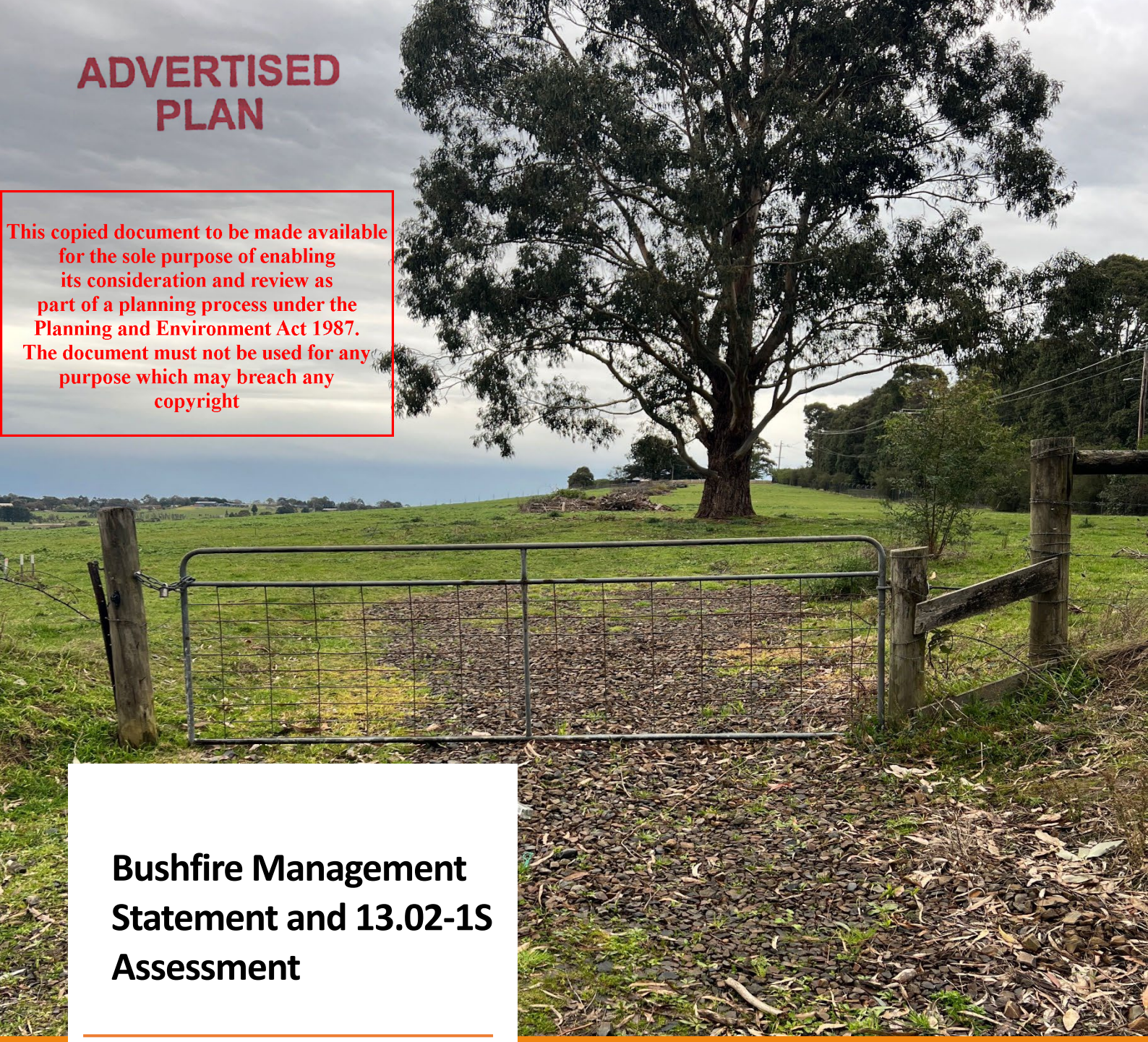

Bushfire Management Statement and 13.02-1S Assessment

19-23 Horswood Road, Narre Warren Nth

July 2023

FIRE RISK
Consultants

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Introduction

This report has been developed to meet the requirements of the Bushfire Management Overlay as outlined within the Victorian Planning Provisions. The site located at 19-23 Horswood Road, Narre Warren North is partially within the Bushfire Management Overlay (refer to Figure 1 and 2). This report outlines the required treatments to enable compliance with the Bushfire Management Overlay. The proposal is to construct a school on the property. The site layout design is provided in Appendix 3.

The report has been developed following extensive assessment of the landscape and local bushfire risk along with access, egress and topography.

The report addresses the following provisions of the Victorian Planning Scheme:

Clause 13.02-1S – Bushfire Planning

Clause 44.06-3 – Bushfire Hazard Site Assessment, Bushfire Hazard Landscape Assessment and Bushfire Management Statement.

Clause 53.02 - Bushfire Planning

To ensure sufficient information is provided that provides a detailed understanding of bushfire risk, a Pathway 2 report has been developed along with an assessment against Clause 13.02-1S. This report only addresses those parts of the Victorian Planning Provisions that relate to Bushfire.

Application Details

Municipality:	Casey
Title Description:	Lot 1 LP130932
Overlays:	Bushfire Management Overlay (BMO), Significant Landscape Overlay (SLO)
Zoning:	Green Wedge A Zone (GWZ)

Site Description

Existing use and siting of buildings and works on and near the land:	The property is 7.99 hectares and is located to the east of Lysterfield Lake. It is currently vacant and is used for stock grazing. There are some scattered trees across the property. The property to the west is associated with the Lysterfield Lake Park and is managed by Parks Victoria. The property to the north is associated with an Apple Orchard.
Existing access arrangements:	Access to the property is via Horswood Road. Horswood Road connects to Belgrave Hallam Road which provides for north or south travel.

Location of nearest fire hydrant:	The closest street fire hydrant is located at the intersection of Horswood Road and Belgrave – Hallam Road. This is outlined in Appendix 4. The site will be provided with a fire hydrant system that meets the requirements of the National Construction Code and AS2419.1.

Figure 1 - Overview of the site with the BMO shaded

Figure 2 - BMO and the site

Proposed development

The development proposes to construct a school on the site. The development has been designed to utilise the site layout to reduce the bushfire risk. The development has placed the open space areas to the western side of the property with the school buildings being located to the east and outside of the BMO.

The buildings are typical of a school development and include class rooms, library, sports facilities, Chapel, staff rooms and an administration area. There are also large car parking areas to the north of the buildings adjacent to Horswood Road.

Access and egress

The site is accessible from Horswood Road which is the main connection between Belgrave – Hallam Road and Lysterfield Lake Park. This intersection provides the opportunity to travel either to the north or south. However, it is likely for travel to the south to be the likely safer option if a bushfire is burning to the north of the development.

Access and egress from the property is provided from three locations. The car parking area is provided with a dual access arrangement to assist with the management of before and after school traffic. An additional access point is provided near the western boundary from Horswood Road. The sealed cycling track is also designed to support emergency vehicle access that will enable firefighting vehicles to safely access the western boundary from within the school site.

Travel to the south along Belgrave - Hallam Road will enable very quickly access to residential and commercial areas. These areas are not considered as having a bushfire risk and will provide a level of safety if a bushfire is burning in the landscape to the north.

