

BUSHFIRE PROTECTION ASSESSMENT

FOR THE PROPOSED SSD MULTI-STOREY RESIDENTIAL DEVELOPMENT

ON LOT 272 in DP 803167

NO. 40 THE RETREAT,

BRADFIELD

Australian Bushfire Protection Planners Pty Limited

Bushfire Mitigation Consultants

32 Old Dog Trap Road
SOMERSBY 2250 NSW

Phone: (02) 43622112

Email: abpp@bigpond.net.au



**Australian Bushfire
Protection Planners Pty Ltd**
ABN 48 935534 462

Bushfire Mitigation Consultants

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Report Number	Document	Preparation Date	Issue Date	Directors Approval
B234093 - 3	Final	22.03.2024	01.05.2024	<i>G.L. Swain</i>

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EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited has been commissioned by the *SCG Developments* to prepare a Bushfire Protection Assessment for the State Significant Development Application (SSDA) to the Department of Planning for the construction of the proposed Multi Storey Residential Complex on Lot 272 in DP 803167, No. 40 The Retreat, Bradfield.

The site contains an existing dwelling on a large rural residential landholding, located at the terminus of The Retreat. The site forms part of the Western Sydney Aerotropolis Core Precinct identified for Mixed Use Residential Development.

Figure 1 – Western Sydney Aerotropolis Landuse & Structure Plan.

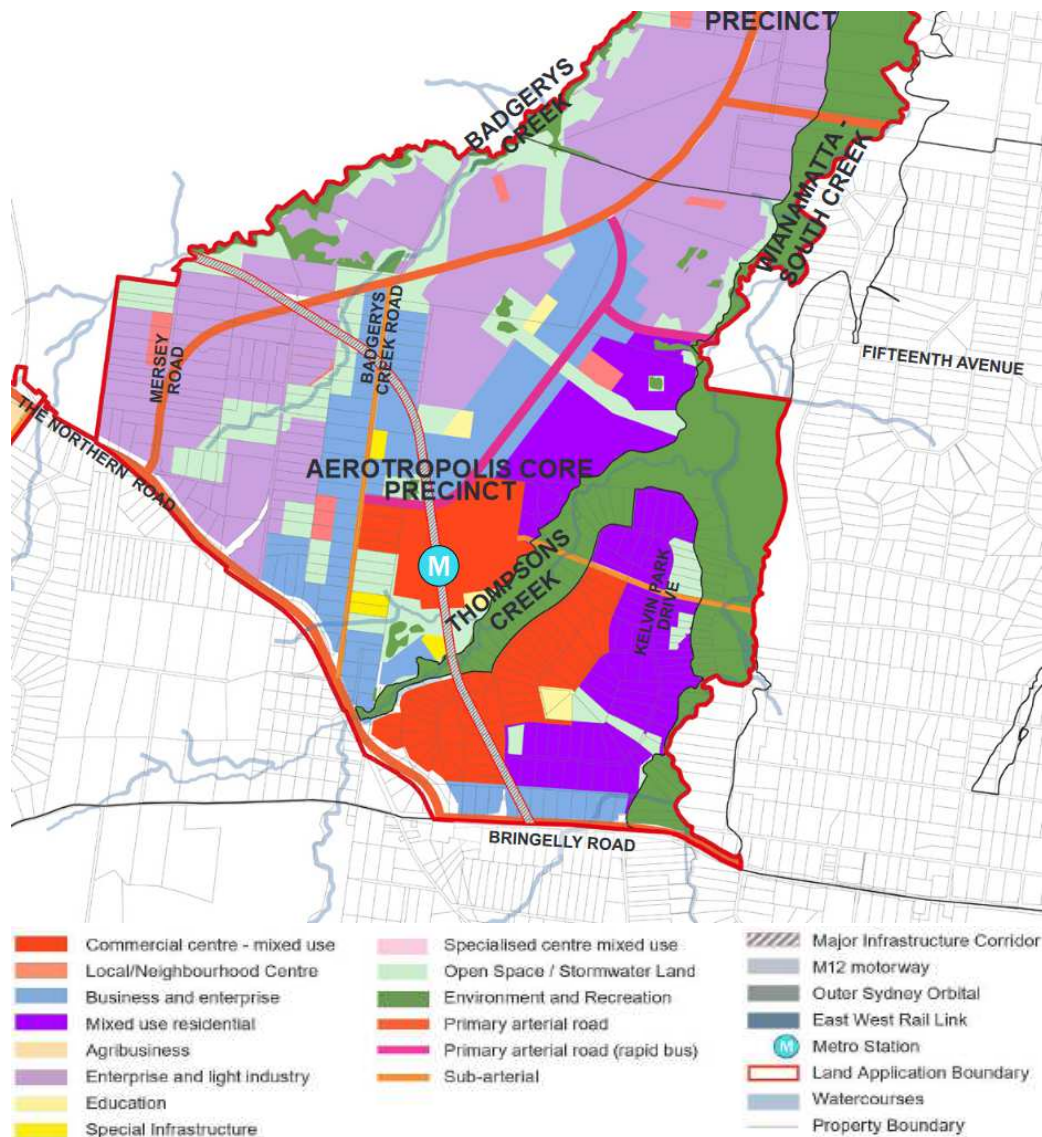
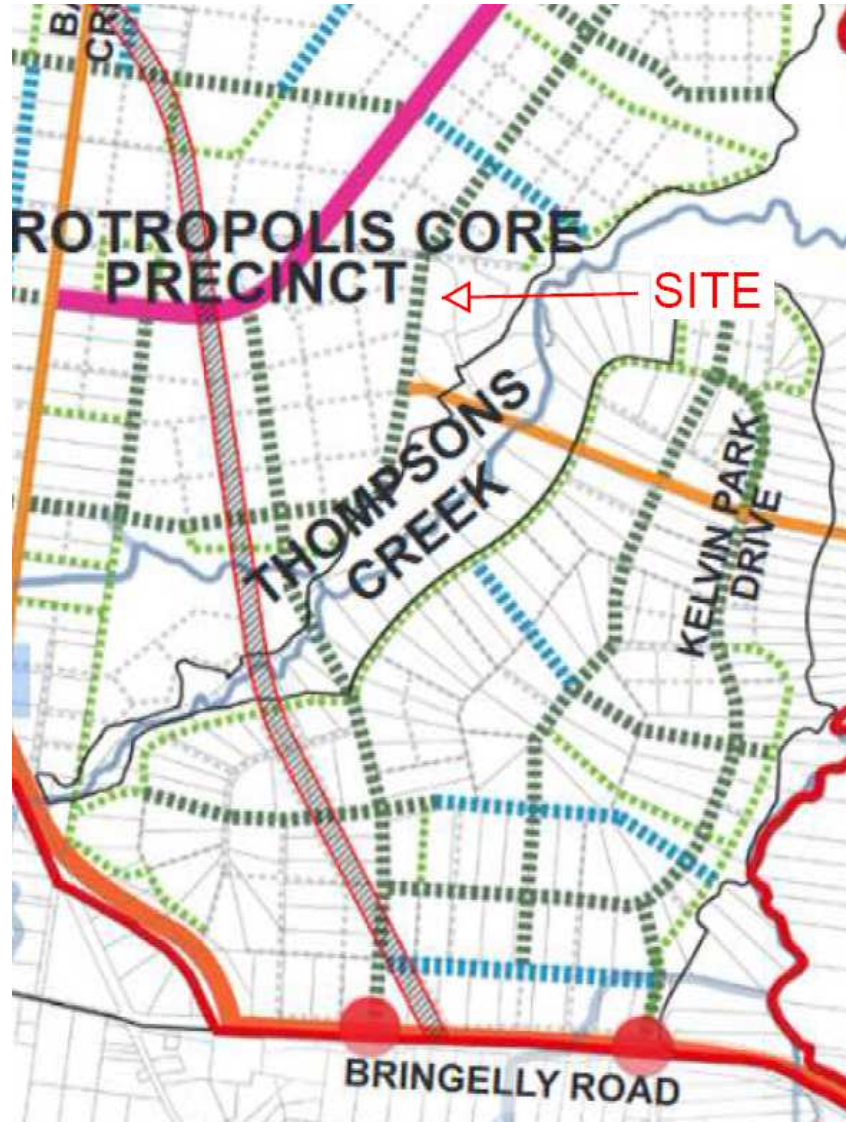


Figure 2 – Western Sydney Aerotropolis Transport Plan.



Major Roads

- Primary arterial road
- Primary arterial road (rapid bus)
- Sub-arterial road
- Collector
- Local Street
- Park Edge Street
- Riparian Street
- M12 motorway
- Outer Sydney Orbital
- Indicative roadway (subject to further investigation)

Laneways and Service Roads

- Service Street
- Park Edge Active Path
- Key signalised intersection
- Planned signalised intersection (subject to investigation)
- Area of investigation for a future signalised intersection
- Major Infrastructure Corridor
- Watercourses
- Land Application Boundary
- Property Boundary
- Precinct Boundary

The SEARs for the proposed development was issued on the 18th January 2024, under SSD – 65729209 and contain under Key Items 22 as requirement, if the development is on bushfire prone land, a Bushfire Assessment is to be prepared.

The land upon which it is proposed to construct the residential complex is shown on the Liverpool Bushfire Prone Land Map to contain Category 2 Bushfire Prone Vegetation – refer to Figure 3 – Extract from the Liverpool Bushfire Prone Land Map.

Figure 3 – Extract from the Liverpool Bushfire Prone Land Map.



As the development site is shown on the Liverpool Bushfire Prone Land Map to contain Category 3 Bushfire Prone Vegetation, the development, being the construction of a Multi-Storey Residential building within a designated bushfire prone area, is required to comply with the provisions of Section 4.14 of the *Environmental Planning & Assessment Act 2017*.

In addition, the development will be staged with each building subdivided into Strata Title Units once completed and for the purpose of this report is deemed to be Integrated Development as defined by Section 4.47 of the *Environmental Planning & Assessment Act 2017*.

The provisions of Section 100B of the *Rural Fires Act 1997* apply to Integrated Development and the development is required to comply with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019*.

This report examines the temporary Asset Protection Zone setback requirement to the Category 3 vegetation on the land to the west and north and temporary fire-fighting access requirements, pending development of the adjoining land to the west and north and construction of the road network as planned in the Western Sydney Aerotropolis Master Plan.



Graham Swain
Managing Director
Australian Bushfire Protection Planners Pty Limited

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SECTION 1

INTRODUCTION

1.1 Aim of this Assessment.

The aim of this Bushfire Protection Assessment is to review the proposed Development Application to determine compliance with the intent of *Planning for Bushfire Protection 2019* and in particular:

- Determine the width of the temporary Asset Protection Zone to the west and north of the site required to satisfy Table A1.12.5 of *Planning for Bushfire Protection 2019*;
- Determine the temporary bushfire fire-fighting access requirements;
- Pending removal for the hazard on the adjoining land determine the Bushfire Attack Level (BAL) to the proposed buildings.

1.2 Development Proposal.

A State Significant Development application (SSD) is to be lodged with the Department of Planning for the construction of a proposed Multi-Storey Residential complex on Lot 272 in DP 803167, No. 40 The Retreat.

The complex consists of two levels of Basement Carparking, Lower Ground Floor level and six tower buildings (Building A, Building B, Building C, Building D, Building E and Building F) rising eleven levels above a Ground Floor Podium.

