

BUSHFIRE PROTECTION ASSESSMENT

FOR THE

PROPOSED RESIDENTIAL FLAT COMPLEX

ON

LOT 25 and LOT 26 in DP 228850,

No. 164 - 170

CROATIA AVENUE,

EDMONDSON PARK

Report Document Number

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0.09.2020 G.L.Swain

EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited has been commissioned by Super Star Holding Group to prepare a Bushfire Protection Assessment for a Development Application to Liverpool City Council for the proposed Retail and Residential Flat Complex on Lot 25 and Lot 26 in DP 228850, No. 164 - 170 Croatia Avenue, Edmondson Park.

The development site consists of two existing residential lots that have a combined area of 2.75 hectares. The eastern boundary of the development site is approximately 420 metres long with a frontage of approximately 90 metres to Croatia Avenue and is located in a rural landscape that is being development as part of the South West Sydney Urban Growth Area.

The development site is located on the southern side of Croatia Avenue and is bound to the east by vacant land that contains bushland vegetation. The land to the north, beyond Croatia Avenue, contains large lot rural residential development.

The land to the west of the southern portion of the development site contains Soldiers Parade beyond which is a commuter carpark for the Edmondson Railway Station. The land to the west of the northern portion of the development site is vacant.

The land to the south of the development site is vacant, partially containing cleared land and a larger parcel of vegetated bushland.

The development site is mostly zoned B4 – 'Mixed Use' under SEPP State Significant Precincts 2005. The northern part and south-eastern corner of the development site is zoned RE1 – Public Recreation.

B4 – Mixed Use zoned land extends to the west and south of the development site. E1 – National Parks and Nature Reserves zoned land adjoins the south-eastern corner of the development site.

The Liverpool Bushfire Prone Land Map records that the development site contains a small area of Category 1 Bushfire Prone Vegetation and the buffer zone to Category 1 Bushfire Prone Vegetation located on the land to the east and south-east of the development site.

Furthermore, the RE1 – Public Recreation zoned land within the northern part of the development site and on the adjacent land to the east will be rehabilitated as part of the creek riparian corridor, introducing some small areas of additional unmanaged vegetation which is likely to become a low bushfire hazard.

As the development site is shown to contain bushfire prone vegetation the development, being the construction of a multi-unit medium density residential flat building within a bushfire prone area, is required to comply with the provisions of Section 4.14 of the *Environmental Planning & Assessment Act 1979*.

In addition, the building will be subdivided into Strata Title Units once completed and for the purpose of this report is deemed to be Integrated Development as defined by Section 4.46 of the *Environmental Planning & Assessment Act 1979*.

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 therefore examines the proposed development against these requirements and provides advice on the suitability of the development in addressing the availability of complying Asset Protection Zones/Defendable Spaces, access and water supplies for fire-fighting operations and the requisite level of construction to the building in order to address the potential levels of radiant heat exposure on the building.

Graham Swain

Managing Director

Graham Swain

Australian Bushfire Protection Planners Pty Limited

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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 formation of the vegetation on and adjoining the development site;
- Undertake an assessment to determine the effective slope of the land which will cause the most insignificant fire behaviour on the facility;
- Determine the Fire Danger Index [FDI] for the site;
- Undertake an assessment to determine the adequacy of the bushfire protection measures, including the following matters:
 - (i) The provision of setbacks from vegetated areas;
 - (ii) Fire fighting water supplies;
 - (iii) Access requirements for emergency service vehicles;
 - (iv) Land management responsibilities; and
 - (v) Evacuation management.

1.2 Statutory Requirements.

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

1.2.1 Legislation.

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

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act*, 1979 (EPA Act). In relation to bushfire planning for new residential, rural residential and special fire protection developments in bushfire prone areas in NSW, Section 4.14 of the Act 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*.

Section 4.46 of the Act defines the subdivision of bushfire prone land, for residential rural; residential subdivision 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*.

1.2.2 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.

1.3 Documentation reviewed in this Assessment.

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

- Architectural Plans and Elevations of the proposed Mixed Use development prepared by Tony Owen Partners;
- SEPP State Significant Precincts Zoning Plan;
- Liverpool City Council Development Control Plan 2008 Part 2.11 Land Subdivision and Development in Edmondson Park – May 2020;
- 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;
- Liverpool Council Certified Bushfire Prone Land Map.

