

Building Code of Australia report

Independent Living Apartments

Jordan Springs Boulevard, Jordan Springs

Reference: 18-Nov-19 Jordan Springs units

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1 Acronyms and terms

1.1 I use the following acronyms in this report:


- (a) BCA - Building Code of Australia, being BCA2019
- (b) DTS - Deemed to satisfy
- (c) FRL - Fire resistance level (minutes)
- (d) ILAs - Independent Living Apartments
- (e) ILUs - Independent Living Units

1.2 I use the following terms in this report:

- (a) As required - As required by the DTS Solutions in the BCA
- (b) Construction certificate - Approval to commence building work
- (c) DTS Solution - A prescriptive method of complying with the BCA
- (d) Performance Requirements - BCA level of performance required to be satisfied
- (e) Performance Solution - An alternative method of complying with the BCA
- (f) Planning Act - Environmental Planning & Assessment Act
- (g) Planning Regulation - Environmental Planning & Assessment Regulation
- (h) Proposed building - The building subject to this report

2 Executive summary

- 2.1 My name is Michael Wynn-Jones and I am the author of this report.
- 2.2 A summary of my qualifications and experience is provided in Appendix A.
- 2.3 I have prepared this report with respect to the proposed building at Jordan Springs.
- 2.4 This report demonstrates that the proposed building is capable of complying with the BCA and refers to Performance Solutions that will be developed at the construction certificate stage.



Michael Wynn-Jones

for Michael Wynn-Jones & Associates

3 Introduction

- 3.1 The Planning Act requires that building work for the proposed building must comply with the BCA, and that such work must not commence until a construction certificate is issued for the work.
- 3.2 BCA compliance can be achieved by complying with DTS Solutions, formulating a Performance Solution, or by a combination of both.
- 3.3 A reference to a Section, Part or clause in this report is a reference to a DTS Solution, except as otherwise noted. A reference to a Performance Solution is a reference to a Performance Solution that will be developed for submission with the construction certificate application.
- (a) This report is suitable for submission with a Development Application and addresses compliance with the BCA except for matters addressed in separate reports, being structural (Section B), access for people with a disability (Part D3), the design of services and equipment (Section E), sound transmission and insulation (Part F5), and energy efficiency (Section J).
- 3.4 The subject site is located on Jordan Springs Boulevard, Jordan Springs 2747 on Lot 1, DP1248137.
- 3.5 The site has approval for a staged concept development comprising Stage 1 works involving the construction of 51 ILUs, civil and landscape works and Stage 2 Concept development for future ILAs.
- 3.6 The development application depicted in the plans¹ concerns the Stage 2 development and is proposing 139 ILAs across 3 x 6 storey buildings, with community facilities and administration areas in Building A.
- 3.7 The proposed building will comprise 3 Class 2 residential buildings (Building A, Building B and Building C) over a Class 7a common carpark. Building A, Building B, Building C and the carpark are considered 1 building for the purposes of determining compliance with the BCA.
- 3.8 A Class 9b assembly space (including a pool) is proposed on the ground floor of Building A.

¹ DA_0_10101/1, DA_0_20001/1, DA_0_30001/1, DA_1_20001/1, DA_0_20101/1, DA_1_20401/1, DA_0_20501/1, DA_0_20601/1, DA_1_30001/1, DA_1_30002/1, DA_2_20001/1, DA_1_20101/1, DA_2_20401/1, DA_2_20501/1, DA_2_20601/1, DA_2_30001/1, DA_2_30002/1, DA_3_20001/1, DA_3_20101/1, DA_3_20401/1, DA_2_20501, DA_3_20601/1, DA_3_30001/1, and DA_3_30002/1 by Lendlease Integrated Solutions

4 Fire Resisting Construction (Part C1)

- 4.1 The proposed building will have a rise in storeys of more than 4, an effective height (as recognised by the BCA) more than 12 m but less than 25 m.
- 4.2 The FRL proposed for the assembly and carpark may be subject to a Performance Solution that will rationalise the FRL required for the proposed building, depending on the outcome from Fire Engineering analysis forming part of the Performance Solution.
- 4.3 The proposed building will otherwise generally be Type A Construction as required (Section C and Specification E1.5a).
- 4.4 The floor area and volume for the carpark is unlimited, complies for the Class 9b, and is not regulated for the Class 2 (C2.2).
- 4.5 The proposed external walls and any components in the wall will be non-combustible as required. This will be addressed at the construction certificate stage (C1.9).
- 4.6 The fire hazard properties of various finishes will be addressed at construction certificate stage and will comply as required (C1.10).
- 4.7 The suitability of ancillary elements (being secondary to and not an integral part of another element to which they are attached) being fixed, installed or attached to the internal parts or external face of an external wall will be addressed at construction certificate stage and will comply as required (C1.14).
- 4.8 The method of attaching or installing a finish, lining, ancillary element or service installation to a building element will be addressed at construction certificate stage to ensure the fire-resistance of that element is not reduced to below that required (Cl 2.4 Sp C1.1).
- 4.9 Proposed loadbearing walls and internal columns will be concrete or masonry as required all floors will be concrete as required.