The complex is to be constructed in two stages, with Stage 1 occupying the northern portion of the site and containing Buildings A, B & C, with temporary access from The Retreat.

Stage 2 occupies the southern portion of the site and contains Buildings D, E & F with permanent vehicular access to the Basement Carparking provided off the future Arterial Road, located to the west of the site.

Refer to Figure 4 – Site Plan; Figure 5 – Lower Ground Level Plan; Figure 5 – Ground Level Plan; Figure 7 – Level 01 Plan; Figure 8 – Level 02 Plan; Figure 9 Level 03 Plan on Pages 9 – 14.

Refer to Figures 10 & 11 Elevations on Page 15 & 16.

Refer to Figure 12 Staging Plan on Page 17.

Figure 4 – Site Plan.



Figure 5 – Lower Ground Level Plan.

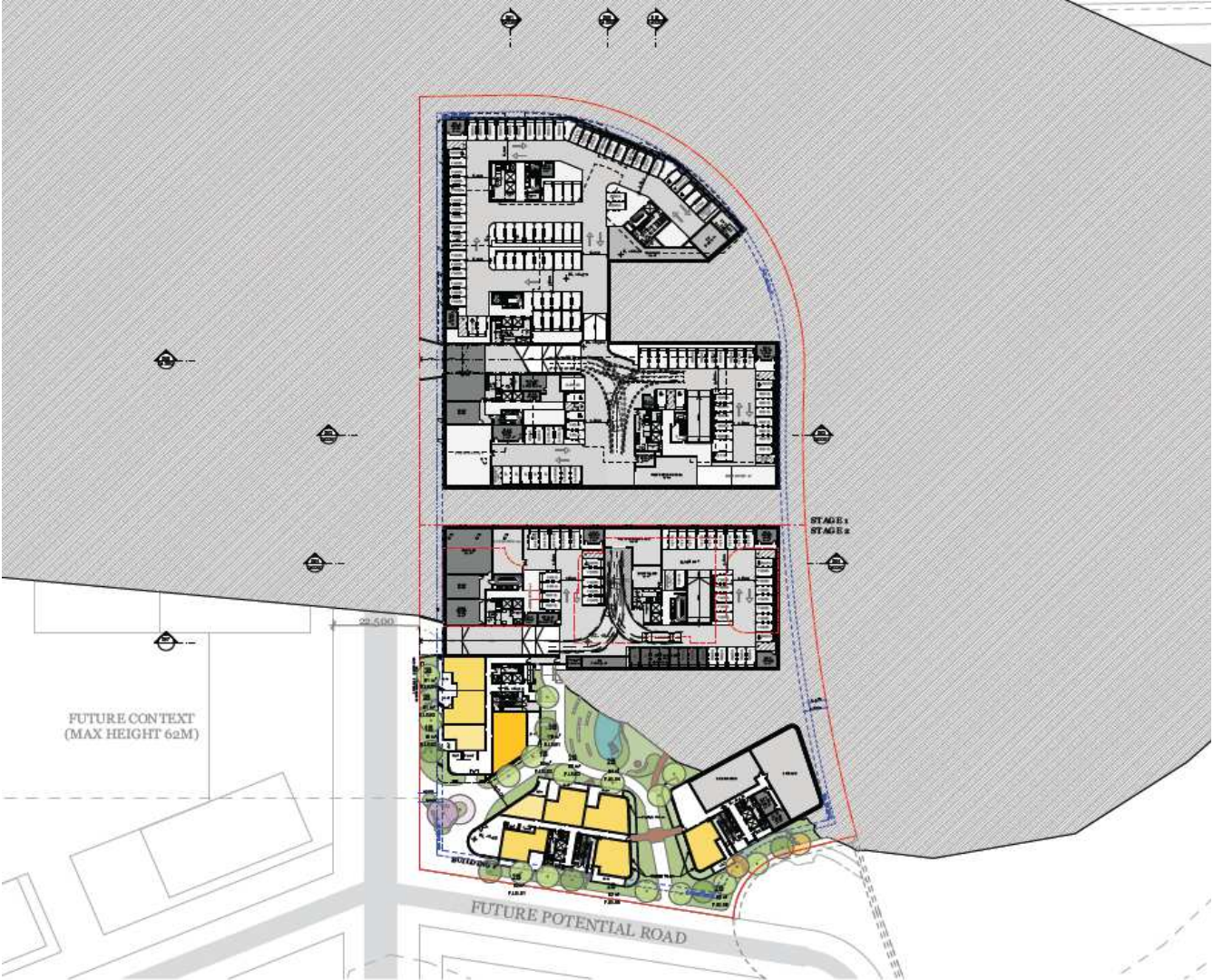


Figure 6 – Ground Level Plan.

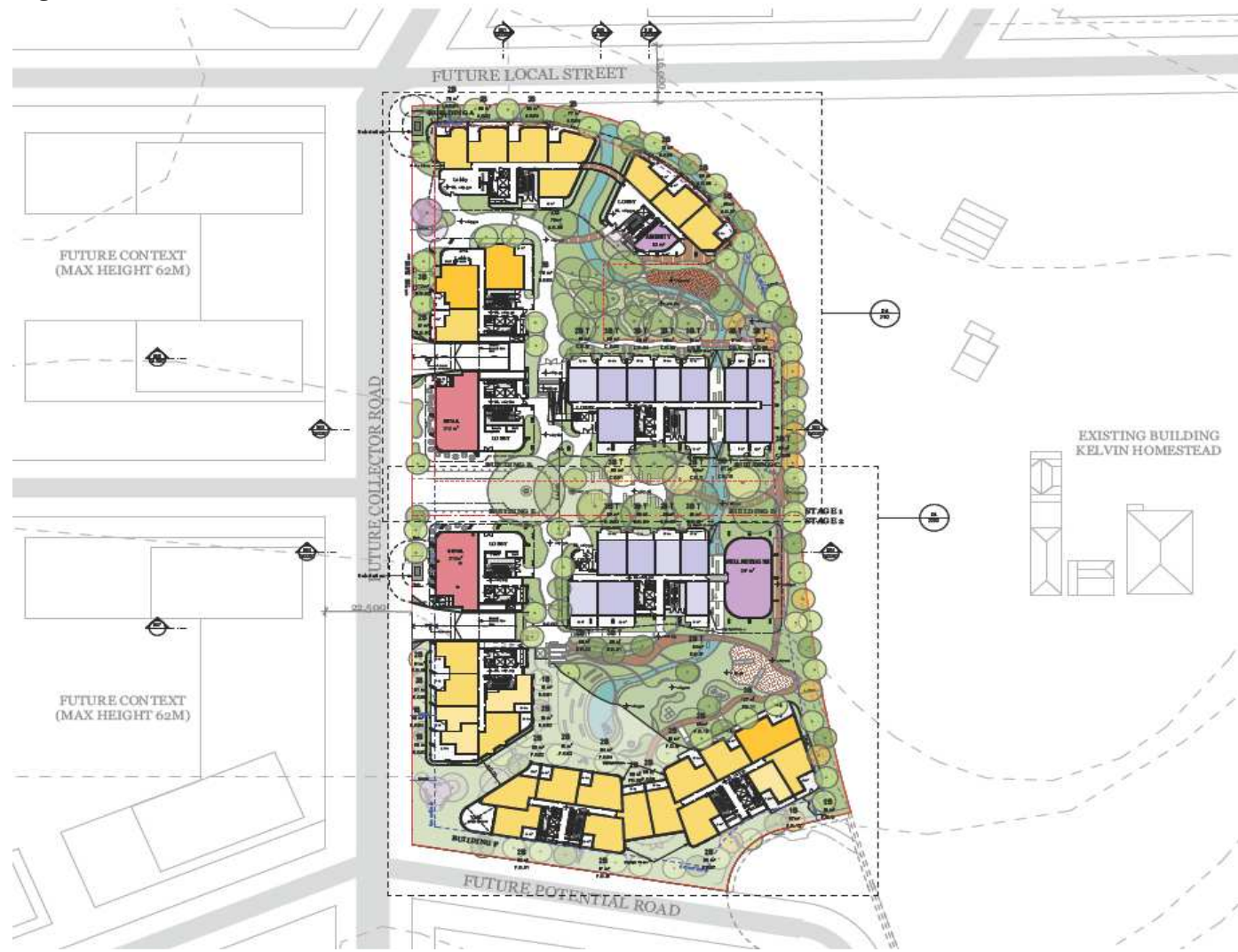


Figure 7 – Level 01 Plan.

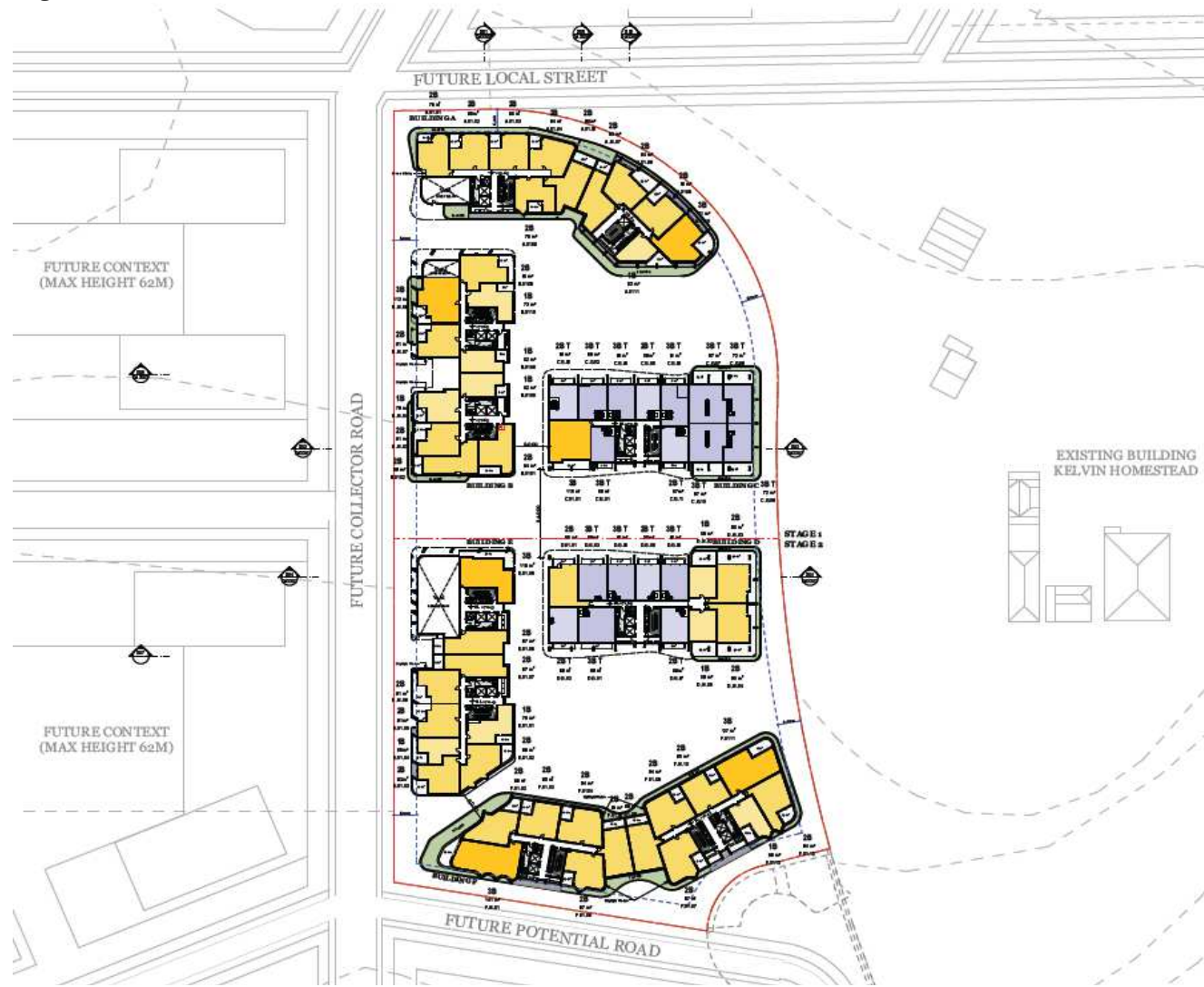


Figure 8 – Level 02 Plan.