1.4 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the site on the 2nd September 2020 to assess 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.

1.5 Development Proposal.

A Development Application is to be lodged with Liverpool City Council for the construction of a proposed mixed use retail and multi-storey medium density Residential Flat complex and an interlinking new local road (MacDonald Road) and DCP Local Road on Lot 25 and Lot 26 in DP 228850, No. 164 - 170 Croatia Avenue, Edmondson Park – refer to Figure 1 – Edmondson Park Master Plan on Page 9.

Figure 1 – Edmondson Park Master Plan.



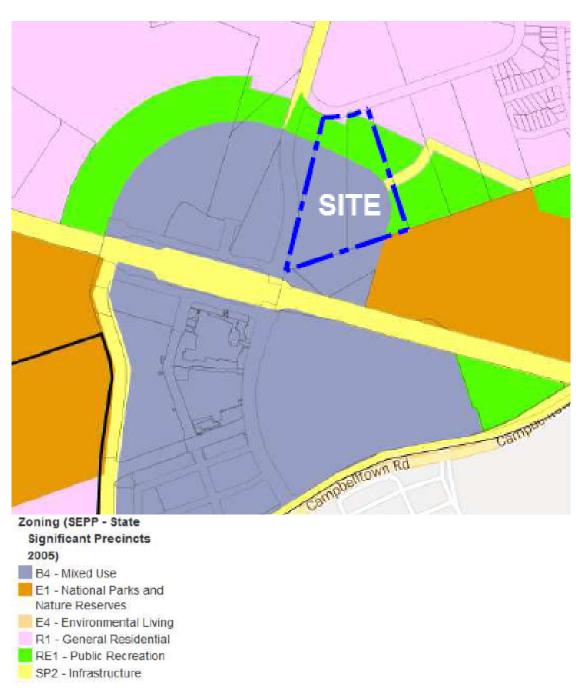
The complex consists of eight [8], seven [7] storey residential buildings (Buildings A – H) with Retail on the Ground Floor level of Buildings C, D, G & H.



Figure 2 – Ground Floor Plan of proposed Development.

The northern portion and the south-eastern corner of the development site is zoned RE1 Public Recreation. The land to the west and south of the development site is zoned B4 – Mixed Use whilst the land to the southeast of the development site is zoned E1 – National Parks and Nature Reserves – refer to Figure 3 – SEPP State Significant Precincts 2005 Zoning Plan on Page 11.





The northern and north-eastern portions of the development site contain Maxwell's Creek which will be re-engineered and realigned and will contain stormwater management ponds and some revegetation within the riparian corridor. Refer to Figure 4 – Liverpool City Council's Maxwell's Creek Concept Design on Page 12

Figure 4 – Liverpool City Council's Maxwell's Creek Concept Design.



DESCRIPTION OF DEVELOPMENT SITE

2.1 Location & Description.

The land within the development site consists of Lot 25 and Lot 26 in DP 228850, No. 164 - 170 Croatia Avenue, Edmondson Park.

The development site is irregular in shape and is located to the south of Croatia Avenue, extending south toward the South West Rail Corridor.

Figure 5 – Location of the development site.

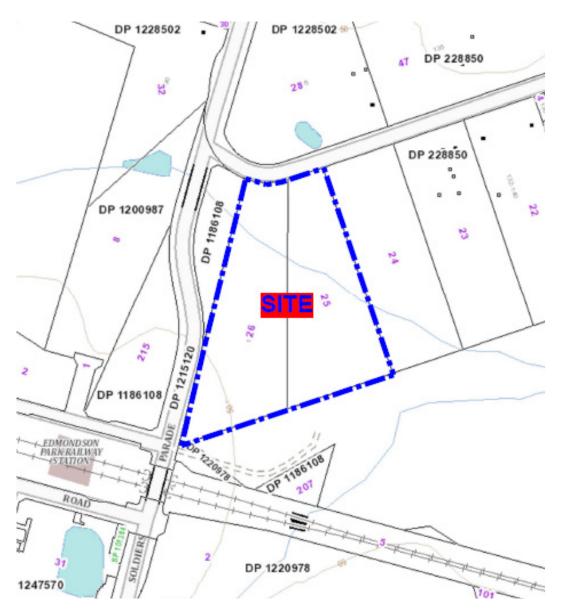




Figure 6 – Aerial Photograph showing location of Development Site.