Topography

The topography on the property consists of gentle slopes and once developed will contribute to the bushfire risk. In the surrounding area, the landscape consists of gentle slopes that may contribute to bushfire behaviour, but this is unlikely. This is also influenced by the availability of fuel to support bushfire activity.

Vegetation

The property is currently utilised for farming activities and is grassed. This will be removed and replaced with a managed landscape that will likely not support bushfire activity.

The surrounding landscape is highly fragmented and is a mix of non vegetated areas, orchards, farming properties, car parking associated with Lysterfield Lake Park and forested areas. The forested areas are within the Lysterfield Lake Park that is on the western side of the development.

The forest areas due to their small size are highly disturbed which has resulted in a lesser fuel load. There is evidence of people using these areas to travel through and this has thinned the vegetation and reduced the ground and mid storey fuel levels. However, the classification has remained as a forest as per AS3959 to ensure a heightened level of conservatism in the resulting bushfire risk assessment outcome.

Following the development, the site will be landscaped in accordance with the plans provided in Appendix 5. The planting schedule has been developed to ensure that the vegetation when it reaches maturity does not enable it to be classified in accordance with AS3959.

Bushfire risk in southeast Australia

The southeast of Australia is one of the most fire prone areas in the world.

The rate a bushfire can spread is a direct result of the weather, fuel hazard (including dryness, quantity and arrangement) and the topography in which the fire is burning. Bushfire fuel is the only one of these three factors that it is possible to modify.

Extreme fire conditions can occur in south-eastern Australia when dry winters and springs are followed by summers where bushfire fuels become very dry.

When these conditions combine, fires can be expected to move quickly under the influence of strong, gusty north westerly winds. These fires can then move rapidly in a different direction when the subsequent south–westerly wind change arrives. Fires that start under these conditions can reach a very high intensity, even in areas of relatively low fuel loads and can be difficult to control until the weather conditions abate.

The height of a bushfire's intensity is directly linked to its destructiveness and the more difficult it is to control. As the intensity increases so does the difficulty of containment and effective suppression. Very high intensity fires with flame heights greater than 10 metres are generally uncontrollable.

Bushfire intensity is a function of the heat content of the fuel, the quantity of fuel and the rate of spread of the bushfire. The heat content of vegetation fuels is roughly constant. It has been found that the quantity and distribution of fine fuels are the main factor influencing bushfire behaviour. Larger fuels burning during a bushfire do not contribute significantly to the spread of a bushfire.

Fine fuels available to a bushfire are fuels such as grass, leaves, dead pine needles and twigs that ignite readily and are consumed rapidly when dry. They are often defined as those dead fuels less than 6mm in thickness. Fine fuel load (measured in tonnes per hectare) has therefore been used as a convenient measure of the underlying bushfire hazard in areas dominated by woody vegetation. The fine fuel load at any given time is a balance between the rate of fuel build up, and factors that remove fuel such as litter decomposition and fire. In the absence of fire, fuel loads in forests and woodlands with a shrubby or heathy understorey build up to a quasi-equilibrium state where the rate of fuel production equals the rate of decomposition. The maximum levels vary for different vegetation types and for the same vegetation types in different locations.

It has been found that fuel structure is possibly more important than the total fine fuel load in determining bushfire behaviour. Fuels in forests, woodlands and shrublands can be categorised into four layers with differing effects on fire behaviour (Hines, et al., 2010). These layers are:

Surface fine fuels: leaves, bark, small twigs and other fine fuel lying on the ground. These fuels provide the horizontal continuity that allows a bushfire to spread

Near surface fine fuels: grasses, low shrubs, bracken etc. up to about .5 m above the ground surface. Fuels in this layer will burn when the surface fuel layer burns and will increase bushfire intensity

Elevated fuels: larger shrubs and small saplings with most of the fuel closer to the top of this layer and a clear gap between them and the surface fuels. These interact with the two-layer fuel layers to further increase bushfire intensity. They also contribute to the vertical continuity of fire that allows fire to 'climb' into the tree canopy

Bark fuels: flammable bark on trees, saplings and large bushes from ground level to the canopy. Loose fibrous bark on string-bark eucalypts, and candle bark on some gums can generate large amounts of burning embers which can start spot fires ahead of the main fire front.

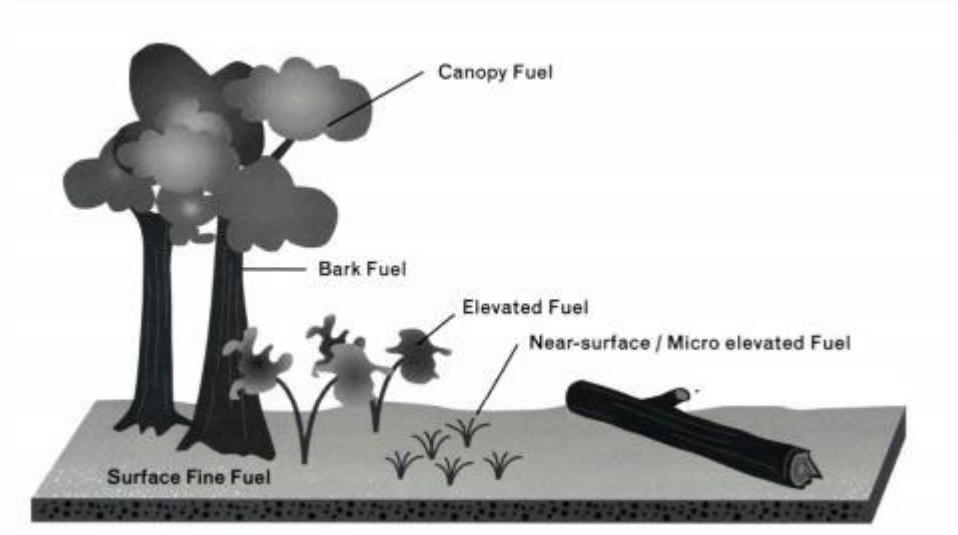

Figure 3 - Overview of fuel structure that affects bushfire behaviour

Bushfire Hazard Landscape Assessment

The Bushfire Hazard Landscape Assessment is completed to provide an assessment of the bushfire hazard more than 150 metres away from the subject site. This assessment considers all available information to determine the effects of a bushfire from more than 150m from the site.

For this assessment, the landscape risk has been assessed at one kilometre and 10 kilometres.

Fire History

The available records demonstrate that bushfires have occurred in the surrounding landscape but have not directly impacted on this property or the surrounding area. Whilst there have been bushfires in the Lysterfield Lake Park footprint in particular to the north and north west of the Lake, there is also a regular fuel reduction burning program undertaken to manage the fuel loads.

Due to the surrounding vegetation, there is the potential for bushfires to occur in the future if the conditions are elevated.

Figure 3 shows the bushfire history according to DEECA records.