Figure 9 – Level 03 Plan (Typical Tower Plan).

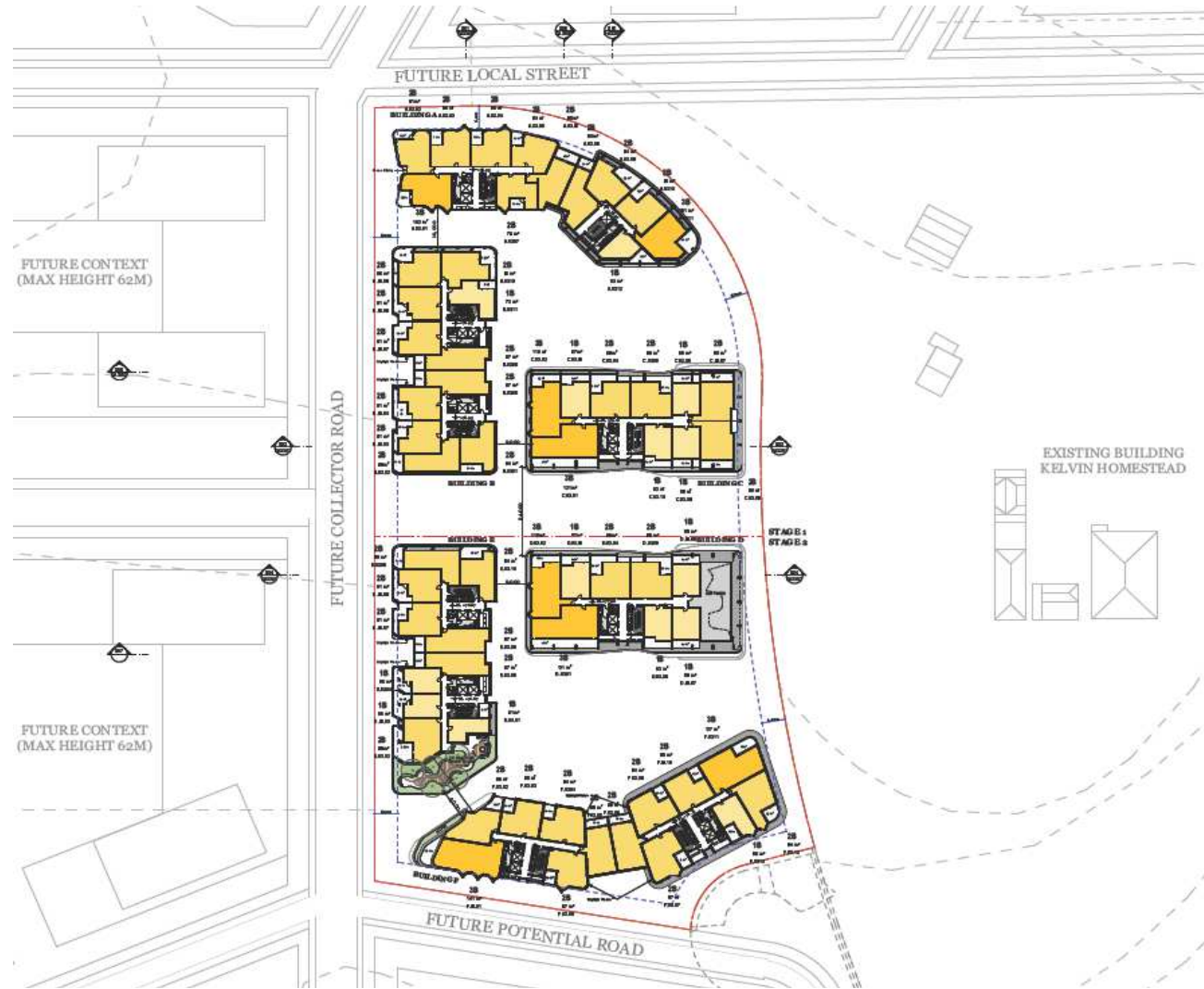


Figure 10 – Elevations.

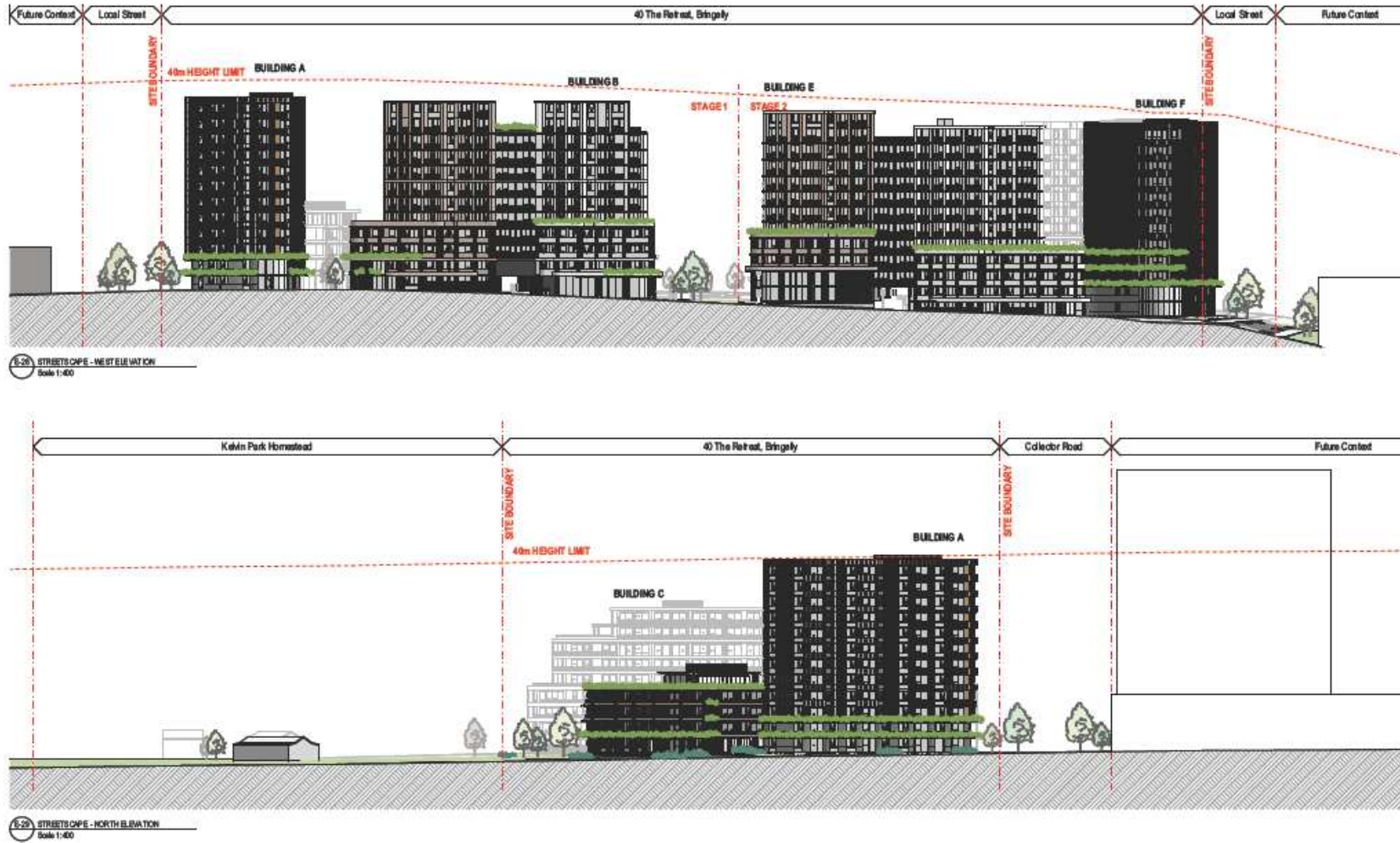
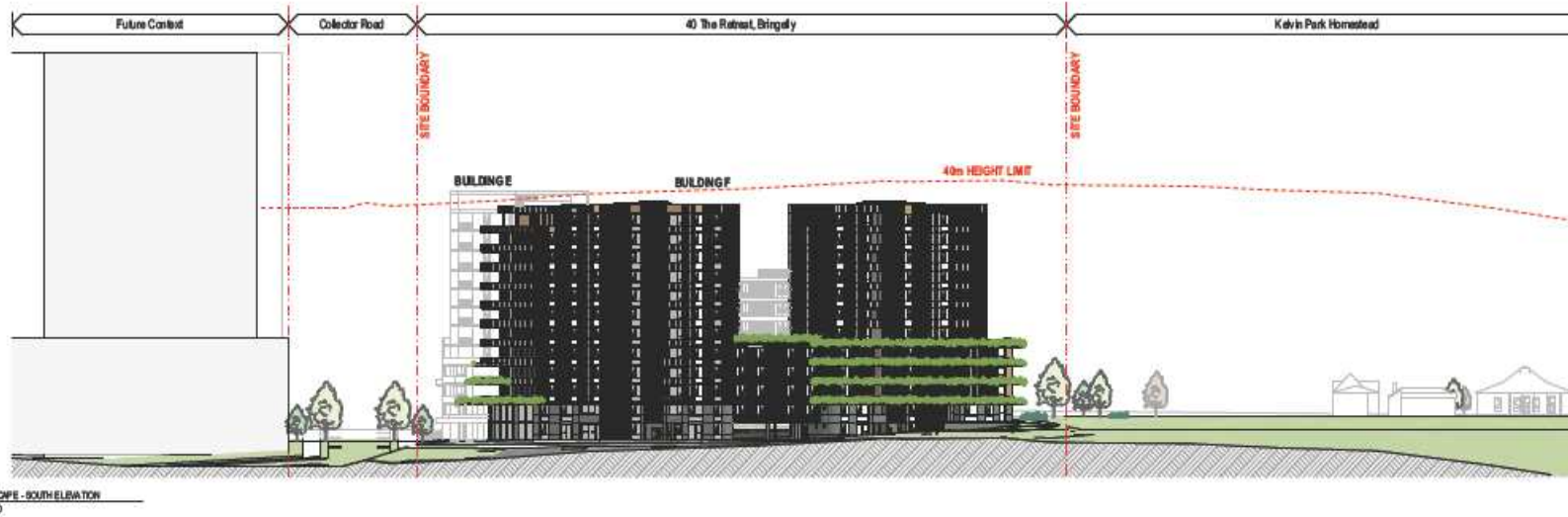
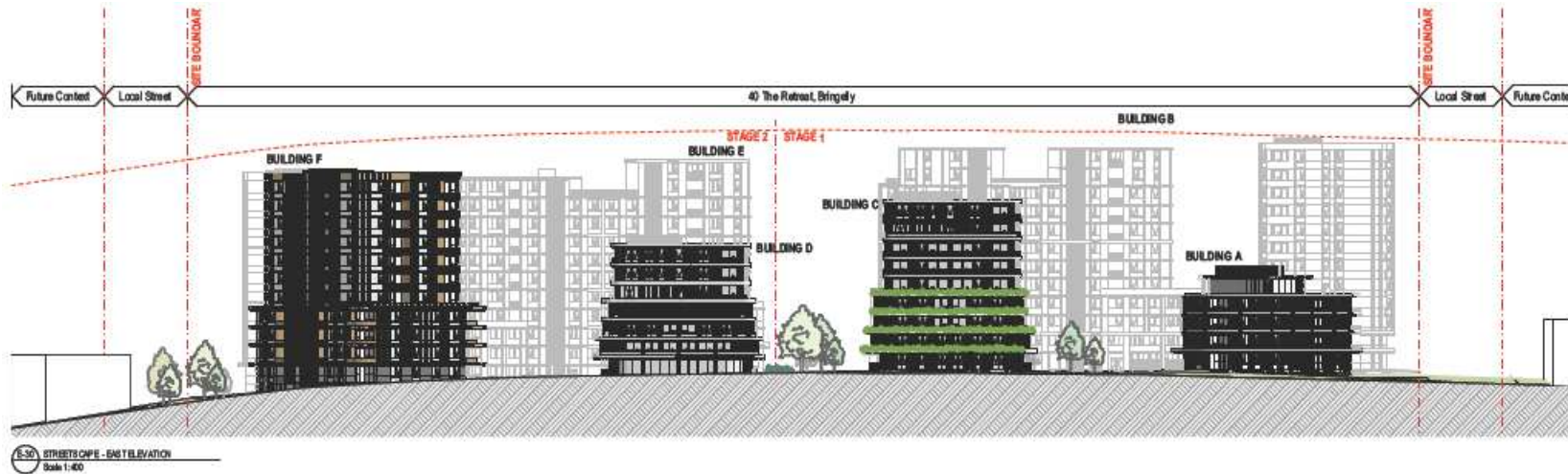