5 Compartmentation and Separation (Part C2)

- 5.1 Vertical separation of openings in external walls is not required as the proposed building will be protected by sprinklers (C2.6).
- 5.2 The requirements for the fire separation of different classes in the same storey do not apply (C2.8).
- 5.3 A Performance Solution will likely address the separation of classes in different storeys in conjunction with the Performance Solution referred to in 4.2 above (C2.9).
- 5.4 Lift shafts and the shafts around the fire isolated exits referred to in 7.2 below that serve the residential levels will be fire isolated as required (C2.11).

6 Protection of Openings (Part C3)

- 6.1 Openings in the Southern external wall of Building A and the carpark will be subject to a Performance Solution where the external wall is less than 3 m from the Southern boundary. The need to protect openings less than 3 m from the boundary will depend on the outcome from the Fire Engineering analysis forming part of the Performance Solution (C3.2).
- 6.2 The openings in the other external walls do not require protection (C3.2).
- 6.3 Openings in fire resisting construction will otherwise be protected as required. These include but are not limited to:
- (a) Openings in fire-isolated exits (C3.8 and Specification E1.5a);
 - (b) Service penetrations in fire-isolated exits (C3.9);
 - (c) Openings in fire-isolated lift shafts (C3.10);
 - (d) Residential unit entry doorways (C3.11 and Specification E1.5a);
 - (e) Openings in floors and ceilings for services (C3.12 and Specification E1.5a);
 - (f) Doorways on the Ground floor leading to the air locks referred to in 7.5 below;
 - (g) Openings in shafts (C3.13 and Specification E1.5a); and
 - (h) Openings for service installations (C3.15 and Specification E1.5a).
- 6.4 No horizontal exits are required or proposed (C3.7).

7 Provision for Escape (Part D1)

- 7.1 The carpark and the assembly will be served by at least 2 exits as required and the residential by at least 1 exit as required (D1.2).
- 7.2 The exit stairs serving the residential will be fire isolated as required (D1.3).
- 7.3 The exit stairs serving the carpark will be fire isolated from the fire isolated exit stairs serving the residential (see discussion in 8.1 below) and will discharge directly to open space as required.
- 7.4 The following will likely be subject to a Performance Solution once the detailed measurements and review are completed:
- (a) Travel distance of more than 12 m on the upper storeys from some residential unit entry doorways to a single exit (D1.4);
 - (b) A travel distance of more than 20 m from the pool area in Building A to a point from which travel in different directions to 2 exits is available (D1.4);
 - (c) A travel distance of more than 40 m (up to ~45 m) from some parts of the carpark to an exit (D1.4); and
 - (d) A distance between alternative exits of more than 60 m (up to 75 m) in the carpark (D1.5); and
 - (e) A path of travel width less than 1 m where people pass by vehicles and columns in the carpark (D1.6).

- 7.5 The fire isolated exit stairs serving the residential in Block A discharge at Ground level to an air lock that will be a fire isolated passageway as required as it forms part of the fire isolated exit system serving the residential (D1.7). The doorways connecting the air lock with the Ground floor and the fire isolated exit will be protected with a self-closing fire door as required.
- 7.6 A performance Solution will address:
- (a) The discharge from the air locks referred to in above 7.5 above to a covered entry (D1.7²); and
 - (b) The paths of travel from the point of discharge from the fire-isolated exits referred to in 7.5 above (D1.7³).
- 7.7 The paths of travel from the discharge from exits to open space and the public road will comply as required. The extent of compliance has not been assessed in preparing this report (D1.10).