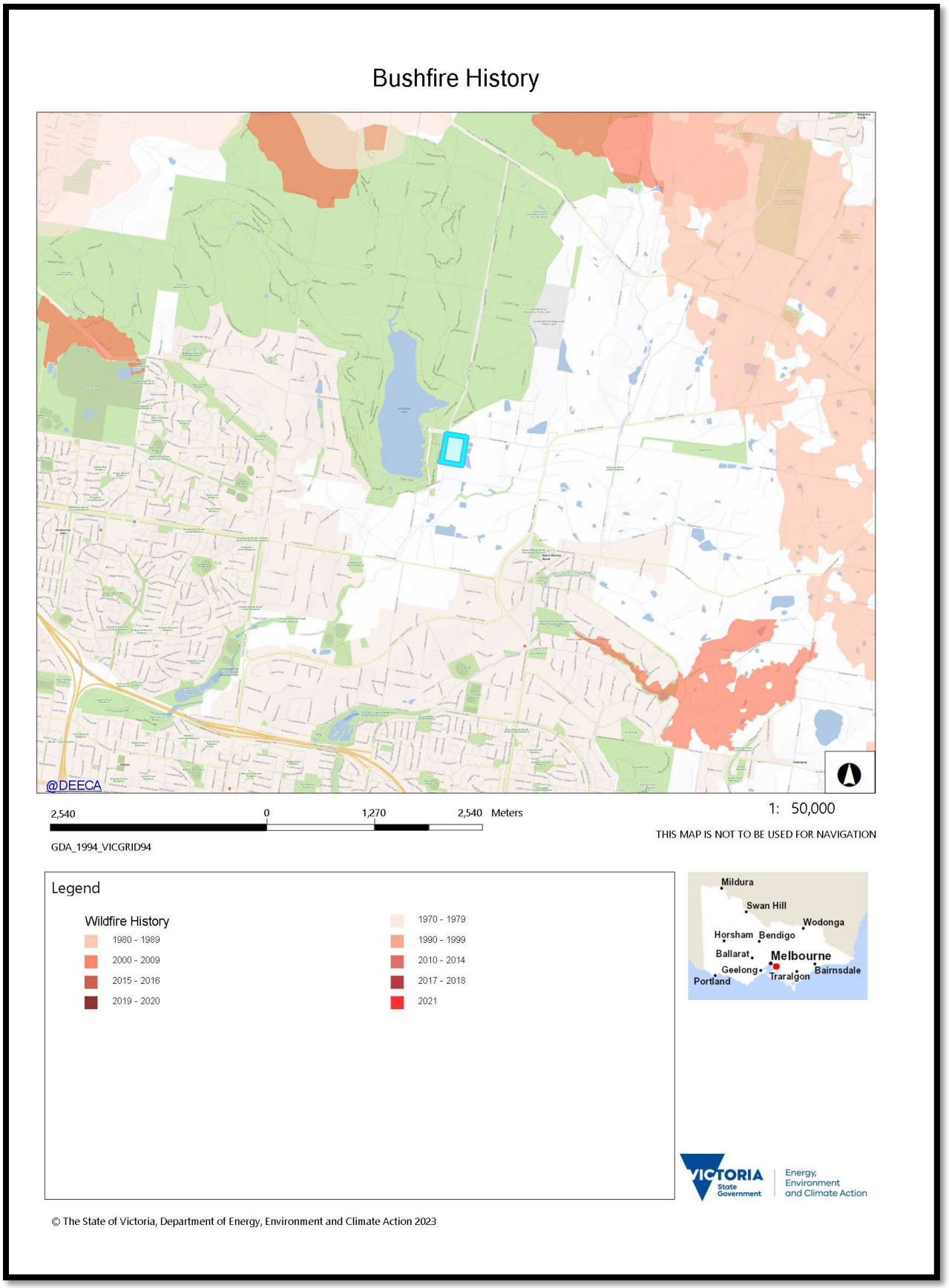

Figure 4 - Bushfire History with the property identified. The shapes represent multiple bushfire and fuel reduction burning events.

Likely Bushfire Scenarios

Figures 4 and 5 indicate the likely scenarios from a bushfire in the surrounding area and how they may impact on the proposed building. This assessment considers all aspects however history shows us that bushfires would be likely to impact on the property from a north westerly direction and then subsequently from a south westerly direction after the wind change. These two fire scenarios cause the greatest amount of damage, including loss of life, in south-eastern Australia during bushfire events.

The following table describes the scenarios that may impact on the building:

Table 1 - Bushfire scenarios

Scenario reference	Description
Scenario A	Figure 4 and 5 outlines the potential for a bushfire to approach the property under a north westerly wind influence. The dominant vegetation immediately to the north is a fragmented mix of farming properties, orchards and forested areas. The Lysterfield Lake provides a large buffer to the north west and limits the ability for a bushfire front to travel long distances before impacting on the local area. The likely bushfire impact on this development will be from any fire activity in the small forested areas to the north west and is adjacent to the car park areas. Due to the car parking arrangements, the forested areas are small in size and will likely limit the bushfire being able to burn at elevated intensities. A bushfire that is burning to the north west of the Lake could generate embers that could start fires in the landscape surrounding the development site. As with a fires that start close to the development site, due to the vegetation fragmentation and disturbance, it is unlikely for the bushfire to reach elevated intensities.
Scenario B	To the south west of the site, the potential for bushfires to approach is limited by the presence of the residential areas to the north of Narre Warren. The maximum bushfire run towards the development is approximatley 1.5 – 2 kilometres. This would require the bushfire to burn through mostly grassland areas that area associated with farming activities. It is not predicted for the bushfire to burn with elevated intensities and under lower fire danger conditions, the bushfire will be able to be suppressed by responding firefighters.

In summary, both scenarios are possible with ember attack likely if no defendable space is implemented as part of this project.

Landscape type

The determination of the landscape type enables the consideration of other treatments depending on the level of risk. These treatments may include additional construction requirements, vegetation management or other solutions. Note that whilst the determination of a landscape risk level is part of this analysis, the determination of the need for additional treatments will be considered as part of further assessments within this report.

Table 2 -Bushfire landscape assessment

	Landscape risk descriptors
Type 1	There is little vegetation beyond 150 metres of the site (except grasslands and low threat vegetation). • Extreme bushfire behaviour is not possible. • The type and extent of vegetation is unlikely to result in neighbourhood-scale destruction of property. • Immediate access is available to a place that provides shelter from bushfire.
Type 2	The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site. • Bushfire can only approach from one aspect and the site is located in a suburban, township or urban area managed in a minimum fuel condition. • Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.
Type 3	The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site. • Bushfire can approach from more than one aspect. • The site is located in an area that is not managed in a minimum fuel condition. • Access to an appropriate place that provides shelter from bushfire is not certain
Type 4	The broader landscape presents an extreme risk. • Fires have hours or days to grow and develop before impacting. • Evacuation options are limited or not available.

In accordance with the Technical Guide, the landscape has been assessed as Type 1. The supporting reasons for this include:

- There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation).
- Extreme bushfire behaviour is not possible.
- The type and extent of vegetation is unlikely to result in neighbourhood-scale destruction of property.
- Immediate access is available to a place that provides shelter from bushfire.