Figure 11 – Elevations.



1.3.1 Staging.

Stage 1A of the development will include the construction of the two levels of Basement Carparking beneath Buildings A, B & C and the construction of Building 1C.

Figure 12 – Stage 1A Plan.

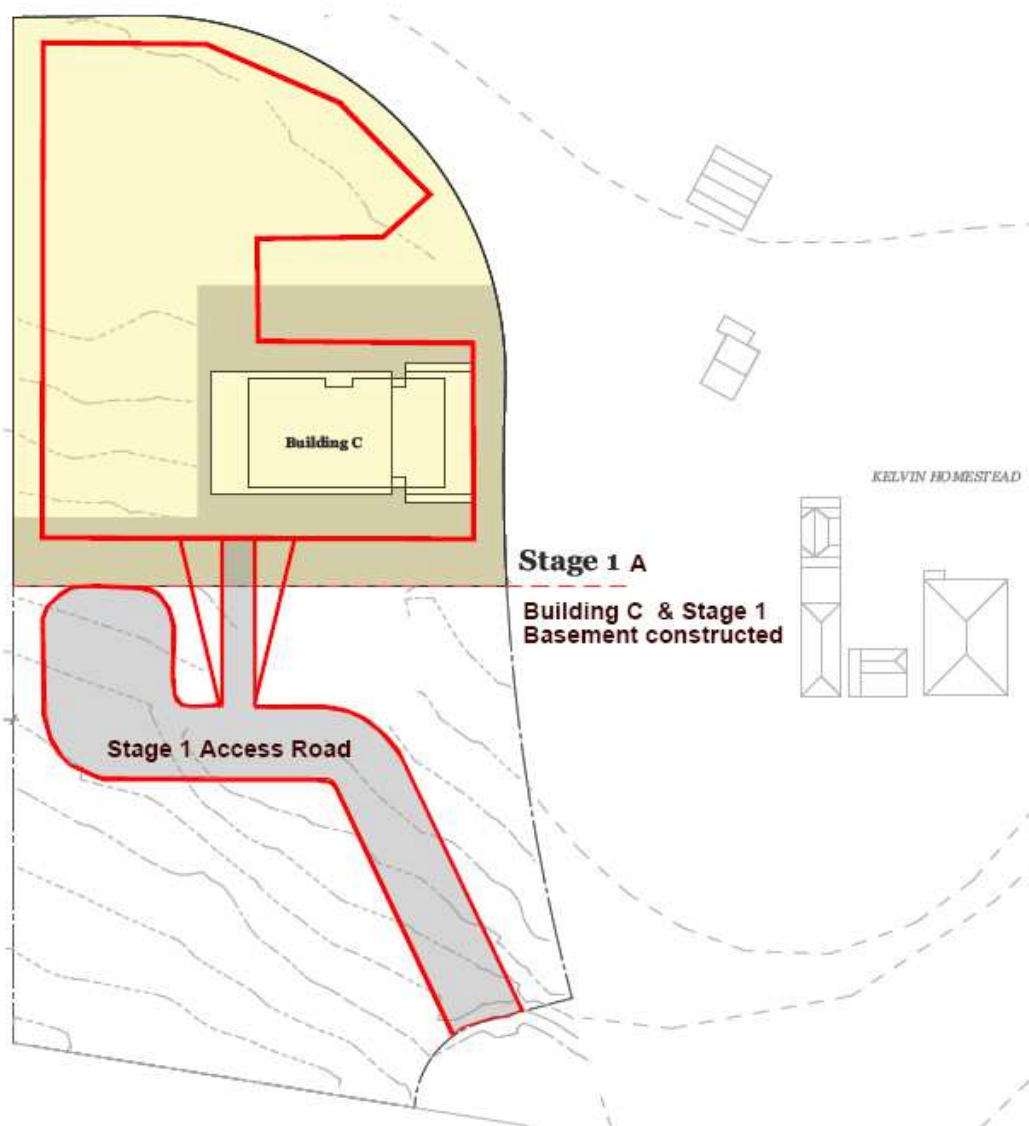
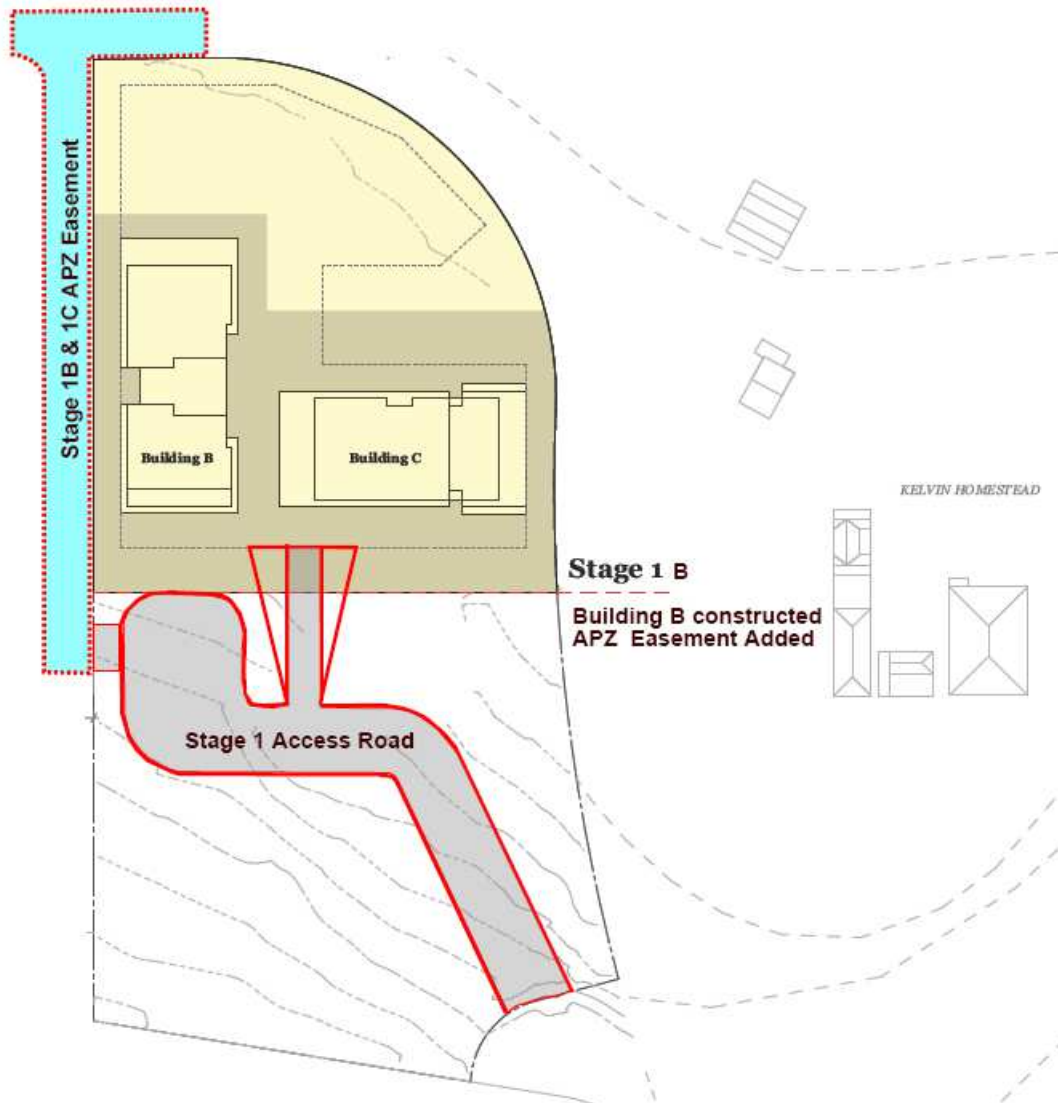
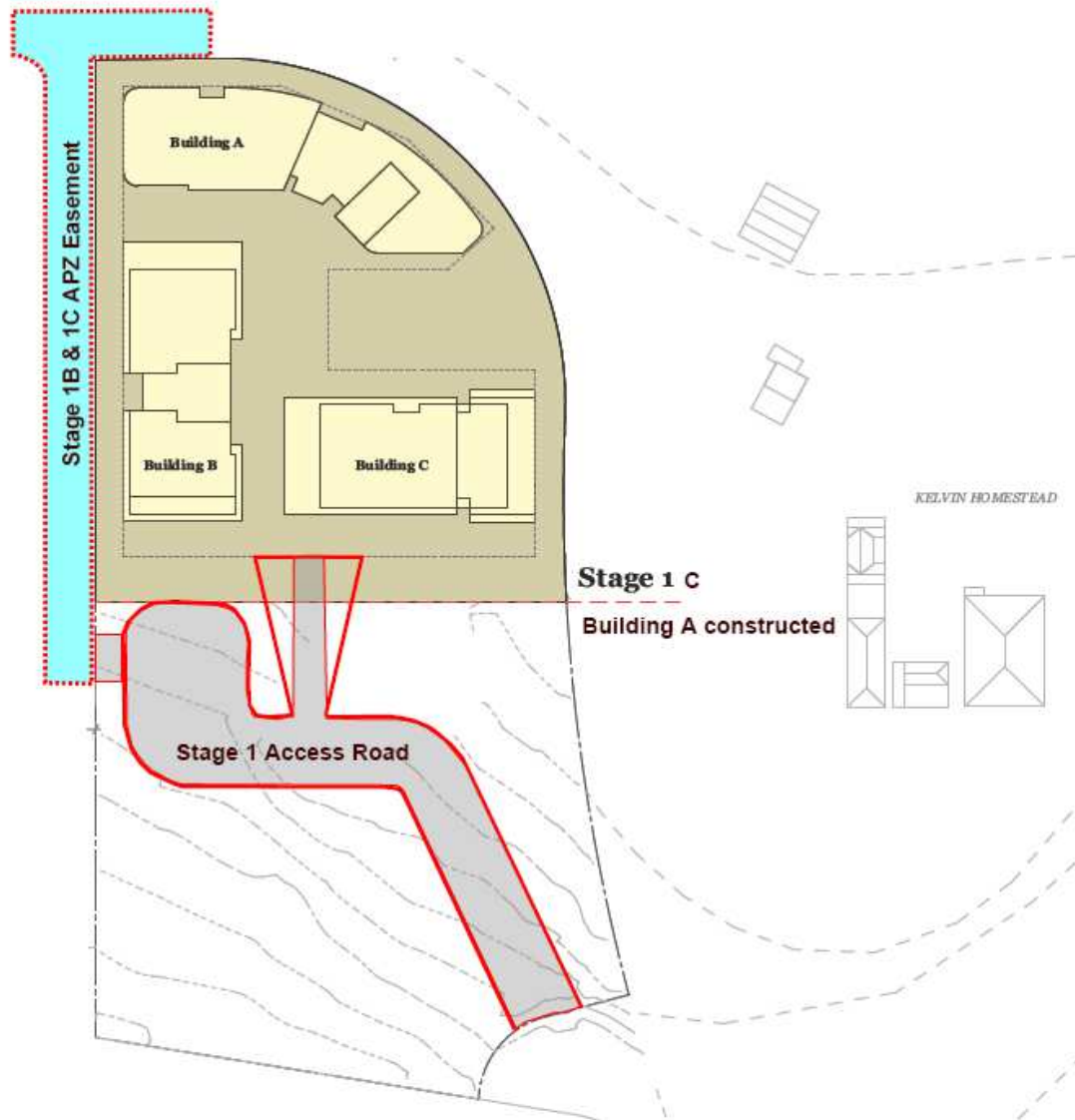