2.2 Adjoining Land Use.

The landuse to the north of the development site, beyond Croatia Avenue, contains a rural residential dwelling and agricultural landuse.

The land to the east of the development site contains vacant land which is zoned RE1 – Public Recreation and contains bushland vegetation. The northern portion of the development site also contains RE1 – Public Recreation zoned land.

The land to the west of the southern portion of the development site contains the Soldiers Parade road reserve. The land to the west of the northern portion of the development site contains vacant land which is zoned B4 – Mixed Use.

The land to the south of the development site is vacant and zoned B4 – Mixed Use, The land to the southeast of the development site is zoned E1 – National Parks and Nature Reserves and contains bushland – refer to Figure 2 – *Extract from the SEPP State Significant Precincts Zoning Plan* on Page 8.

2.3 Topography.

Appendix 1 of *Planning for Bushfire Protection 2019* states that slopes should be assessed, over a distance of at least 100m from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour to the site.

a) Within the Development Site.

The land within the development site is generally level with a slight fall into the watercourse that crosses the northern part of the site.

b) Within 100 metres of the Development Site.

The land surrounding the development site is level.

Refer to Figure 7 – Topographic Map on Page 16.

Figure 7 – Topographic Map



2.4 Vegetation.

Appendix A1.2 of *Planning for Bushfire Protection 2019* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Figure A1.2 of *Planning for Bushfire Protection 2019*, which classifies vegetation types into the following groups:

- (a) Rainforests Forests;
- (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 grassland and remnant Cumberland Riverflat Forest (PCT 835) and Cumberland Shale Plains Woodland (PCT 849).

2.4.2 Vegetation within 140 metres of the Development Site.

The vacant land to east of the site contains Cumberland Riverflat Forest.

The E1 zoned land to the southeast of the development site contains Cumberland Shale Plains Woodland (PCT 849) and a small pocket of Cumberland Riverflat Forest (PCT 835).

Figure 8 – Vegetation Communities Map.



Note: The Maxwell's Creek corridor in the northern and north-eastern portion of the development site will be re-engineered and re-aligned to provide creek embankments and flood storage benches – refer to Figure 4 on Page 12.

These benches will be revegetated with Macrophites or similar low bushfire hazard reed planting.

2.6 Significant Environmental Features within the Development Precinct.

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

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

The RE1 zoned northern and south-eastern portion of the development site contains remnant Cumberland Riverflat Forest (PCT 835) and Cumberland Shale Plains Woodland (PCT 849) which are listed as an Endangered Ecological Community - EEC.

The development proposal, including the provision of Asset Protection Zones to the proposed buildings, does not extend into the RE1 zoned land

2.8 Details and location of Aboriginal relics or Aboriginal place.

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

PRECINCT LEVEL ASSESSMENT

3.1 Introduction.

The Liverpool Council Bushfire Prone Land Map records that the development site and the adjoining land to the east and southeast contains Category 1 Bushfire Prone Vegetation.

Figure 9 below is an extract from the Bushfire Prone Land Map showing the extent of the Category 1 Bushfire Prone Vegetation and Buffer Zone.

Ambien Policy SITE

Figure 9 – Extract of the Liverpool Bushfire Prone Land Map.

Legend: Orange – Category 1 Bushfire Prone Vegetation; Red – 100 metre wide Buffer Zone to the Category 1 Bushfire Prone Vegetation

The inspection of the development site and adjoining lands confirmed that the extent of the mapped Category 1 Bushfire Prone Vegetation on the development site and adjoining land is correct.

BUSH FIRE PROTECTION ASSESSMENT

4.1 Introduction.

Section 44(h) of the *Rural Fires Regulation 2013* requires that an application for a *Bushfire Safety Authority*, pursuant to Section 100B of the *Rural Fires Act 1997*, 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 fire-fighting 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.

Section 4.2 of this report uses the methodology provided by *Planning for Bushfire Protection 2019* to determine the Asset Protection Zones required for the residential component of the development whilst the remaining items identified by Section 44 of the *Rural Fires Regulation 2013* are examined in Sections 4.3 – 4.8 of this report.

4.2 Determination of Asset Protection Zones – Proposed Medium Density Residential Flat Building.

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

- (a) Determine vegetation formations as follows:
 - Identify all vegetation in all directions from the site for a distance of 140 metres;
 - Consult Figure A2.1 to determine the predominant vegetation type; and
- (b) Determine the effective slope of the land under the predominant vegetation Class;
- (c) Determine the appropriate fire [weather] area;
- (d) Consult Table A1.12.5 and determine the appropriate setback [Asset Protection Zone] for the assessed land use, vegetation formation and slope range.