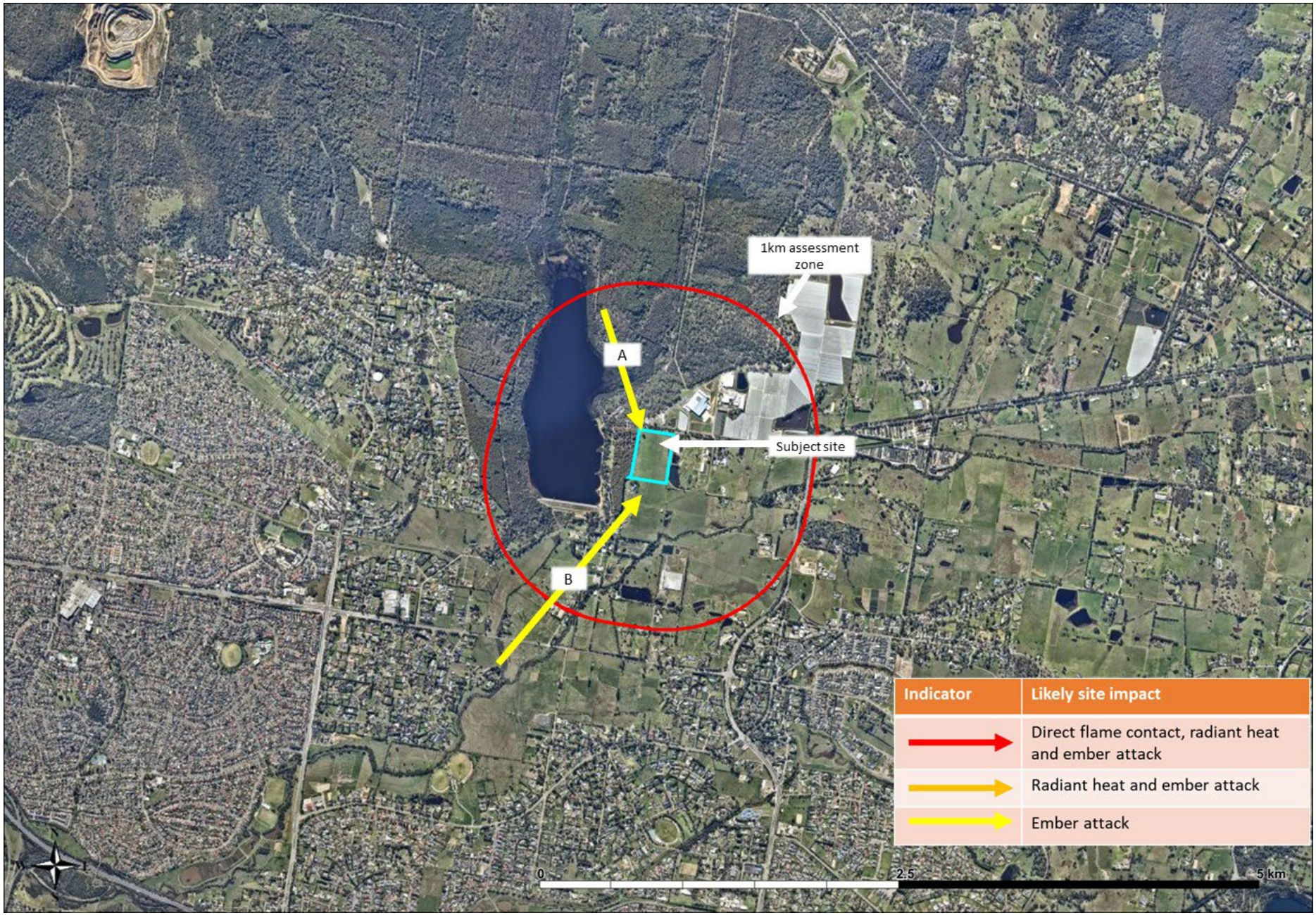

Figure 5 - Aerial photo showing site and identified bushfire attack scenarios (1 kilometre)

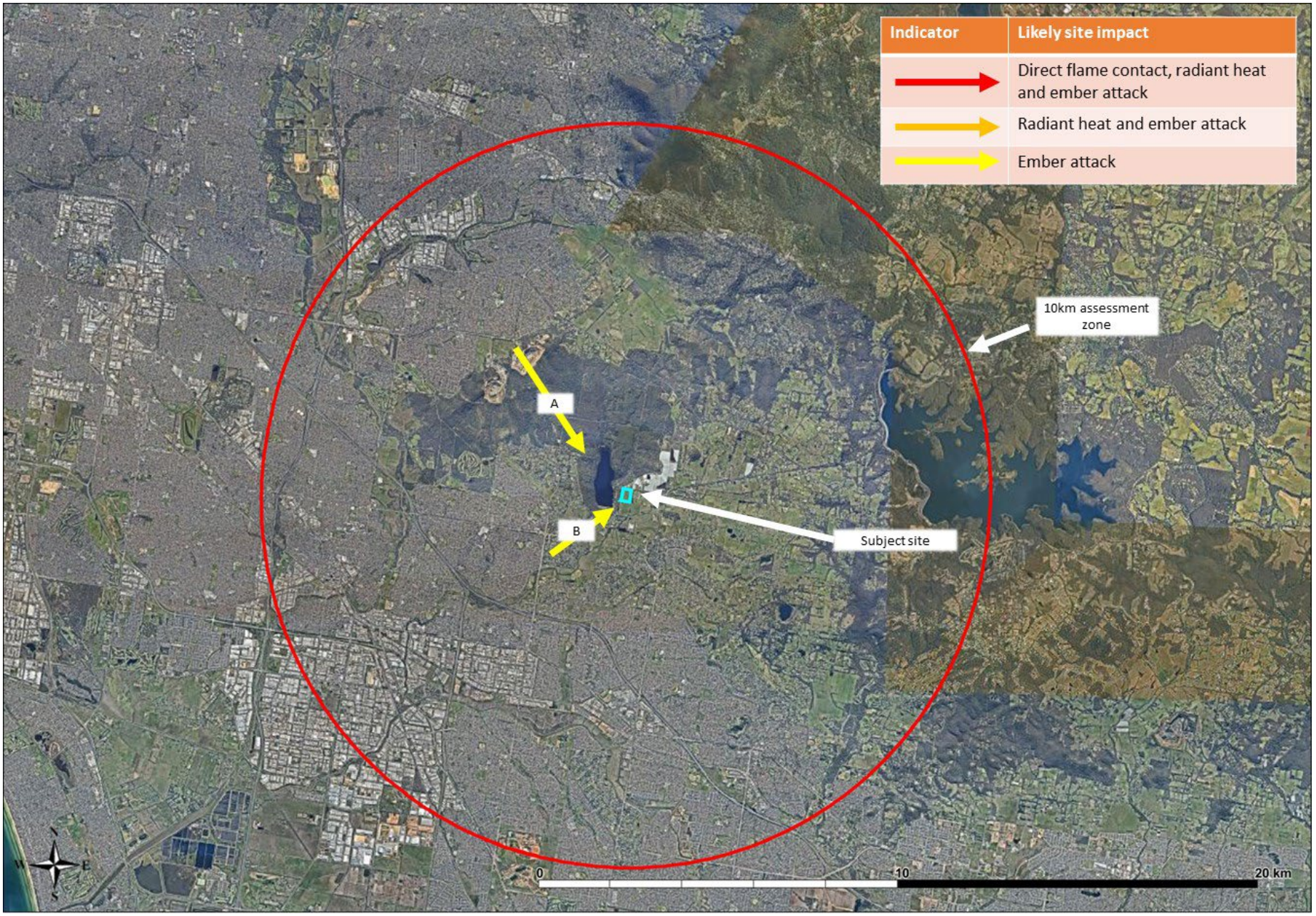

Figure 6 - Aerial photo showing landscape 10 km from site and potential bushfire scenarios

Clause 13.02 assessment

Clause 13.02 of the Planning Scheme outlines its objective as:

To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.