8 Construction of exits (Part D2)

- 8.1 The exit system serving the residential and the carpark will comply as required with the requirement that there must be no connection between an exit rising from below and a fire isolated exit descending from the upper levels (D2.4).
- 8.2 No smoke lobbies are required in order to comply with the DTS Solution (D2.6), installations in paths of travel and exits will comply as required (D2.7), and no cupboard or other enclosed space is proposed below a stair (D2.8).
- 8.3 The stair configuration (D2.13), landings (D2.14), thresholds (D2.15), barriers (D2.16) and handrails (D2.17) will comply as required. The extent of compliance has not been assessed in preparing this report.
- 8.4 The doors in Building B and Building C providing egress at Ground floor level from the exits serving the carpark will swing in the direction of egress (D2.20).

² D1.7 (b) (iii) - Each fire-isolated stairway must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway into a covered area that:

- adjoins a road or open space; and
- is open for at least 1/3 of its perimeter; and
- has as an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m; and
- provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.

³ D1.7 (c) (iii):

Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall to have—

- an FRL of not less than 60/60/60; and
- any openings protected internally in accordance with C3.4,

for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

9 Fire Fighting Equipment (Part E1)

- 9.1 The proposed building will be served by a fire hydrant system (E1.3), fire hose reel system (E1.4) and sprinkler system (E1.5) as required.
- 9.2 The hydrant pump room (labelled fire pump room) is connected directly with the fire isolated exit as required (E1.4).
- 9.3 Portable fire extinguishers will be provided to serve the proposed building as required (E1.6). The locations and types have not been assessed in preparing this report.
- 9.4 A fire control centre is not required or proposed (E1.8). The requirements for fire precautions (E1.9) and for special hazards (E1.10) have not been assessed in preparing this report.

10 Smoke hazard management (Part E2)

- 10.1 The residential will be served by an automatic smoke detection and alarm system as required (Specification E2.2a).
- 10.2 Any air handling system serving the assembly in Building A will be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000 L/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 6 of AS 1668.1) which does not form part of the smoke hazard management system as required (NSW Table E2.2b).
- 10.3 A Performance Solution will likely clarify the smoke hazard management required to serve the assembly.
- 10.4 The carpark will be served by mechanical ventilation as required (Table E2.2a, E2.2, AS 1668.2 and clause 5.5 of AS 1668.1).
- 10.5 No exits are required to be served by stair pressurisation (Part E2.2).

11 Lifts (Part E3)

- 11.1 Passenger lifts will be capable of accommodating a stretcher facility as required as the proposed building has an effective height more than 12 m (E3.2).
- 11.2 No lift is required to be an emergency lift as the proposed building has an effective height not more than 25 m (E3.4).
- 11.3 Access and egress to and from liftwell landings will comply as required (E3.5).
- 11.4 Fire control services will be provided to each lift as required as the proposed building has an effective height more than 12 m (E3.7).

12 Emergency lighting, exit signs & warning systems (Part E4)

- 12.1 Emergency lighting (E4.2 and E4.4) and exit signs (E4.5, E4.6, E4.7 and E4.8) will be provided as required. The extent of compliance has not been assessed in preparing this report.
- 12.2 No sound or intercom system for emergency purposes is required or proposed in any part of the proposed building as the assembly part of Building A does not have a rise in storeys or more than 2 (E4.9).

13 Health and amenity (Section F)

- 13.1 Whilst stormwater drainage and provisions to address dampness, drainage, weatherproofing, roofs, sarking, wet area flashing, damp proof courses, floor wastes, sub-floor ventilation and glazed assemblies will comply as required (Part F1) no analysis has been carried out in preparing this report.
- 13.2 Private facilities will be provided for each residential unit as required (Part F2)⁴.
- 13.3 The floor to ceiling height will be at least 2.4 m in the habitable rooms in the residential and assembly as required, with the height in the lounge/dining in the assembly being at least 2.7 m where it is determined that more than 100 persons will be accommodated (F3.1).
- 13.4 The floor to ceiling height will be at least 2.1 m in the carpark and non habitable areas in the residential, assembly and carpark (F3.1).
- 13.5 Whilst natural light will be designed to comply as required no detailed analysis has been carried out in preparing this report (F4.1).
- 13.6 The required artificial light for all areas will comply as required (F4.4).
- 13.7 The sound transmission for the residential will comply as required and has not been assessed in preparing this report (Part F5).

⁴ Private facilities provided in each unit comprise a bath or shower, a closet pan and washbasin and a laundry. This is consistent with the requirements for residents (Table F2.1).