Figure 13 – Stage 1B Plan.



Construction of Building 1B will commence following establishment of an easement to provide as Asset Protection Zone and fire service vehicular access to the western boundary. This easement will be in place prior to the commencement of works for Building B.

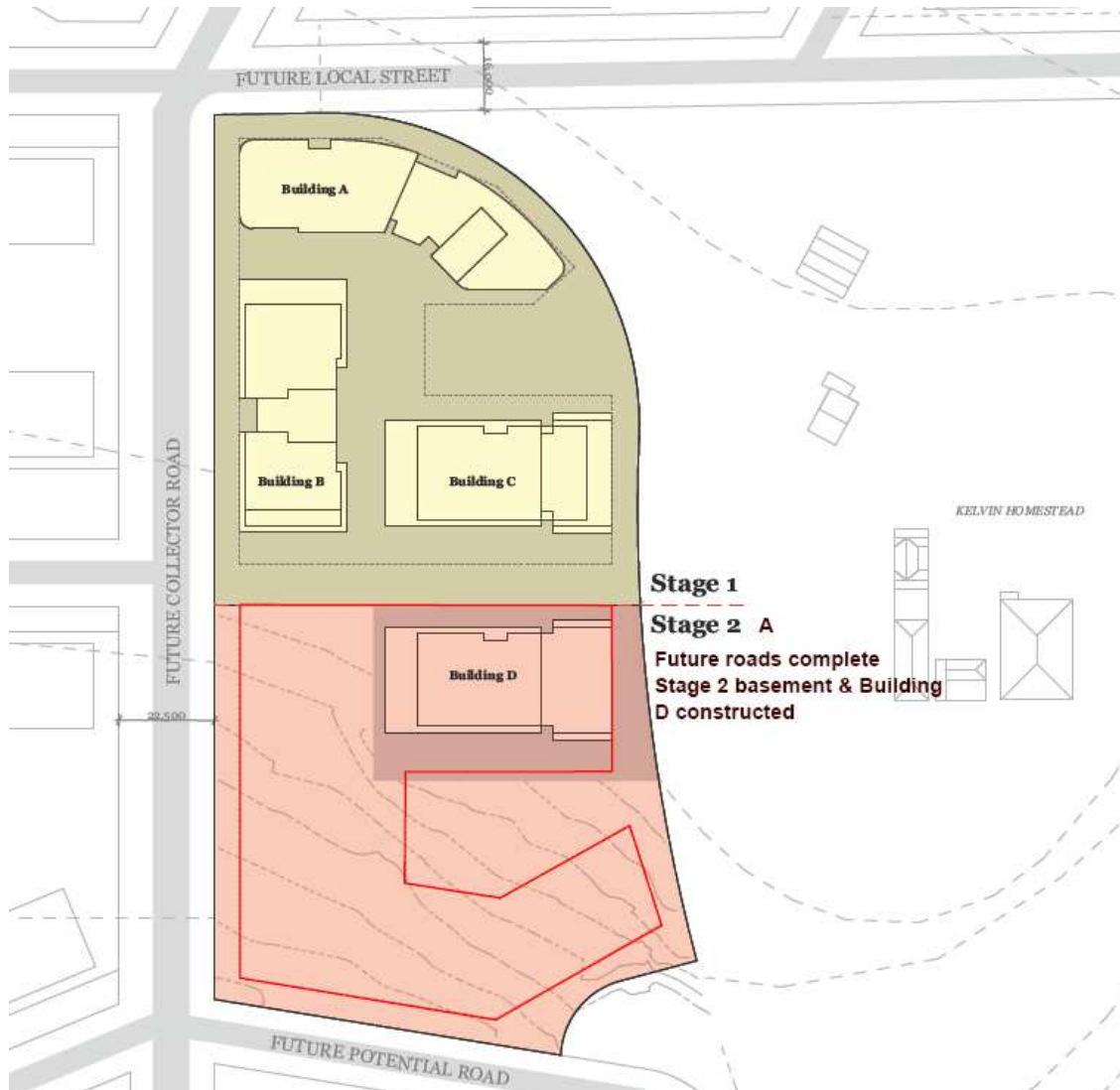
Figure 14 – Stage 1C Plan.



Construction of Building 1A will commence following completion of the construction of Building 1B. The easement providing an Asset Protection Zone and fire appliance vehicular access to the western boundary will remain in place until the Collector Road to the west of the site is constructed.

Stage 2A of the development will include the construction of the two levels of Basement Carparking beneath Buildings D, E & F and the construction of Building 2D.

Figure 15 – Stage 2A Plan.



Stage 2A will commence following the construction of the Collector Road on the adjacent property to the west.

The Collector Road will provide access to the Stage 1 and Stage 2 Basement and provide a temporary Asset Protection Zone to the site, pending development of the adjoining land.

Figure 16 – Stage 2B Plan.



Construction of Building 2F will commence following completion of the construction of Building 2E.

Figure 17 – Stage 2C Plan.



1.3 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

1.3.1 Legislation.

(a) Environmental Planning and Assessment Act (EPA Act)

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 2017* (EPA Act).

In relation to bushfire planning for new residential, rural residential and special fire protection developments in bushfire prone areas in NSW, the following sections of the Act apply:

(i) Section 4.14:

Section 4.14 requires a consent authority to determine if a proposed development that is located within a designated Bushfire Prone Area, or the buffer zone to the Bushfire Prone Land, complies with *Planning for Bushfire Protection 2019*.

(ii) Section 4.15(1) states:

“In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

(b) The likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality (e.g. natural hazards such as bushfire threat);

(c) The suitability of a site for development (e.g. bushfires)

(ii) Section 4.46:

Identifies that the subdivision of bushfire prone land that could lawfully be used for residential rural and residential purposes and the construction of special protection purpose development, as integrated development which requires authorization under Section 100B of the *Rural Fires Act 1997*.

(b) Rural Fires Act 1997

The objectives of the *Rural Fires Act* are to provide:

- The prevention, mitigation and suppression of fires;
- Coordination of bushfire fighting and prevention
- Protection of people and property from fires; and
- Protection of the environment.

In relation to bushfire planning for residential and rural residential subdivision and special fire protection purpose developments in bushfire prone areas in NSW, Section 100B of the Act applies. Section 100B provides for the issue, by the Commissioner of the NSW Rural Fire Service, of a Bushfire Safety Authority for development which creates the subdivision of bushfire prone land for residential and rural residential development and construction of special fire protection purpose developments located within a Bushfire Prone Area.

An application for a Bushfire Safety Authority must be lodged as part of the development application process and must demonstrate compliance with *Planning for Bushfire Protection 2019* and other matters which are considered necessary, by the Commissioner, to protect persons, property and the environment from the impact of bushfire.

In relation to the management of bushfire fuels on public and private lands within NSW, Sections 63(1) and 63(2) require public authorities and owners / occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimize the danger of, the spread of bushfires.

(c) Rural Fires Regulation 2013.

Section 44 of the *Rural Fires Regulation 2013* relates to planning for new residential, rural residential and special fire protection purpose developments in bushfire prone areas in NSW and provides details of the matters that are required to be addressed for the issue of a *Bushfire Safety Authority* under Section 100B of the *Rural Fires Act*.

1.3.2 Planning Policies.

Planning for Bushfire Protection – 2019 (Rural Fire Service).

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for development in bushfire prone areas.

In addition to the provisions of the *Planning for Bushfire Protection 2019* document, the Commissioner may determine, under Section 100B of the *Rural Fires Act*, additional measures for rural residential and residential subdivisions and ‘*Special Fire Protection Purpose*’ development that are considered necessary to protect the development against the impact of bushfire.

1.4 Documentation reviewed in this Assessment.

The following documents were reviewed in the preparation of this report:

- Architectural Plans and Elevations and Staging Plans of the proposed Multi-Storey Residential building prepared by DKO Architects;
- Aerial Photograph of the development site and adjoining land;
- *Planning for Bushfire Protection 2019* prepared by the NSW Rural Fire Service;
- Australian Standard AS3959 – 2018 - “*Construction of Buildings in Bushfire Prone Areas*”;
- *Rural Fires Act 1997*;
- *Rural Fires Regulation 2013*;

- Western Sydney Aerotropolis Precinct Plan;
- Western Sydney Aerotropolis Centre Hierarchy Plan;
- Western Sydney Aerotropolis Transport Network Plan;
- Western Sydney Aerotropolis Core Precinct Plan;
- Western Sydney Aerotropolis Landuse Structure Plan;
- Liverpool Council Certified Bushfire Prone Land Map;

1.5 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the site on the 11th April 2024 to confirm the topography, slopes and vegetation classification within and adjoining the development site.