The analysis against Clause 13.02 is reliant on the information contained within the Bushfire Hazard Landscape Assessment.

The following strategies from Clause 13.02-1S are aimed at ensuring a focus on the protection of life is achieved:

Table 3 - Clause 13.02 strategy assessment

	Strategy	Response
1	Prioritising the protection of human life over all other policy considerations.	Compliance with the Bushfire Management Overlay (BMO) has ensured that the prioritisation of human life is achieved. The BMO conditions are being imposed on the entire development and not just those areas that are located within the BMO. The buildings are located outside the BMO and are subject to the BPA. For this development, a solution is proposed that achieves the BMO requirements. The design solution includes: • The new building will be constructed to BAL 12.5. • Defendable space to the property boundary in addition to the surrounding managed properties. • A fire hydrant system will be installed that meets the National Construction Code requirements. This fire hydrant system will be suitable to meet the bushfire water supply requirements. • Access to the school is provided from Horswood Road via three entrances. • Effective access for firefighters is provided onto the property and around the property including the buildings. • The building design has considered the bushfire risk and will achieve a greater than BAL12.5 rating including concrete slab, non combustible external walls and a simple façade design.
2	Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.	As the buildings have been located outside the BMO, the development can be considered as occurring within a low risk area. This is also supported by the fragmented vegetation on the surrounding properties. The development of this property will see a reduction in bushfire risk to the adjoining landowners due to the increased management of the vegetation on the property.

3	Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.	This report addresses the Bushfire Management Overlay and has considered the bushfire risk and identified treatments based on this risk.

Bushfire Hazard Site Assessment

The bushfire hazard within 150 metres is outlined within Figure 6 and Table 4. Note that this has been measured from the property boundary.

Figure 7 - Bushfire Site Hazard Assessment

Table 4 - Bushfire Site Hazard Assessment vegetation assessment

Plot	Vegetation classification	Slope	Separation distance	Discussion
1	Class A - Forest	Upslope	56 metres	This area is disturbed and there is evidence of people walking through the area. The forest classification is a conservative outcome.
2	Class B - Woodland	Upslope	5 metres	This area includes car parking areas, driveways and small areas of vegetation located between the car parks. There is some consistent vegetation along the site's western boundary however due to the lack of fuel underneath the tree canopy, the area has been assessed as Woodland.
3	Class A - Forest	Upslope	5 metres	This area is not as disturbed as the areas to the north and is more consistent with a forest classification.
4	Class G - Grassland	Upslope	1 metre	The surrounding properties are largely managed or are operating as farming properties. A conservative approach has classified all of these areas as grassland.
5	Excluded	N/A	N/A	The site for the development will be managed post the development due to the defendable space requirements being imposed. The orchard to the north is permitted to be excluded as per clause 2.2.3.2 of AS3959.

**The 150 metre assessment area has been measured from the property boundary.*

The assessment of vegetation has identified five plots within the 150 metre assessment area outlined in Figure 6.

Bushfire Management Statement

53.02-4.1 Landscape, siting and design objectives

- **Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape.**
- **Development is sited to minimise the risk from bushfire.**
- **Development is sited to provide safe access for vehicles, including emergency vehicles.**
- **Building design minimises vulnerability to bushfire attack.**

Approved Measure (AM) 2.1 – Landscape

Requirement

The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.

The bushfire risk to the development from the surrounding landscape can be considered low. This is due to the high level of vegetation fragmentation within the local area. The vegetation is separated by driveways, car parks, orchards and roadways. The classified grassland vegetation to the south and east is also

considered low risk due to the intensive management that is likely to occur ongoing.

Any bushfire activity to the north west of Lysterfield Lake will unlikely spread into the area surrounding the development site. This is due to the fragmented vegetation and the managed areas that will exist on the site once developed.

The landscape assessment has resulted in a Type 1 classification due to the low risk ,the ability to leave the site and the range of safer areas both on the property and in the surrounding landscape.

This BMS includes an assessment against Clause 13.02 which has identified the bushfire risk and acknowledges that the risk can be managed through the provision of a construction level of BAL12.5 along with additional controls including defendable space to the property boundary, non combustible external walls, constructed on a concrete slab and a simple external façade.

The landscape bushfire risk has been classified as Type 1[1].

Has Approved Measure (AM) 2.1 been fully met? **Yes** ✓ **No** ☐

Approved measure (AM) 2.2 – Siting

Requirement

A building is sited to ensure the site best achieves the following:

- **The maximum separation distance between the building and bushfire hazard**

The buildings have been sited outside of the BMO and therefore have more than 150 metres separation from the classified vegetation to the west. As the vegetation to the east is classified as grassland, there will be sufficient separation from this area or ensure the buildings are exposed to less than 10kW/m².

- **The building is in close proximity to a public road**

The building is accessible from Horswood Road via three separate access points. These are constructed to handle large vehicles including buses and provide the ability for fire appliances to enter the site safely.

- **Access can be provided to the building for emergency service vehicles**

Emergency service vehicles can access the building. The access provisions outlined within the Bushfire Management Overlay can be achieved.

Any other comments

The landscape risk has been assessed and compliance with the Bushfire Management Overlay along with additional construction controls will assist with managing the elevated landscape risk.

Has Approved Measure (AM) 2.2 been fully met? **Yes** ✓ **No** ☐

[1] https://www.planning.vic.gov.au/__data/assets/pdf_file/0029/107669/Technical-Guide-Planning-Permit-Applications-Bushfire-Management-Overlay.pdf

Approved Measure (AM) 2.3 – Building design

Requirement

A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.

The buildings have been designed to include a simple roof profile and reduced corners on the external façade. The external façade is not a complex design and will not contribute to capturing embers. The façade is also being constructed of non combustible materials along with a concrete slab being utilised which provides a greater than BAL12.5 solution.

The building will be constructed to a minimum of **BAL 12.5**.

Has Approved Measure (AM) 2.3 been fully met? **Yes** ✓ **No** ☐

53.02-4.2 – Defendable Space and Construction Objectives

- **Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on the building.**

Approved Measure (AM) 3.1 – Bushfire Construction and Defendable Space

A building used for accommodation (other than a dwelling or dependent person's unit), a child care centre, an education centre, a hospital, leisure and recreation or a place of assembly is:

- **Provided with defendable space in accordance with Table 3 and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land.**
- **Constructed to a bushfire attack level of BAL12.5**

The entire site is being provided within defendable space as per the requirements outlined within Table 6 of Clause 53.02 of the Casey Planning Scheme. This ensures the buildings can be constructed to a maximum BAL rating of BAL12.5.

The Table 3 requirements are for the western side of the development to be provided with 60 metres and the eastern side to be provided with 35 metres of defendable space. As outlined previously, the entire property will be provided with defendable space and the Landscape Plan provided in Appendix 5 outlines how this will be achieved.

Defendable space will be provided to the property boundary as outlined in the Bushfire Management Plan and in accordance with Table 6 (below). Refer to the Bushfire Management Plan (Appendix 2) for further details.

Table 6 of Clause 53.02-5 – Vegetation management requirements

Defendable space is provided and is managed in accordance with the following requirements:

1. Grass must be short cropped and maintained during the declared fire danger period.
2. All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
3. Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.

4. Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.
5. Shrubs must not be located under the canopy of trees.
6. Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.
7. Trees must not overhang or touch any elements of the building.
8. The canopy of trees must be separated by at least 5 metres.
9. There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

A building is constructed to the bushfire attack level:

That corresponds to the defendable space provided in accordance with Table 2 to Clause 53.02-5. The building will be constructed to **BAL 12.5.**

Has Approved Measure (AM) 3.1 been fully met? **Yes** ✓ **No** ☐

53.02-4.3 – Water Supply and Access Objectives

Approved Measure AM 4.2 – Water Supply and Access

Water Supply Requirement

A building used for accommodation (other than a dwelling or dependent person's unit), child care centre, education centre, hospital, leisure and recreation or place of assembly is provided with:

- **A static water supply for fire fighting and property protection purposes of 10,000 litres per 1,500 square metres of floor space up to 40,000 litres.**
- **Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.**
- **An integrated approach to risk management that ensures the water supply and access arrangements will be effective based on the characteristics of the likely future occupants including their age, mobility and capacity to evacuate during a bushfire emergency.**

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for fire fighting water supplies.

As the building is located in an area that is not provided with reticulated water, the fire hydrant system will be required to comply with the storage requirements of AS2419.1. This will result in a static water supply of well in excess of 40,000 litres. This static water supply will be provided with the ability to draw water from the tank by firefighting appliances in addition to accessing water through the onsite pump system.

The building is provided with a static water supply for firefighting and property protection purposes as specified in Table 4 to Clause 53.02-5.

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for firefighting water supplies.

Confirm Static Water Supply meets the	Unless otherwise agreed in writing by the relevant fire authority, the water supply must: • Be stored in an above ground water tank constructed of concrete or metal.

following requirements	• Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal. • Include a separate outlet for occupant use. Where a litre water supply is required, fire authority fittings and access must be provided as follows: • Be readily identifiable from the building or appropriate identification signs to the satisfaction of the relevant fire authority. • Be located within 60 metres of the outer edge of the approved building. • The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed. • Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling. • (64 millimetre CFA 3 thread per inch male fitting). • Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

Additional Information:

As outlined previously, compliance with AS2419.1 will provide more than the required water supplies specified by the BMO.

Has Approved Measure AM 4.1 (Water Supply) been fully met? **Yes** ✓ **No** ☐

Access Requirement

Vehicle access is designed and constructed as specified in Table 5 to Clause 53.02-5.

Column A	Column B
Length of access is less than 30 metres	☐ There are no design and construction requirements if fire authority access to water supply is not required under AM 1.3
Length of access is less than 30 metres	✓ Where fire authority access to the water supply is required under AM1.3 fire authority vehicles must be able to get within 4 metres of the water supply outlet
Length of access is greater than 30 metres	The following design and construction requirements apply: ✓ All weather construction ✓ A load limit of at least 15 tonnes ✓ Provide a minimum trafficable width of 3.5 metres ✓ Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically ✓ Curves must have a minimum inner radius of 10 metres ✓ The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres ✓ Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle
Length of access is greater than 100 metres	A turning area for fire fighting vehicles must be provided close to the building by one of the following: ✓ A turning circle with a minimum radius of eight metres ✓ A driveway encircling the dwelling ✓ The provision of other vehicle turning heads such as a T head or Y Head – which meet the specification of Austroad Design for an 8.8 metre service vehicle.
Length of access is greater than 200 metres	✓ Passing bays must be provided at least every 200 metres. ✓ Passing bays must be a minimum of 20 metres long with a minimum trafficable width of 6 metres.

Additional Information:

The site is provided with effective access to the water supply and the property. The access provisions have been measured to the location of the static water supply.

Has Approved Measure AM 4.1 (Access) been fully met? **Yes** ✓ **No** ☐

Conclusion

The construction of the new building on this site can be achieved safely and in accordance with the Bushfire Management Overlay.

Due to the location of the development, the likely bushfire impact will be through embers landing on and around the property. It is considered unlikely for a bushfire to impact through radiant heat and flame contact due to the siting of the building and the creation of defendable space to the property boundary.

The outcome of the landscape assessment has identified the bushfire risk to the property and demonstrates how this can be managed.

The design solution including water supply, emergency vehicle access, construction level and defendable space will ensure this design achieves the requirements of the Bushfire Management Overlay and Clause 13.02 of the Planning Scheme.

Appendix 1 – Bushfire Management Statement

The building will be designed and constructed to a minimum Bushfire Attack level of **BAL 12.5.**

Defendable Space

Defendable space to the property boundary must be provided where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

Water Supply

Unless otherwise agreed in writing by the relevant fire authority, the water supply must:

- Be stored in an above ground water tank constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.
- Include a separate outlet for occupant use.

Where a water supply is required, fire authority fittings and access must be provided as follows:

- Be readily identifiable from the building or appropriate identification signs to the satisfaction of the relevant fire authority.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling.
- (64 millimetre CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

Access

The following design and construction requirements apply:

- All weather construction
- A load limit of at least 15 tonnes
- Provide a minimum trafficable width of 3.5 metres
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
- Curves must have a minimum inner radius of 10 metres
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle

Emergency Plan

An emergency plan incorporating a risk assessment and response to bushfire be in place prior to occupancy and reviewed annually.

Construction standard

The new building will be designed and constructed to a minimum Bushfire Attack Level of **BAL 12.5.**

Defendable Space

Defendable space to the property boundary must be provided where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
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Access

The following design and construction requirements apply:

- All weather construction
- A load limit of at least 15 tonnes
- Provide a minimum trafficable width of 3.5 metres
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
- Curves must have a minimum inner radius of 10 metres
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle
- A turning area for fire fighting vehicles must be provided close to the building by one of the following:
    - A turning circle with a minimum radius of eight metres
    - A driveway encircling the dwelling
    - The provision of other vehicle turning heads such as a T head or Y Head – which meet the specification of Austroad Design for an 8.8 metre service vehicle.
- Passing bays must be provided at least every 200 metres.
- Passing bays must be a minimum of 20 metres long with a minimum trafficable width of 6 metres.

Emergency Plan

- An emergency plan incorporating a risk assessment and response to bushfire be in place prior to occupancy and reviewed annually.