Table 1 summarises the Asset Protection Zones provisions of the proposed development from Table A1.12.5 of *Planning for Bushfire Protection 2019*:

Table 1. Summary of Asset Protection Zone to the proposed Residential Apartments.

Fire Danger Index [FDI] for the site is 100

Aspect	Vegetation within 140m of Residential Unit building	Predominant Vegetation Formation Class [Figure A1.2 PfBFP]	Effective Slope of Land	Asset Protection Zone width required by PfBFP	Available width of Asset Protection Zone
North of Building A & B; Northeast & east of Building E & F	Re-engineered riparian corridor to Maxwell's Creek with Macrophites and reed planning in flood benches and narrow bands of Cumberland Riverflat Forest and Cumberland Shale Plains Woodland	Forest re classified as 'rainforest'	Level	11 metres	North to Building A & B 19.0 metres; 19.5m to N.E & east of Building E & F
Southeast	Cumberland Riverflat Forest and Cumberland Shale Plains Woodland	Forest	Level	24 metres	24 metres

MAXWELLS CREEK REALIGNMENT (8) ARIAN REVEGETATION FUTUREROAD B RIBARIAN REVI (7)(7) 0000000 **MASTER PLAN - S**

Figure 10 – Plan of Asset Protection Zone.

4.3 Assessment of Bushfire Attack (Construction Standards).

The vegetation within the Maxwell's Creek riparian corridor, to the north of Building A & B, to the northeast of Building E and to the east of Building F is low hazard Macrophites and reeds on the benches. This vegetation has been identified as low hazard 'rainforest' for the purpose of determining the width of the Asset Protection Zones and bushfire construction standards to the buildings located adjacent to the riparian corridor. Building F is also exposed to the forest vegetation in the adjacent E1 zoned land.

From Table A1.12.5 of *Planning for Bushfire Protection 2019* the available 19.0 metre wide Asset Protection Zone to the north of Building A & B and the 19.5 metre wide Asset Protection Zone to the northeast and east of Building E & F the required bushfire construction standards is BAL 19.

Therefore, the northern elevations of Building A and Building B, the north-eastern and eastern elevations of Building E and the eastern elevation of Building F shall be constructed to comply with Section 3 and Section 6 (BAL19) of A.S. 3959 – 2018 – 'Construction of Buildings in Bushfire Prone Areas'.

From Table A1.12.5 of *Planning for Bushfire Protection 2019* the available 24.0 metre wide Asset Protection Zone to the southeast of Building F the required bushfire construction standard is BAL 29.

Therefore, the south-eastern elevation of Building F shall be constructed to comply with Section 3 and Section 7 (BAL29) of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'*.

Bushfire construction standards shall be applied to all buildings located within 100 metres of the bushfire hazard to the north, northeast, east and southeast of the development precinct.

4.4 Access Standards for Firefighting Operations.

4.4.1 Adequacy of Public Roads.

The provided new roads shall be constructed to standards which comply with Appendix 3 of *Planning for Bushfire Protection 2019*.

The proposed development will have access to a new public road network including the provision of a perimeter road against the bushfire hazard. This road shall have a minimum pavement width of 8.0 metres with 'No Parking' to each side.

The minimum width of internal roads shall be 5.5 metres with parking provided in designated parking bays, clear of the pavement width.

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 the proposed development is to be provided off the new road network as explained in Section 4.4.1 above.

4.5 Water Supplies for Firefighting Operations.

A reticulated water supply will be provided to the proposed development, providing street hydrant supply with an extension of this service into the buildings to provide a fire-fighting water service to each floor to address the provisions of A.S 2419.1 – 2005.

A hydrant booster assembly shall be provided for structural fire-fighting and no additional water supplies are required for bushfire fighting operations.

4.6 Emergency Management for Fire Protection.

Due to the low level of bushfire risk on the proposed buildings, there is no requirement to implement emergency management systems to aid in the protection of the building/occupants against the exposure to bushfires.

4.7 Adequacy of Sprinkler Systems & other Fire Protection Measures.

There are no sprinkler systems required or recommended.