14 Appendix A (About Michael Wynn-Jones)

- 14.1 After 13 years as a Local Government Building Surveyor Michael established a Building Regulations consulting company and became a permanent part time academic at Western Sydney University.
- 14.2 Over the next 15 years he helped develop, lectured in, and was eventually the Head of Program for, separate Post Graduate courses in Building Surveying, Fire Engineering and bushfire prone areas. He has delivered over 120 seminars/short courses, including Building Regulations courses through the Centre for Local Government (at the University of Technology, Sydney), and is a former conjoint Professor in the School of Architecture and the Built Environment at the University of Newcastle.
- 14.3 In addition to his academic pursuits Michael has personally provided consulting and education services for over 20 years to the private sector and over a dozen Councils through Michael Wynn-Jones & Associates. Whilst accredited at the highest level in NSW as a private certifier this includes working as a Building Regulations expert and consultant rather than as a certifier.
- 14.4 Michael has also worked as a consultant to the NSW Department of Planning on various projects associated with the built environment, including the Retail Complying Development Code and the Federal Premises Standards, the introduction of private certification in 1997, and the 2013 'White Paper – A new planning system for NSW'.
- 14.5 Michael has been actively involved with several State Government committees and professional bodies that deal with building and planning legislation and the certification of building work.
- 14.6 Michael's relevant qualifications, accreditations and details are as follows:
- (a) MAppSc (Fire Safety Design), Western Sydney University, 1996
 - (b) BAppSc (Building Surveying), Hons, University of Technology Sydney, 1986
 - (c) AssDip AppSc (Health & Building Surveying), TAFE, Sydney (1988)
 - (d) A1 - Accredited Certifier - Building Surveying (NSW Building Professionals Act)
 - (e) Qualified Principal Building Surveyor and Fire Engineer
 - (f) Conjoint Professor, Arch/Built Environment, Newcastle University (2010 to 2015)
 - (g) Associate, Centre for Local Govt, University of Technology, Sydney (Since 2005)
 - (h) Building Professionals Board member (2008 to June 2013)
 - (i) Deputy President of the Building Professionals Board (2011 to June 2013)
 - (j) Fellow, Aust. Institute of Building (Since 2011; member since 2011)
 - (k) Fellow, Aust. Institute of Building Surveyors (Since 2012; member since 1980)



Job no SY190207

15/11/2019

Murray Robertson
Lendlease
Level 14, Tower Three, International Towers Sydney
Exchange Place, 300 Barangaroo Avenue, Barangaroo NSW 2000

Dear Murray

Jordan Springs Apartments – Jordan Springs Boulevard, Jordan Springs – Preliminary fire safety engineering review

The design of the proposed development at Jordan Springs Boulevard, Jordan Springs will incorporate performance solutions complying with the performance requirements of National Construction Code Volume One – Building Code of Australia (NCC) 2019¹. Warringtonfire has undertaken a preliminary fire safety engineering review of the proposed design for the development application submission at the request of Lendlease. The review was based on the drawings and information listed in Attachment 1.

The intent of the review was to determine whether we believe the design can be demonstrated to achieve compliance with the performance requirements of the NCC.

The performance solutions identified to date are listed in Table 1.

Item	Description of performance solution	DTS provision	Performance requirement	Comment
1.	<p>Building B and Building C incorporate a maximum travel distance of 12.8m instead of 12 from residential unit entry doorways.</p> <p>Note: Based on draft updated design documentation provided, it is understood that the maximum travel distance to a single exit from residential unit entry doorways is now 12.8m instead of 12m, as opposed to 16m as identified within the BCA report prepared by Michael Wynn-Jones & Associates</p>	Clause D1.4	DP4 and EP2.2	<p>The performance solution will require the following provisions:</p> <ul style="list-style-type: none"> A combined sprinkler and hydrant system in accordance with specification E1.5 of the NCC and AS 2118.6-2012 throughout the whole building. A building occupant warning system in accordance with clause 3.22 of AS 1670.1:2018 with the minimum A-weighted sound pressure level of the signal to be 75dB at each bedhead, with all doors closed. Medium temperature smoke seals to each residential entry doorway. Additional smoke detectors in common areas of the residential portions in accordance with AS 1670.1:2018. <p>It is to be noted that the proposed design constitutes an approvals risk from Fire & Rescue NSW (FRNSW).</p>

¹ National Construction Code Volume One - Building Code of Australia 2019, Australian Building Codes Board, Australia.