Appendix 2 – Photos

1 Typical vegetation and landscape to the north of Horswood Road.	
2 Looking westerly along Horswood Road.	

3 Typical vegetation on the property.	
4 Existing car park area within the Lysterfield Lake area.	

5 Small area of forested vegetation.	
6 Main entrance to Lysterfield Lake Reserve from Horswood Road.	

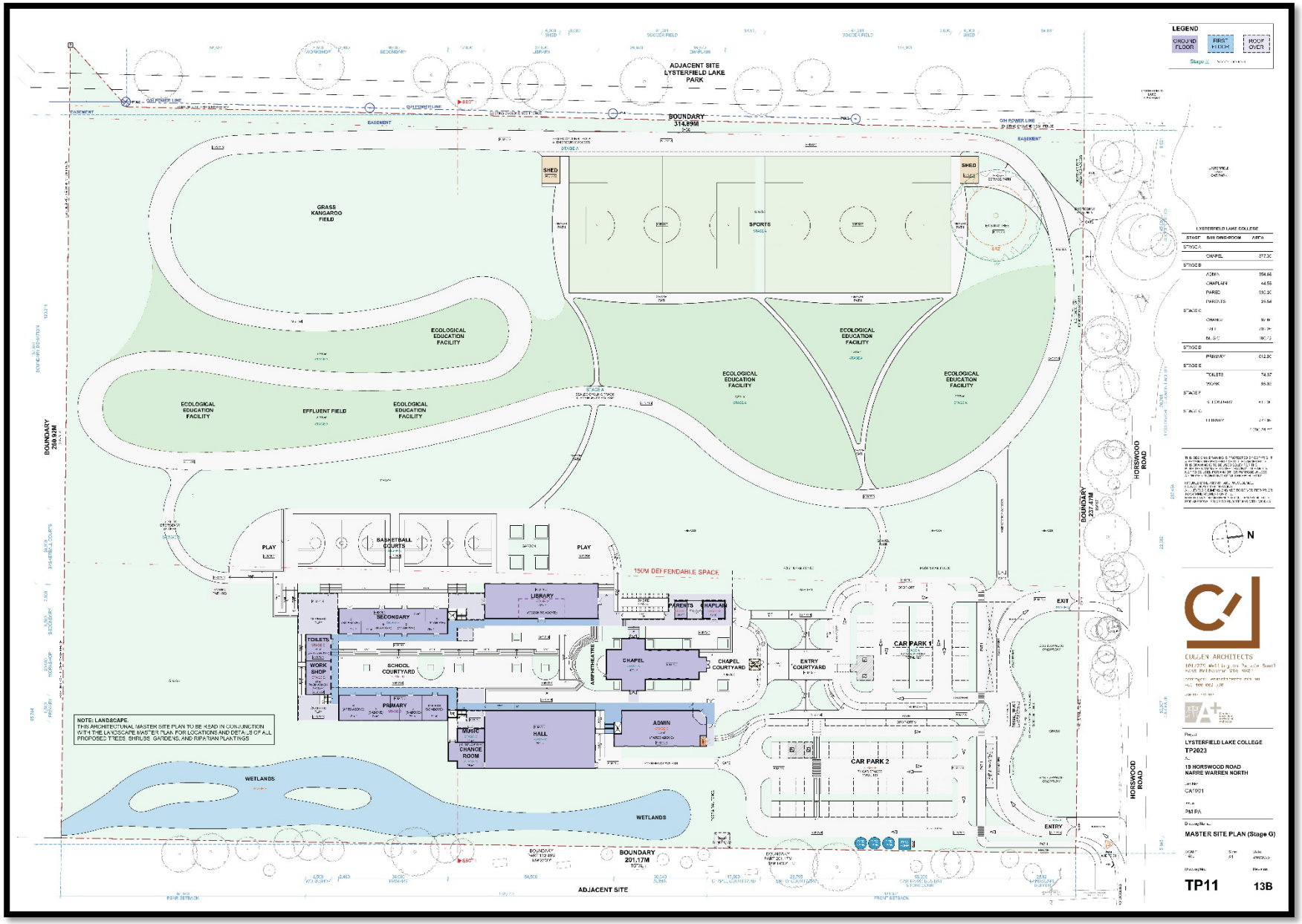
7 Existing entrance to the property.	
8 Access track and fire break along the western boundary between the development site and the Lysterfield Lake Reserve.	

9 Typical vegetation to the west of the development site.	
10 Access roads and car parking areas within the Lysterfield Lake area.	

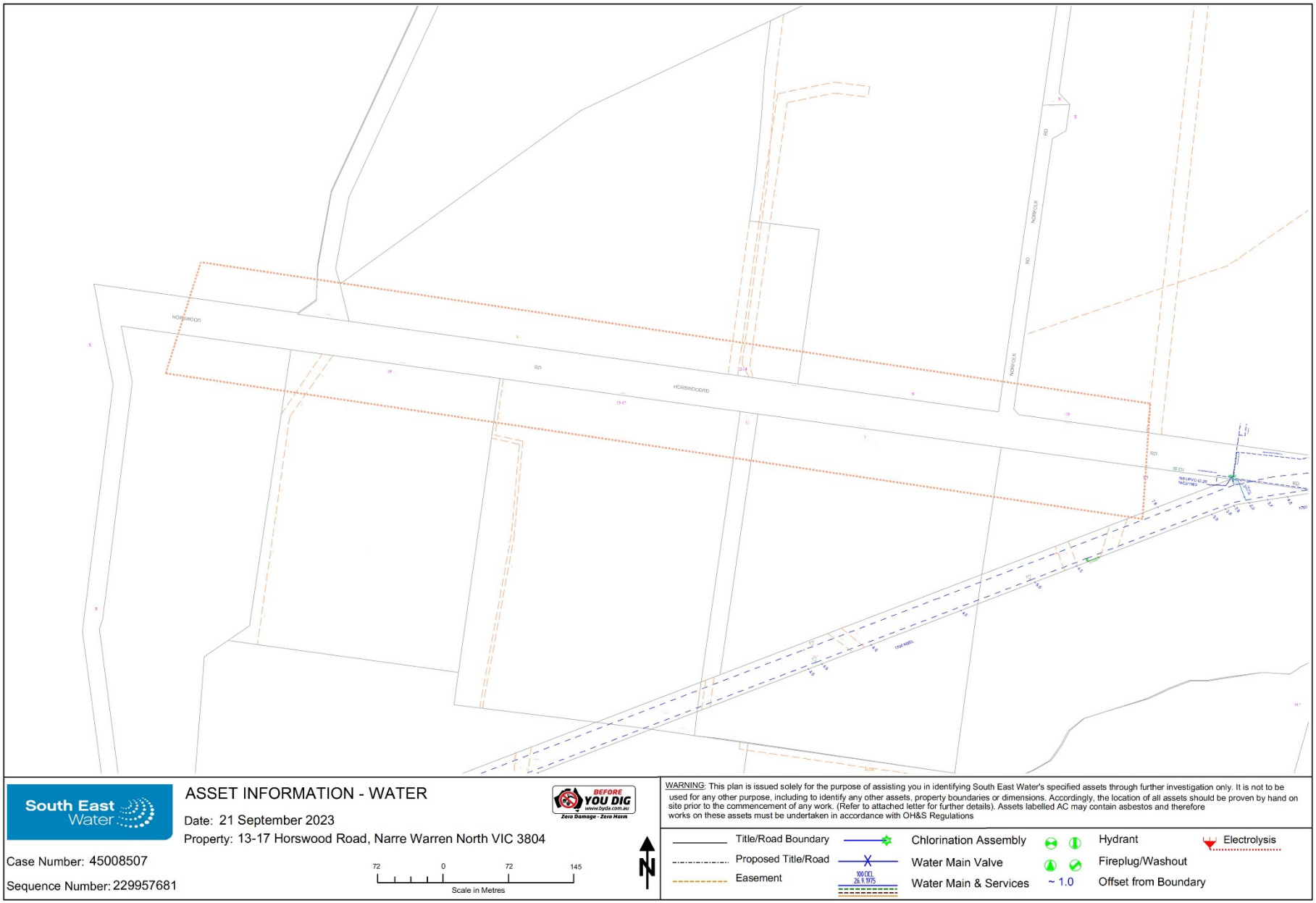
11 Car parking areas within the Lysterfield Lake area.	
12 Existing vegetation on the property.	

