2003.

Designated bushfire prone area

Designated bushfire prone area means land which has been designated under a power of legislation as being subject, or likely to be subject, to bushfires.

Effective height

Effective height means the vertical distance between the floor of the lowest storey included in a determination of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).

Envelope

Envelope, for the purposes of Section J in Volume One, means the parts of a building's fabric that separate a conditioned space or habitable room from—

(a) the exterior of the building; or

(b) a non-conditioned space including—

(i) the floor of a rooftop plant room, lift-machine room or the like; and

(ii) the floor above a carpark or warehouse; and

(iii) the common wall with a carpark, warehouse or the like.

Exit

Exit means –

(a) Any, or any combination of the following if they provide egress to a road or open space—

(i) An internal or external stairway.

(ii) A ramp.

(iii) A fire-isolated passageway.

(iv) A doorway opening to a road or open space.

(v) A horizontal exit or a fire-isolated passageway leading to a horizontal exit.

Fire compartment

Fire compartment means –

(a) the total space of a building; or

(b) when referred to in—

(i) the Performance Requirements — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or

(ii) the Deemed-to-Satisfy Provisions — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to Satisfy Provisions of the relevant Part.

Fire-resistance level (FRL)

Fire-resistance level (FRL) means the grading periods in minutes determined in accordance with Specification A2.3, for the following criteria—

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

Note: A dash means that there is no requirement for that criterion. For example, 90/–/– means there is no requirement for an FRL for integrity and insulation, and –/–/– means there is no requirement for an FRL.

Fire-source feature

(a) the far boundary of a road, river, lake or the like adjoining the allotment; or

(b) a side or rear boundary of the allotment; or

(c) an external wall of another building on the allotment which is not a Class 10 building

Fire wall

Fire wall means a wall with an appropriate resistance to the spread of fire that divides a storey or building into fire compartments.

Flammability index

Flammability Index means the index number as determined by AS 1530.2:1993.

Group number

Group number means the number of one of 4 groups of materials used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

Horizontal exit

Horizontal exit means a required doorway between 2 parts of a building separated from each other by a fire wall.

Loadbearing

Intended to resist vertical forces additional to those due to its own weight.

Non-combustible

Non-combustible means—

(a) applied to a material — not deemed combustible as determined by AS 1530.1:1994 — Combustibility Tests for Materials; and

(b) applied to construction or part of a building — constructed wholly of materials that are not deemed combustible

Occupiable outdoor area

Occupiable outdoor area means a space on a roof, balcony or similar part of a building–

(a) that is open to the sky; and

(b) to which access is provided, other than access only for maintenance; and

(c) that is not open space or directly connected with open space.

Open space

Open space means a space on the allotment, or a roof or similar part of a building adequately protected from fire, open to the sky and connected directly with a public road.

Performance Requirement

Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

Performance Solution

Performance Solution means a method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.

Sarking-type material

Sarking-type material means a material such as a reflective insulation or other flexible membrane of a type normally used for a purpose such as waterproofing, vapour management or thermal reflectance.

Smoke developed index

Smoke developed index means the index number for smoke as determined by AS/NZS 1530.3.

Smoke development rate

Smoke development rate means the development rate for smoke as determined by testing flooring materials in accordance with AS ISO 9239.1.

Smoke growth rate index

Smoke growth rate index (SMOGRA RC) means the index number for smoke used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining or attachment to a wall or ceiling.

Sole-occupancy unit

Sole-occupancy unit means a room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

(a) a dwelling; or

(b) a room or suite of rooms in a Class 3 building which includes sleeping facilities; or

(c) a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or

(d) a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

ANNEXURE F BCA COMPLIANCE SPECIFICATION

Annexure F – BCA Compliance Specification

The following BCA matters are to be addressed by specific BCA Design Certificate to be issued by the relevant architectural, services and engineering consultants at the Construction Certificate Stage. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