Item	Description of performance solution	DTS provision	Performance requirement	Comment
				Warringtonfire's support of the proposed design is subject to endorsement of the design by FRNSW.
2.	Building A incorporates a maximum travel distance of 27m to a point of choice instead of 20m from the swimming pool.	Clause D1.4	DP4 and EP2.2	<p>The performance solution will require the provision of a combined sprinkler and hydrant in accordance with specification E1.5 of the NCC and AS 2118.6-2012 throughout the whole building.</p> <p>The performance solution will have regard to the area around the pool being predominantly circulation space, the low fire loads expected within the pool area, the airlock and rooms adjacent to the airlock, and the availability to two alternate paths of travel to the subject airlock in case of a fire within the pool area.</p>
3.	<p>The basement carpark incorporates the following maximum travel distances:</p> <ul style="list-style-type: none"> • Up to 45m to the nearest exit instead of 40m • Up to 75m between alternative exits instead of 60m 	Clauses D1.4 and D1.5	DP2, DP4 and EP2.2	The performance solution will require the provision of fast response sprinkler heads within the basement carpark.
4.	<p>The fire-isolated exit stairs serving Building A discharge into a covered area that is not open for 1/3 of the perimeter.</p> <p>The path of travel from the exit further requires occupants to travel within 6m of unprotected openings within the external walls of the same building.</p>	Clause D1.7	CP2, DP4 and DP5	<p>The performance solution will require the following provisions:</p> <ul style="list-style-type: none"> • The covered discharge area to be fire separated from the adjacent internal parts of the building by wall construction achieving an FRL of not less than 120/120/120. • A combined sprinkler and hydrant system in accordance with specification E1.5 of the NCC and AS 2118.6-2012 throughout the whole building. • The availability of two paths of travel to the road from the discharge location – ie around both sides of the building.

Table 1 Preliminary list of performance solutions

It is Warringtonfire's professional opinion that it is possible to develop performance solutions for the issues identified to demonstrate compliance with the relevant performance requirements of the NCC without major changes to the proposed design.

It is Warringtonfire's understanding that with the exception of performance solutions identified in Table 1, the design will comply with the current DTS provisions of the NCC relating to fire safety. This includes aspects of the design noted in items 4.2, 5.3, 6.1, 7.4(e) and 10.3 of BCA report 14-Nov-2019 Jordan Springs units prepared by Michael Wynn-Jones & Associates.

The details of the proposed performance solutions are subject to the outcome of the fire engineering brief and analysis which will be carried out in accordance with the International Fire Engineering Guidelines (IFEG)².

The performance solutions for the building will be developed as part of the ongoing design and development process and documented in a format suitable for submission to the relevant approval authorities. It is noted that additional performance solutions may be identified during the ongoing design development process in consultation with the design team.

Please contact me on 02 9211 4333 if you have any questions.

Yours sincerely



Grace Huang
Fire safety engineer
Fire safety engineering
Warringtonfire



Greg Leach
NSW manager
Fire safety engineering
Warringtonfire
Accredited certifier C10 – BPB 2402

² International Fire Engineering Guidelines – Edition 2005, Australian Building Codes Board, Australia.

Attachment 1 Drawings and information

Drawing title	Dwg no	Date	Drawn
Overall Plan – Basement	DA_0_10101 revision 1	-	Lendlease Integrated Solutions
Building A – General arrangement ground floor	DA_0_20001 revision 1	-	
Building A – General arrangement Level 01 – 03	DA_0_20101 revision 1	-	
Building A – General arrangement Level 04	DA_0_20401 revision 1	-	
Building A – General arrangement Level 05	DA_0_20501 revision 1	-	
Building A – General arrangement Roof	DA_0_20601 revision 1	-	
Building B – General arrangement Ground floor	DA_2_20001 revision 1	-	
Building B – General arrangement Level 01 – 03	DA_2_20101 revision 1	-	
Building B – General arrangement Level 04	DA_2_20401 revision 1	-	
Building B – General arrangement Level 05	DA_2_20501 revision 1	-	
Building B – General arrangement Roof	DA_2_20601 revision 1	-	
Building C – General arrangement Ground floor	DA_3_20001 revision 1	-	
Building C – General arrangement Level 01 – 03	DA_3_20101 revision 1	-	
Building C – General arrangement Level 04-05	DA_3_20401 revision 1	-	
Building C – General arrangement Level 05	DA_3_20501 revision 1	-	
Overall Elevations – Sheet 1	DA_0_30001 revision 1	-	
Overall Elevations – Sheet 2	DA_0_30001 revision 1	-	
JDS_Building and C – Travel Distance Plan – Typical Levels_1-100@B1	-	-	
JDS_Building B and C – Travel Distance Plan – Upper Levels_1-50@B1	-	-	

Other information	Ref no	Date	Prepared by
Building Code of Australia report	14-Nov-19 Jordan Springs units	14/11/2019	Michael Wynn-Jones & Associates