The inspection also examined the management of the vegetation on the adjoining properties to determine the actual extent of any vegetation within 100 metres of the development site which could lawfully be mapped as being bushfire prone vegetation and concluded that the only vegetation which present a hazard to the development site is the grassland vegetation on the land to the west and north of the development site.

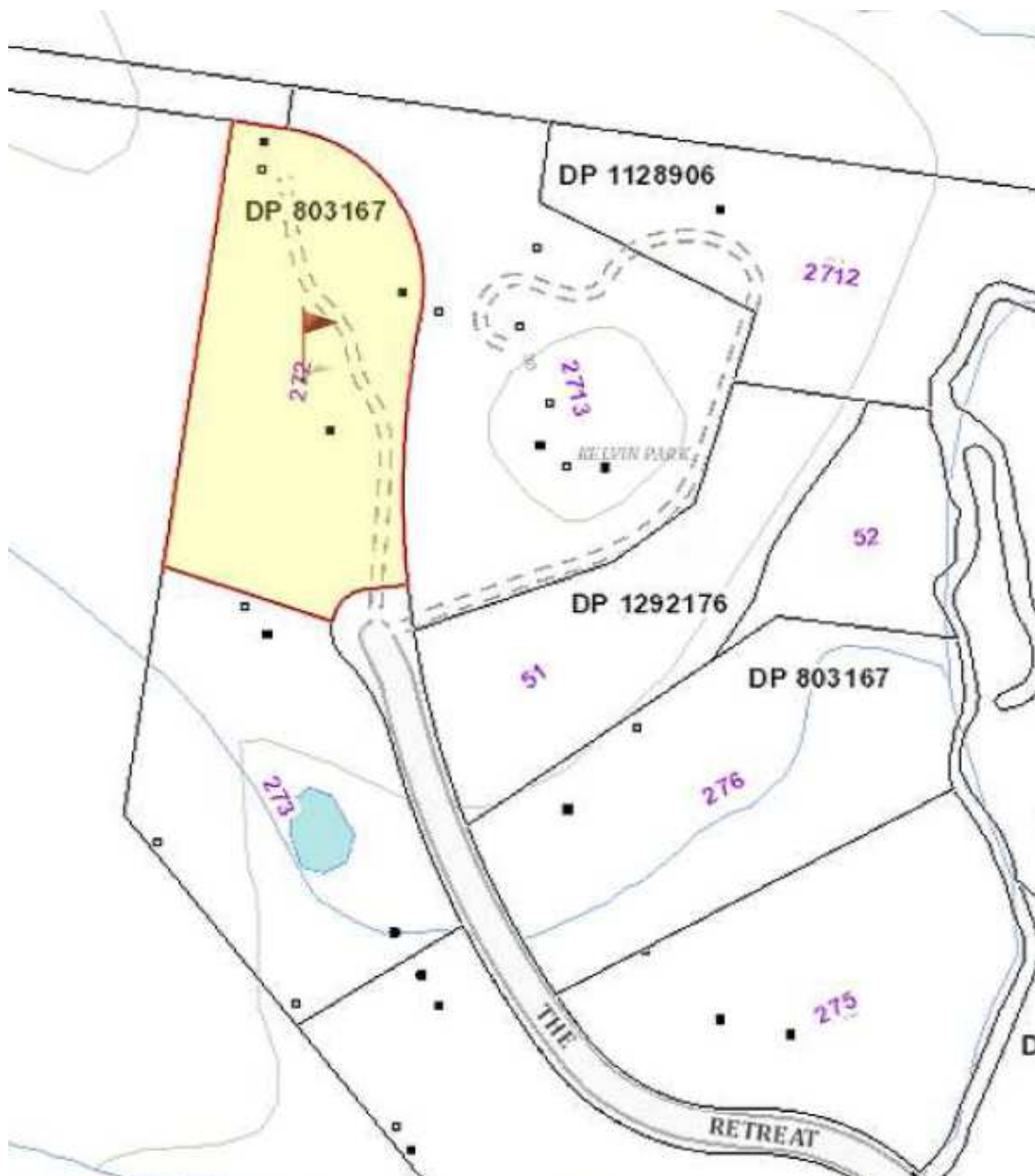
SECTION 2

DESCRIPTION OF DEVELOPMENT SITE

2.1 Location & Description.

The land within the development site consists of Lot 272 in DP 803167, No. 40 The Retreat, Bradfield.

Figure 18 – Location of Development Site.



2.2 Adjoining Land Use.

The land to the east and northeast of the site is occupied by the Heritage listed Kelvin Park.

The land to the west of the site forms part of the Western Sydney Parkland and identified as future Commercial Centre and Business Enterprise.

The land to the north and south of the site is identified for future Mixed-Use Residential Development.

2.3 Topography.

Appendix 1.5 of *Planning for Bushfire Protection 2019* defines the parameters for determining the effective slope of the land under the bushfire prone vegetation.

a) Within the Development Site.

The land within the development site falls 4 metres from the northeast corner to the southwest corner and occupies the south-western side of a low knoll located on the land to the east.

b) Within the Surrounding Land.

The land to the northwest of the site rises to the northwest along a low ridgeline.

The land to the northeast of the northeast corner of the site falls to the northeast at less than 3 degrees.

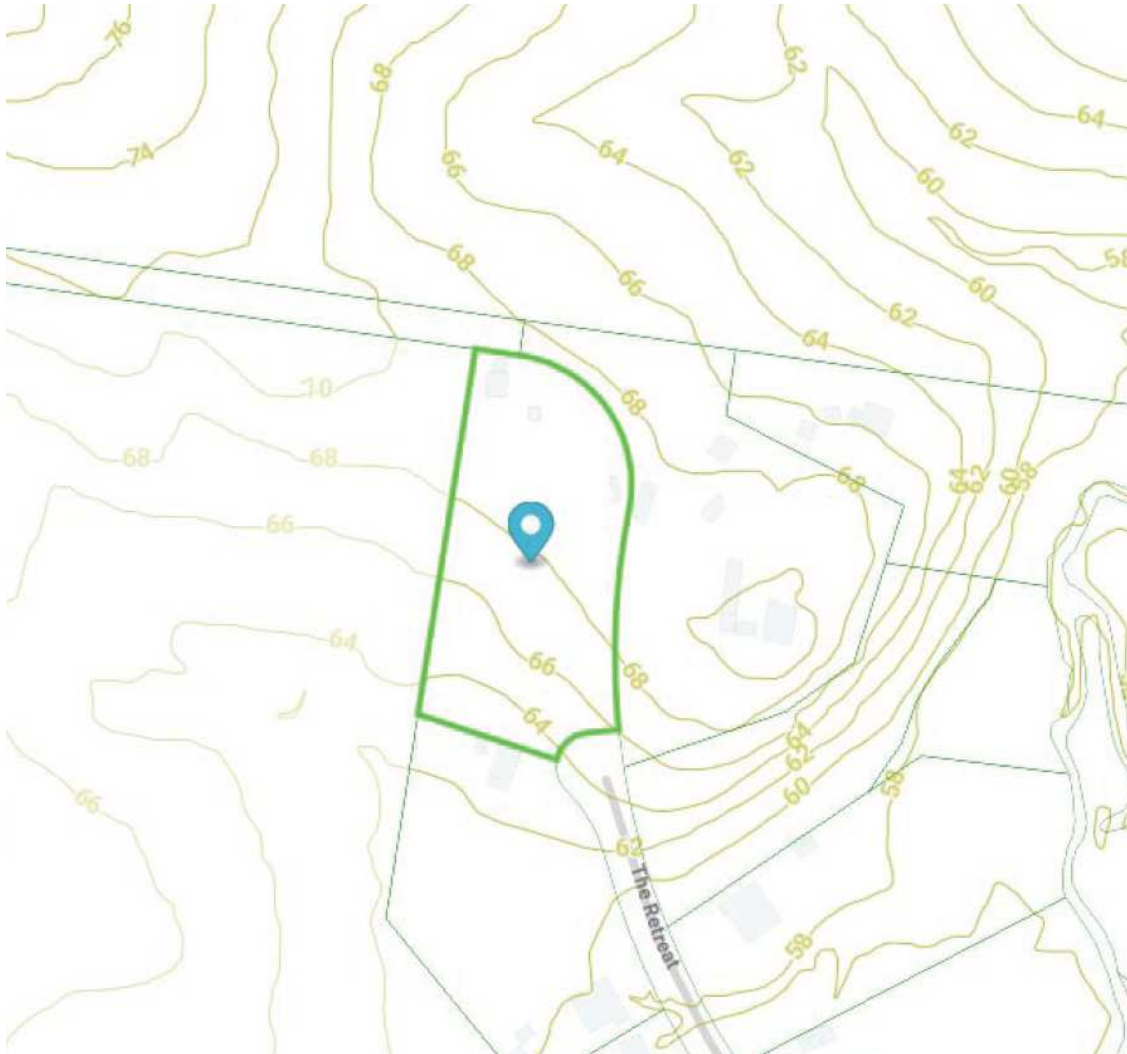
The land to the east rise to the east.

The land to the west follows the contours of the land and is level.

The land to the southwest falls to the southwest at less than 2 degrees towards a watercourse on the adjacent land before rising to the southwest.

The land to the south of the development site falls to the south at less than 2 degrees.

Figure 19 – Contour Plan.



2.4 Vegetation.

Vegetation is classified using Figure A1.2 of *Planning for Bushfire Protection 2019*, which classifies vegetation types into the following groups:

- (a) Rainforest;
- (b) Wet Sclerophyll Forest;
- (c) Dry Sclerophyll forest;
- (d) Woodland;
- (e) Tall Heath;
- (f) Short Heath; and
- (g) Grassland.

2.4.1 Vegetation within the Development Site.

The development site contains managed lawns and landscaped gardens.

2.4.2 Vegetation within the adjoining Properties.

The vegetation in the Kelvin Farm to the east of the site consists of managed lawns and landscaped gardens.



Kelvin Park



Kelvin Park



Kelvin Park

The vegetation on the land to the northeast, north, northwest and west of the development site consists of grassland with small copses of retained trees.



Looking to the northwest from the development site showing the grassland & small copse of trees.



Looking to the west from the development site showing the grassland vegetation on the land to the west and southwest of the site.



Looking to the southwest from the development site showing the grassland vegetation on the land to the southwest of the site.

Figure 20 – Aerial Photograph of Development Site and Adjoining Land.



2.6 Significant Environmental Features within the Development Site.

The land within the development site does not contain significant environmental features such as SEPP 14 Wetlands, Koala Habitat, SEPP 26 Littoral Rainforests; land slip areas or National Parks Estate; areas of geological interest; steep lands [>18 degrees] or riparian corridors.

2.7 Known Threatened Species, population or ecological community within the Development Site.

The development precinct does not contain any known threatened species, population or ecological communities.

2.8 Details and location of Aboriginal relics or Aboriginal place.

There are no known sites of Aboriginal heritage significance within the development precinct.

SECTION 3

BUSH FIRE PROTECTION ASSESSMENT

4.1 Introduction.

Section 45 of the *Rural Fires Regulation 2013* requires that an application for a *Bushfire Safety Authority* must include a bushfire assessment for the proposed development (including the methodology used in the assessment) that addresses the extent to which the development provides:

- *Asset protection zones;*
- *The siting and adequacy of water supplies for firefighting operations;*
- *Capacity of public roads to handle increased volumes of traffic during a bushfire emergency;*
- *Whether or not public roads link with the fire trail network and have two-way access;*
- *The adequacy of access and egress for the purposes of emergency response;*
- *The adequacy of bushfire maintenance plans and fire emergency procedures and;*
- *The construction standards to be used for building elements.*

These matters are examined in the following sections of this report.