Architectural Design Certification

1. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2019.
2. Services penetrating elements required to possess an FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2019.
3. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C3.16.
4. Columns protected by light weight construction will achieve an FRL not less than the FRL for the element it is penetrating, in accordance with Clause C3.17 of BCA2019.
5. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2019.
6. Discharge from exits will be in accordance with Clause D1.10 of BCA2019.
7. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2019.
8. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2019 with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
9. New pedestrian ramps will comply with AS 1428.1:2009, Clause D2.10 and Part D3 of BCA2019. The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
10. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
11. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2019. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 where the edge ledge to a flight below.
12. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2019.
13. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing handrail, balustrade, located within the machinery room, boiler house, lift-machine room, plant-room, or non-habitable attic/storeroom within the sole occupancy unit will comply with AS 1657:2013 or Part D2 of BCA2019.
14. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2019.

15. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2019.
16. External above ground waterproofing membranes will comply with Clause F1.4 of BCA2019 and AS 4654 Parts 1 & 2:2012.
17. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2019.
18. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2019 and AS 3740:2010.
19. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2019 and AS 1288:2006 / AS 2047:2014.
20. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2019.
21. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
22. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2019.
23. Glazing will be in accordance with Part J1 of BCA2019.
24. Building sealing will be in accordance with Part J3 of BCA2019.
25. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2019.

Electrical Services Design Certification:

26. A smoke detection and alarm system will be installed throughout the building in accordance with AS1670.1-2018 except as modified by fire engineering report by Affinity Fire which permits 20mx20m grid.
27. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2019 and AS/NZS 2293.1:2018.
28. Exit signage will be installed in accordance with Clause E4.5 and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
29. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2019 and AS/NZS 1680.0:2009.
30. Lighting power and controls will be installed in accordance with Part J6 of BCA2019.

Hydraulic Services Design Certification:

31. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2019 and AS/NZS 3500.3:2018
32. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2019 and AS 2441:2005.
33. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2019 and AS 2444:2001.
34. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2019.

Mechanical Services Design Certification:

35. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2019, and AS 1668.1:2015.
36. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2019 and AS 1668.2:2012.

37. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2019
38. Rigid and flexible ductwork will comply with the fire hazard properties set out in AS 4254 Parts 1 and 2.

Structural Engineers Design Certification:

39. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2019 as follows:
    a. Dead and Live Loads – AS/NZS 1170.1:2002
    b. Wind Loads – AS/NZS 1170.2:2011
40. Earthquake actions – AS 1170.4:2007
41. Masonry – AS 3700:2018
42. Concrete Construction – AS 3600:2018
43. Steel Construction AS 4100:1998
44. Aluminium Construction – AS/NZS 1664.1 or 2:1997

NSW Specification Design Certificate:

45. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties in accordance with Clause C1.10, NSW Clause C1.10, Specification C1.10 and NSW Specification C1.10 of BCA2019.
46. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6, and NSW Clause D1.6(f)(vi)&(j) of BCA2019.
47. Stair geometry to the new stairways will be in accordance with Clause D2.13, and NSW Clause D2.13(a)(ix)(x)(xi) of BCA2019. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a nosing strip with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013.
48. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15, and NSW Clause D2.15(d)&(e) of BCA2019. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586:2013 where the edge leads to a flight below.
49. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, NSW Clause D2.16 & NSW Table D2.16a 1 and D2.17 of BCA2019.
50. The doorways and doors will be in accordance with Clause D2.19, NSW Clause D2.19(b)(v) and D2.20 of BCA2019.
51. Insulation will be in accordance with AS/NZS 4859.1:2018 and will be installed as required by NSW Part J1 of BCA2019.
52. A smoke detection and alarm systems will be installed throughout the building in accordance with Table E2.2a, NSW Table E2.2a and NSW Specification E2.2a of BCA2019.
53. Exit signage will be installed in accordance with Clause E4.5, NSW Clause E4.6 and E4.8 of BCA2019 and AS/NZS 2293.1:2018.
54. The building will be mechanically ventilated in accordance with Clause F4.5, NSW F4.5(b) of BCA2019 and AS 1668.2:2012.