4.8 Evacuation.

An emergency management plan shall be prepared for the proposed development and shall include protocols for potential short term impact from a bushfire event in the adjoining E1 (National Park/Nature Reserve) zoned land to the southeast of the development precinct.

BUSHFIRE MANAGEMENT STRATEGIES

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

Strategy 1 – Asset Protection Zone:

There shall be provided and maintained to the northern aspect of Building A and Building B a minimum 19.0 metre wide Asset Protection Zone, consisting of the building setback and width of the new road.

There shall be provided and maintained to the north-eastern and eastern aspects of Building E and Building F a minimum 19.5 metre wide Asset Protection Zone, consisting of the building setback and width of the new road.

There shall be provided and maintained to the south-eastern aspect of Building F a minimum 24.0 metre wide Asset Protection Zone, consisting of the building setback and width of the new road.

Strategy 2 – 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 3 – Bushfire Construction Standards to the proposed Complex:

The northern elevations of Building A and Building B, the north-eastern and eastern elevations of Building E and the eastern elevation of Building F shall be constructed to comply with Section 3 and Section 6 (BAL19) of A.S. 3959 – 2018 – 'Construction of Buildings in Bushfire Prone Areas'.

The south-eastern elevation of Building F shall be constructed to comply with Section 3 and Section 7 (BAL29) of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'*.

The bushfire construction standards shall be applied to all buildings located within 100 metres of the bushfire hazard to the north, northeast, east and southeast of the development precinct.

Strategy 4 – 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.

Strategy 5 – Public Roads:

The new public roads shall be constructed to standards which comply with Appendix 3 of *Planning for Bushfire Protection 2019*.

CONCLUSION

This report has been prepared for a Development Application seeking consent for the construction of a mixed use retail and residential flat complex on Lot 25 and Lot 26 in DP 228850, No. 164 - 170 Croatia Avenue, Edmondson Park.

The development site and adjoining land to the east and southeast are recorded on the Liverpool Bushfire Prone Land contain Category 1 Bushfire Prone Vegetation.

The northern portion of the development site is zoned RE1 – Public Recreation and contains Cumberland Riverflat Forest and Cumberland Shale Plains Woodland.

Liverpool City Council has prepared a rehabilitation plan for the Maxwell's Creek riparian corridor which includes reshaping and revegetation of the flood benches with low hazard Macrophites and similar species.

The design and planting within the riparian corridor present a low level of bushfire hazard to the proposed Buildings A, B, E & F. Rainforest vegetation classification has been used to determine the width of the Asset Protection zone.

The available width of Asset Protection Zone to these buildings (19.0m & 19.5m) reduces the bushfire construction standard to BAL 19.

The retention of the Cumberland Riverflat Forest and Cumberland Shale Plains Woodland within the E1 zoned land to the southeast of Building F presents a moderate level of hazard to this building from a fire which spreads under southeasterly winds.

The 24.0 wide Asset Protection Zone applied to this building satisfies Table A1.12.5 of *Planning for Bushfire Protection 2019*, with a resultant construction standard of BAL 29.

The proposed perimeter road satisfies *Planning for Bushfire Protection 2019* with a trafficable pavement width of 8.0 metre and 'No Parking' to both sides and the application of bushfire construction standards pursuant to A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'* to the building/s.

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

Consham Swain

Graham Swain Managing Director,

Australian Bushfire Protection Planners Pty Limited.

Fire Protection Association Australia Member No. 48781

REFERENCES:

- N.S.W. Rural Fire Service Planning for Bushfire Protection 2019;
- N.S.W Rural Fire Service Threatened Species Hazard Reduction List for the Bushfire Environmental Code (2003);
- Environmental Planning & Assessment Act 1979;
- Rural Fires Act 1997;
- Rural Fires and Environmental Assessment Legislation Amendment Act 2002;
- Rural Fires Regulation 2013;
- NSW Rural Fire Service Guideline for Bushfire Prone Land Mapping 2015;
- Biodiversity Management Act 2017;
- Bushfire Environmental Assessment Code;
- Building Code of Australia;
- Australian Standard A.S. 3959-2018 "Construction of Buildings in Bushfire Prone Areas";
- Liverpool Bushfire Prone Land Map;
- SEPP State Significant Precincts Zoning Plan;
- Modification of the Creeks in Edmondson Park Concept Plan prepared by Storm Consulting for Liverpool City Council.