4.2 Determination of Asset Protection Zones – Proposed Multi-Storey Residential Building.

Appendix 1 of *Planning for Bushfire Protection 2019* provides the following procedure for determining setback distances (Asset Protection Zones):

- (a) Determine vegetation formation;*
- (b) Determine the slope of the land under the bushfire hazard;*
- (c) Determine the 'effective slope' of the land;*
- (d) Determine the Fire Danger Index for the area;*
- (e) Determine the width of the Asset Protection Zone from Table A1.12.5.*

The properties to the east, southeast and south of the development site contain managed lawns and landscaped gardens. This vegetation does NOT constitute bushfire prone vegetation and is not a hazard to the proposed development.

The Western Sydney Parkland land to the west and southwest and the private land to the northwest, north and northeast (beyond Kelvin Park) contains grassland vegetation which is periodically slashed.

This vegetation is mapped as Category 3 Bushfire Prone Vegetation.

The Aerotropolis Precinct Plan identifies that the Western Sydney Parkland land will be developed to provide a Commercial Centre and Mixed-Use Residential development to the southwest, west, northwest, north and northeast of the development site.

This development will remove the current grassland vegetation and grassland fire hazard to the development site.

Should development on the Western Sydney Parkland occur prior to the commencement of the Stage 1 building works, no bushfire threat will remain and therefore the bushfire protection measures required to address *Planning for Bushfire Protection 2019* will not be required.

This report assumes that the hazard on the adjoining land to the west and north will not be removed prior to commencement of works on the development site.

Therefore, the Stage 1A works will include the construction of the two-level basement carpark beneath Buildings 1A, 1B & 1C and construction of Building 1C, above the Basement Carpark.

This construction staging achieves compliance with the Asset Protection Zone setback from the grassland hazard on the adjoining land.

If the hazard is removed prior to the commencement of Stage 1 Building A and Building B, there will be no requirement for the provision of Asset Protection Zones to these buildings and access will be provided to the Basement Carpark from the new Collector Road.

Should the hazard remain on the adjoining land to the west and north of the site, an easement will be established on the adjoining land to provide temporary Asset Protection Zones and access for fire-fighting appliances.

From Table A1.12.5 of *Planning for Bushfire Protection 2019*, the required width of Asset Protection Zone for unmanaged grassland vegetation on an upslope gradient to the northwest is 10 metres and for the downslope (less than 5 degrees) to the northeast and southwest is 12 metres.

From Table A1.12.5 *Planning for Bushfire Protection 2019*, the required width of Asset Protection Zone for unmanaged grassland vegetation on level land to the west of the site is 10 metres.

The Stage 1A – Building C development constructs the two-level Basement Carpark beneath Stage 1 Building A, B & C, plus construction of the Building C Tower Building.

The Stage 1 Building C Tower is located more than 35 metres from the grassland vegetation on the land to the west and more than 65 metres from the grassland vegetation on the land to the north and northeast of the development site.

These widths exceed the 10 metre width required to comply with Table A1.12.5 of *Planning for Bushfire Protection 2019* for the Stage 1C development proposal.

Prior to the construction of Buildings A and B in Stage 1 of the development proposal, an easement will be established on the adjoining land to the west and north to provide a temporary Asset Protection Zone to the widths required to comply with Table A1.12.5 of *Planning for Bushfire Protection 2019*.

Construction of Stage 2 Building D, E & F will commence following the construction of the Collector Road on the adjacent property to the west.

The Collector Road will provide access to the Stage 1 and Stage 2 Basements and provide a temporary Asset Protection Zone to the site, pending development of the adjoining land.

Figure 20 – Plan of Asset Protection Zone – Stage 1A – Building C.

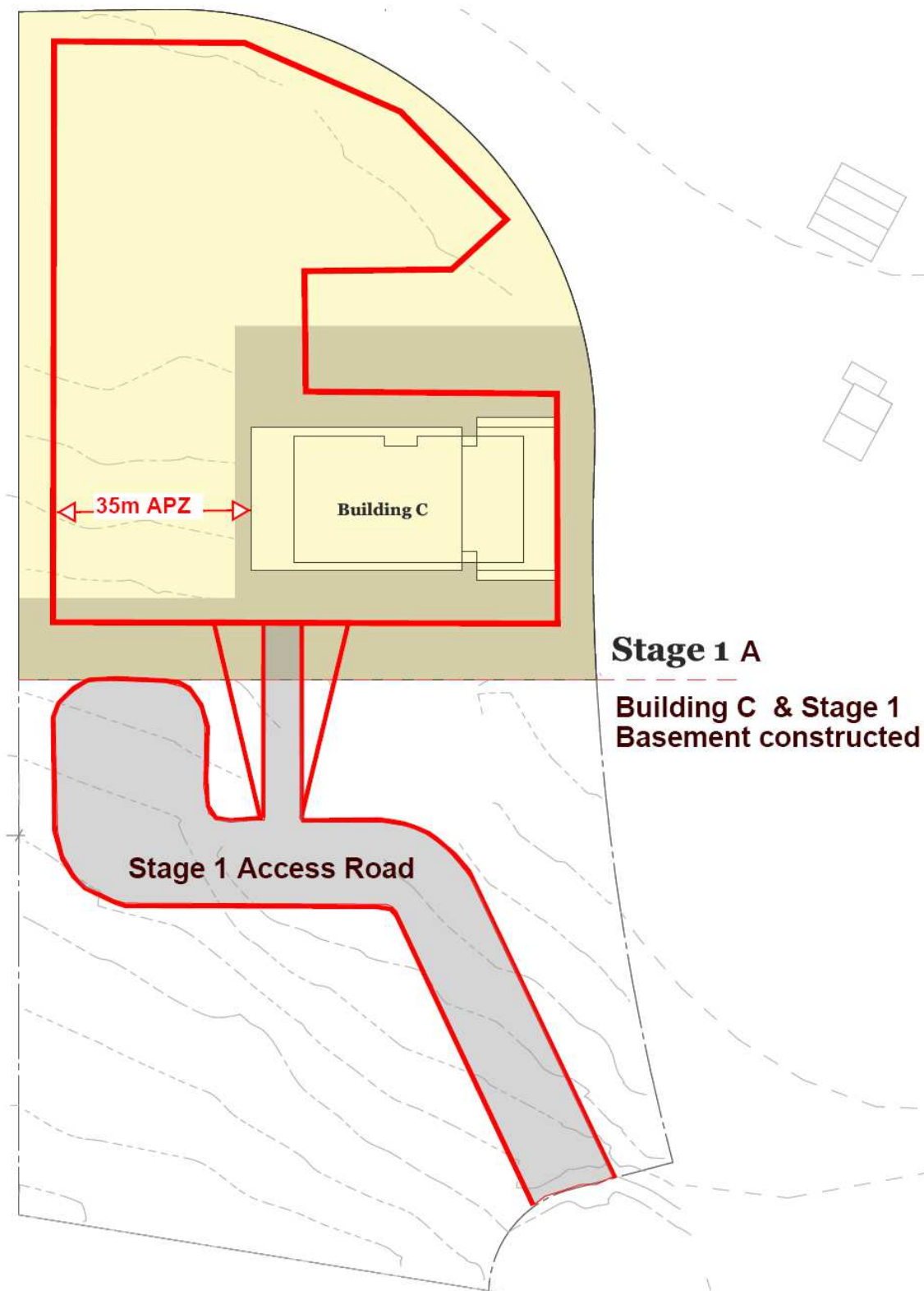
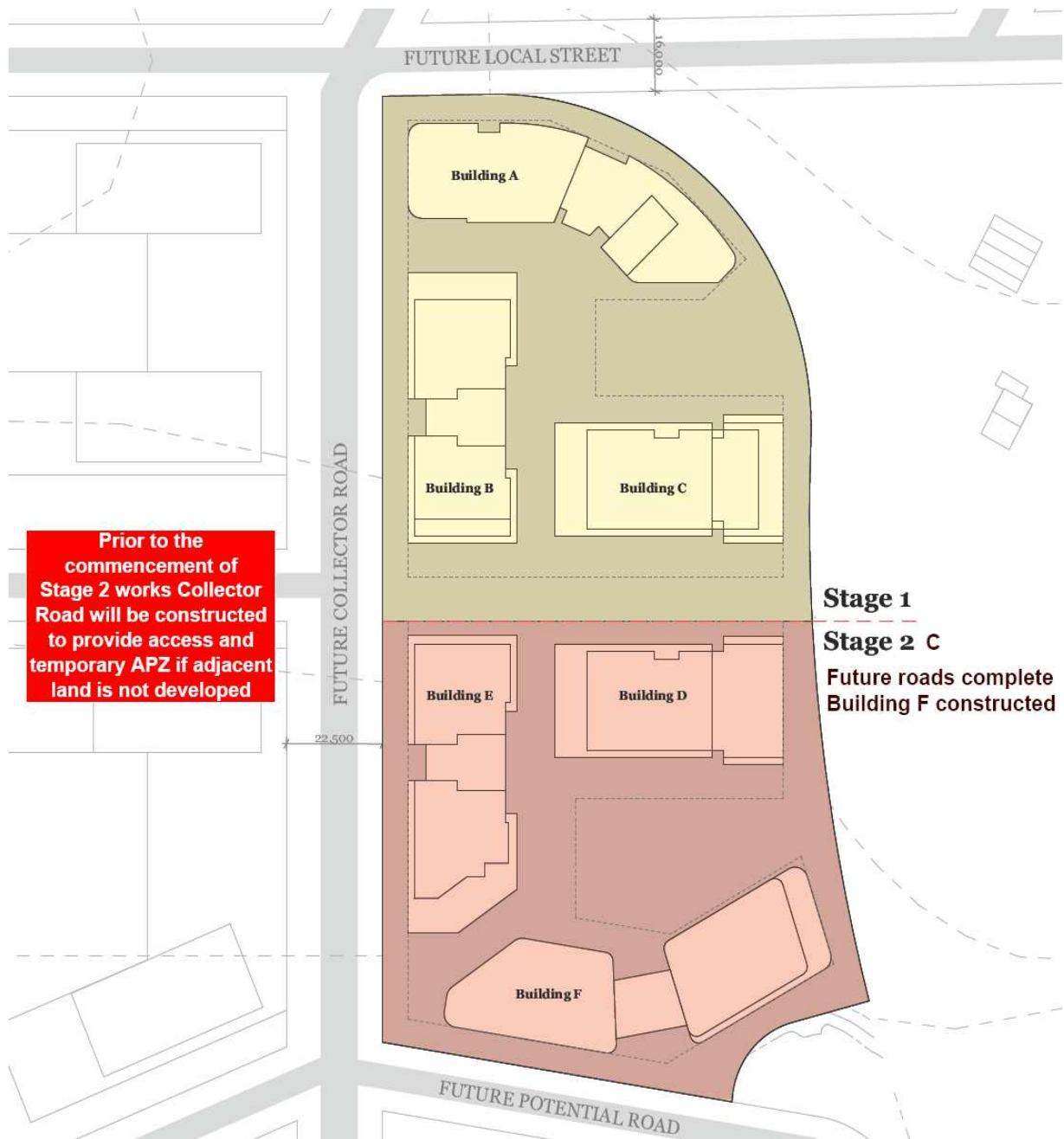


Figure 21 – Plan of Asset Protection Zone – Stage 2.