13 Existing vegetation on the property.	
14 Existing vegetation on the property.	

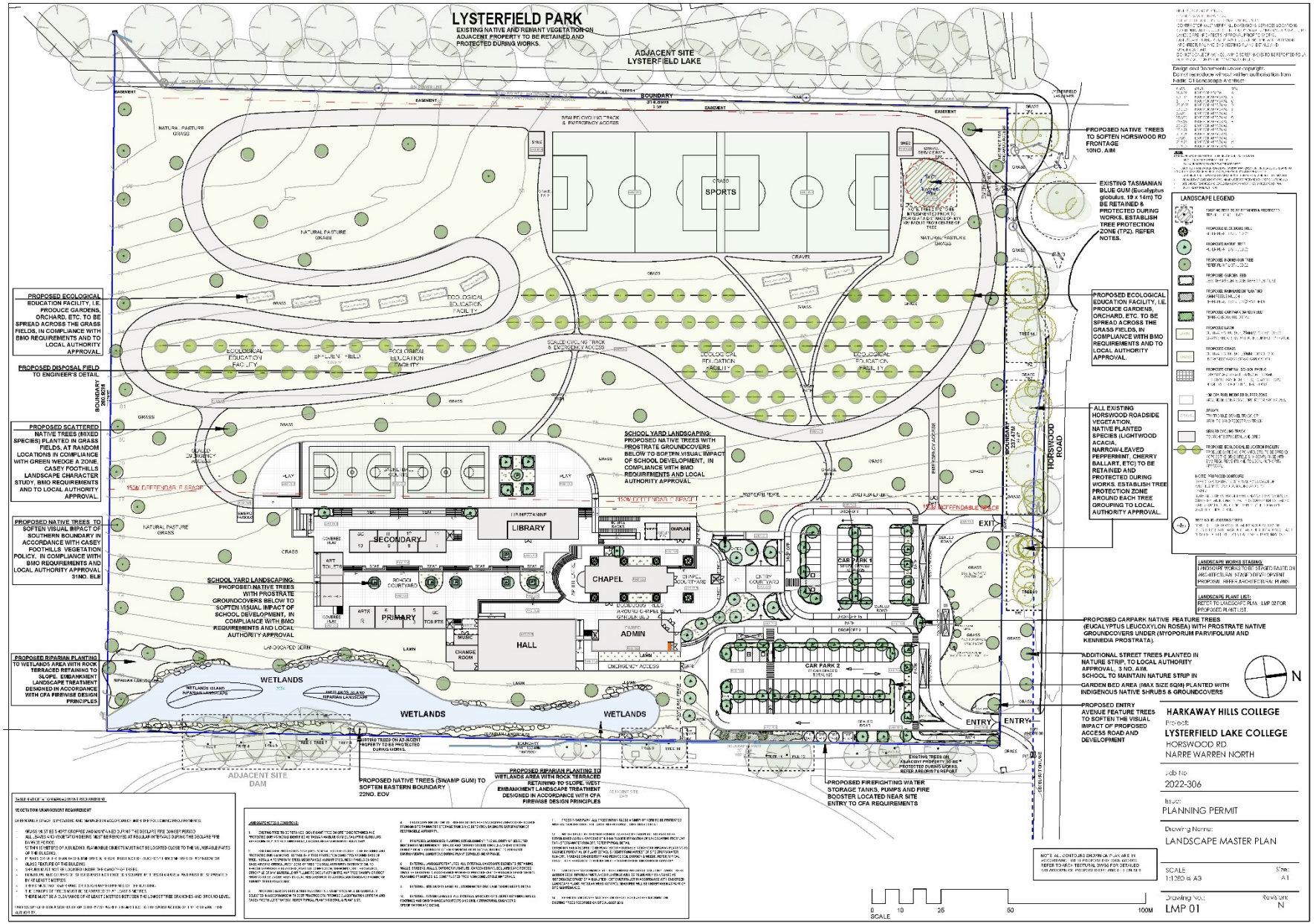
Appendix 3 – Provided Plans



Appendix 4 – Street fire hydrant locations

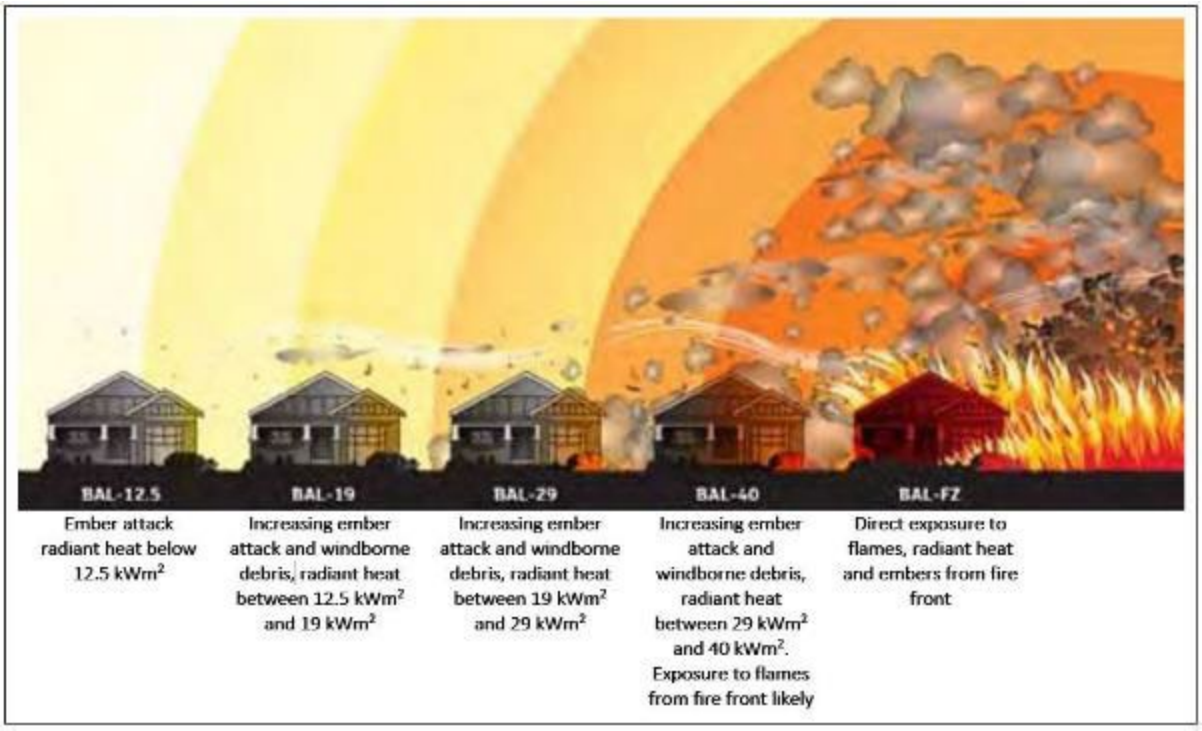


Appendix 5 – Landscaping plan



Appendix 6 – BAL levels explained

The following diagram outlines the type of bushfire attack method that may impact on the building. This then indicates the relevant BAL construction level as determined by the Bushfire Management Overlay.



Appendix 7 – References

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