4.3 Assessment of Bushfire Attack (Construction Standards).

The width of the Asset Protection Zone (> 35 metres) to Building C in Stage 1A Multi-Storey Residential Building reduces the radiant heat rating on the building to less than 12.5kW/m².

The establishment of the temporary easement for the APZ to the west and north of Buildings A & B in the Stage 1 precinct will reduce the radiant heat levels on these buildings to less than 29kW/m². Therefore, pending removal of the hazard on the Western Sydney Parkland to the west and private land to the north/northeast, the Stage 1B and Stage 1C Multi-Storey Residential Buildings (Building A & B) shall be constructed to comply with Section 3 and Section 7 [BAL 29] of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'*.

The construction of the Collector Road to the west of the site will reduce the radiant heat levels on Building E & F in Stage 2 to less than 12.5kW/m².

Therefore, pending removal of the hazard on the Western Sydney Parkland to the west and private land to the north/northeast, the Stage 2E and Stage 2F Multi-Storey Residential Buildings (Building E & F) shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'*.

When the hazard is removed from the adjoining land, the requirements of A.S. 3959 – 2018 will NOT apply to the development.

4.4 Access Standards for Firefighting Operations.

4.4.1 Adequacy of Public Roads.

The Stage 1 of the proposed development will have vehicular access off The Retreat which will provide adequate fire-fighting appliance access to the site, pending construction of the future roads identified in the Aerotropolis Precinct Plan.

Future vehicular access to Stage 1 and the future Stage 2 Basement Carpark levels will be off the future Arterial Road that runs along the western boundary of the site.

The removal of the grassland hazard will remove the requirement to provide access for bushfire/grassland fire fighting, replaced by structure fire-fighting operational requirements.

4.4.2 Fire Trail Access to two-way Public Roads.

The proposed development does not require the provision of a fire-fighting access trail.

4.4.3 Emergency Response Access / Egress.

Emergency access and egress to Stage 1 of the proposed development is provided off The Retreat.

Future vehicular access to the Basement Carparks will be provided off the Collector Road constructed along the western boundary of the development site.

4.5 Water Supplies for Firefighting Operations.

A reticulated water supply will be provided to the proposed development from the Sydney Water mains in The Retreat.

4.6 Adequacy of Sprinkler Systems & other Fire Protection Measures.

There are no bushfire sprinkler systems required or recommended.

The buildings will be fitted with internal sprinklers.

4.7 Evacuation.

The removal of the hazard on the adjoining land will remove the bushfire risk to the development.

Pending removal of the grassland vegetation the complex maybe subject to low level impact from grass fire ember attack and smoke.

This level of exposure will not generate the need for evacuation of the complex.

SECTION 4

BUSHFIRE MANAGEMENT STRATEGIES

Strategies to address the aim and objectives of *Planning for Bushfire Protection 2019* are as follows:

Strategy 1 – Construction Phases:

Stage 1A development shall consist of the construction of the Basement Carpark levels and the Stage 1C Medium Density Residential Tower (Building C) which have compliant APZs as shown on Figure 20.

Following the establishment of the temporary Asset Protection Zone and fire appliance access adjacent to the western and the northern boundaries development Stage 1B and 1C shall consist of the construction of Buildings A & B.

The buildings in Stage 2 shall be constructed following completion of the construction of the Collector Road.

Strategy 2 – Asset Protection Zone:

Prior to the occupation of the Stage 1C Medium Density Residential Tower the whole of the site shall be managed as an Asset Protection Zone.

Strategy 3 – Management of the Asset Protection Zone:

The Asset Protection Zone shall be designed, constructed and maintained as an Inner Protection Area [IPA] in accordance with Appendix 4 of *Planning for Bushfire Protection 2019* and the NSW Rural Fire Service's document '*Standards for Asset Protection Zones*'.

Strategy 4 – Bushfire Construction Standards to the proposed Buildings:

Pending removal of the hazard on the Western Sydney Parkland to the west and private land to the north/northeast, the Stage 1B and Stage 1C Multi-Storey Residential Buildings (Building A & B) shall be constructed to comply with Section 3 and Section 7 [BAL 29] of A.S. 3959 – 2018 – '*Construction of Buildings in Bushfire Prone Areas*'.

Pending removal of the hazard on the Western Sydney Parkland to the west and private land to the north/northeast, the Stage 2E and Stage 2F Multi-Storey Residential Buildings (Building E & F) shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] of A.S. 3959 – 2018 – '*Construction of Buildings in Bushfire Prone Areas*'.

When the hazard is removed from the adjoining land, the requirements of A.S. 3959 – 2018 will NOT apply to the development.

Strategy 5 – Water Supplies for Firefighting Operations:

The existing Sydney Water reticulated service shall be extended into the development site with hydrants installed in accordance with A.S. 2419.1 – 2005.

SECTION 5

CONCLUSION

This report has been prepared for a State Significant Development Application seeking consent for the construction of a Multi-Storey Residential complex on proposed Lot 272 in DP 803167, No. 40 The Retreat, Bradfield.

This report has reviewed the proposed development against the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019* and has found that, the Liverpool Bushfire Prone Land Map identifies the vegetation on the land surrounding the development site consists of Category 3 Bushfire Prone Vegetation.

The site inspection confirmed that the existing rural residential development along The Retreat contains managed landscaped gardens which do not constitute bushfire prone vegetation.

The vegetation on the Sydney Western Parkland, to the southwest and west and on the private land to the northwest and north of the site contains grassland vegetation, which when unmanaged presents a risk to the proposed residential development.

A review of the Western Sydney Aerotropolis Precinct Plan document confirms that this land is zoned for future Commercial Centre and Business Enterprise development.

Sydney Aerotropolis Precinct Plan also identifies the future transport network, including roads that will service the development precinct.

Stage 1 of the development is likely to proceed prior to the development of the adjoining land and construction of the new road network and therefore requires the establishment of an Asset Protection Zone to provide protection from a grassland fire.

The design of the proposal does not permit the establishment of a complying width of Asset Protection Zone within the development site. Therefore, pending removal of the grassland hazard from the adjoining land, the development will occur with Building C in Stage 1A constructed in the eastern portion of the site, providing complying Asset Protection Zone to the hazard on the land to the west and north.

Buildings A & B in Stage 1 will be constructed following the creation of a temporary easement on the adjoining land for an Asset Protection Zone and access for fire-fighting appliances.

The construction of Building D, E & F in Stage 2 of the development will occur following the construction of the Collector Road adjacent to the western boundary of the site. The Collector Road will provide an Asset Protection Zone and permanent vehicular and fire-fighting access to the west of the site.

Should the grassland hazard on the adjoining land be removed prior to the commencement of construction of the Stage 1 and Stage 2 buildings the requirement for the provision of Asset Protection Zones and bushfire construction standards to the buildings will not be required.

Table 8.2.2 of *Planning for Bushfire Protection 2019* lists considerations for multi-storey residential buildings in bushfire prone areas. The response to these provisions is provided below:

1. Population:
The location of the proposed development provides a safe environment in which occupants can take refuge and therefore NOT relocate to a remote location away from the site.
2. Location of Building:
The building is not located on a ridge-top;
3. Design Fire:
Perpendicular flame length is 8.0m. Flame Angle is 82 degrees (grassland vegetation on 2 degrees downslope).
4. Egress:
The pedestrian access/egress to the complex is directly off The Retreat.
5. Building Construction:
Compliance with BAL 12.5 construction standards is sufficient and appropriate to ensure that the low level of bushfire risk is mitigated, and the design fire has been addressed.

The provision of the available separation widths between the bushfire hazard and the Stage 1C and Stage 2D buildings, combined with the recommended bushfire construction standards to these buildings, removes any risk of fire spread from the vegetation to inside the building.

External balconies are included in the design of the building and are located beyond the minimum width of the Asset Protection Zone required by Table A12.5 of *Planning for Bushfire Protection 2019*.

Due to the low level of ember attack there is no requirement for the imposition of measures that restrict the use of the balconies.

6. Carparking:

The basement carparking will not be exposed to heavy ember attack or high levels of radiant heat.

7. Other Considerations:

Access for fire-fighters will not be restricted or challenging and there is no risk of floor to floor fire spread as the buildings are designed to comply with the relevant floor to floor fire spread required by the Building Code of Australia.

Table 1 summarises the extent to which the proposed development conforms to the deemed-to-satisfy specifications of *Planning for Bushfire Protection 2019*.

Table 1. Compliance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019*.

Bushfire Protection Measure	Compliance with deemed-to-satisfy provisions of <i>Planning for Bushfire Protection 2019</i>.
Asset Protection Zone setback	YES – Location of the Stage 1C & Stage 2D buildings provides a minimum Asset Protection Zone width of 35m to low hazard vegetation and exceeds the minimum widths required by Table A.1.12.5 of <i>Planning for Bushfire Protection 2019</i> .
The siting and adequacy of water supplies for fire fighting	YES – Fire-fighting Hydrant supply to be installed in accordance with AS 2419.1 – 2005.
Design of Public Roads	YES – Temporary fire access to Stage 1 provided off The Retreat
Design of Fire Trail network	No Fire network required.
Adequacy of emergency response access and egress	YES – Existing public and proposed road network provides safe, two-way access/egress for emergency service vehicles.
Adequacy of bushfire maintenance plans and fire emergency procedures	A Fire Management Plan and bushfire emergency procedures are not required for the development due to the low level of bushfire risk and the location of the Asset Protection Zones contained wholly within the site.
Building construction standards	BAL 12.5 Bushfire construction standards recommended to the Stage 1C and Stage 2D buildings
Adequacy of sprinkler systems and other fire protection measures to be incorporated into the development	Bushfire Sprinkler Systems not applicable. BCA fire protection measures to be implemented including hydrant supply and hydrant booster system for buildings and bushfire emergencies.
Emergency Management	Bushfire Evacuation Plan not required due to the low level of risk.

I confirm that the proposed development complies with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2019*.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2019*;
- *Environmental Planning & Assessment Act – 2017*;
- *Rural Fires Act – 1997*;
- *Rural Fires Regulation 2013*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2015*;
- *Bushfire Environmental Assessment Code 2021*;
- Building Code of Australia;
- Australian Standard A.S. 3959-2018 “*Construction of Buildings in Bushfire Prone Areas*”;
- *Liverpool Bushfire Prone Land Map*;

DESIGN FIRE CALCULATOR:



Calculated April 18, 2024, 10:34 am (BALc v.4.9)

The Retreat

Bushfire Attack Level calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Grassland Fire Danger Index	130	Rate of spread	19.4 km/h
Vegetation classification	Grassland	Flame length	8 m
Understorey fuel load	4.5 t/ha	Flame angle	82 °
Total fuel load	4.5 t/ha	Panel height	7.92 m
Vegetation height	n/a	Elevation of receiver	3.96 m
Effective slope	2 °	Fire intensity	45,106 kW/m
Site slope	0 °	Transmissivity	0.795
Distance to vegetation	35 m	Viewfactor	0.1043
Flame width	100 m	Radiant heat flux	6.31 kW/m ²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,090 K		