Bushfire Protection Assessment – Horsley Logistics Park, Lots 201, 202, 203, 204

Industrial Development

327-335 Burley Road, Horsley Park

June 2020

ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au

DOCUMENT TRACKING

Project Name	**Horsley Logistics Park BPA – Lots 201, 202, 203, 204.**
Project Number	**20WOL-15510**
Client Name	**ESR**
Project Manager	**Letara Judd**
Prepared by	**Deanne Hickey**
Reviewed by	**Mick George**
Approved by	**Mick George**
Status	**Final**
Version Number	**2**
Last saved on	**16 June 2020**

This report should be cited as 'Eco Logical Australia June 2020. *Horsley Logistics Park BPA – Lots 201, 202, 203, 204*. Prepared for ESR.

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd in conjunction with ESR.

LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

Contents

List of Figures

List of Tables

Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2018 Construction of buildings in bushfire prone areas
APZ	Asset protection zone
BAL	Bushfire attack level
BFPL	Bush fire prone land
DA	Development application
DtS	Deemed-to-satisfy
EP&A Act	Environmental Planning and Assessment Act 1979
FDI	Fire danger index
IPA	Inner protection area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
OPA	Outer protection area
PBP	Planning for Bush fire Protection 2019
RFS	NSW Rural Fire Service

1. Property and proposal

The table below (**Table 1**) identifies the subject property and outlines the type of development proposed.

Table 1: Subject site and development proposal summary

Street address:	327-335 Burley Road, Horsley Park
Postcode:	2175
Lot/DP no:	2/-/DP1228114
Local Government Area:	Fairfield City Council
Fire Danger Index (FDI)	FDI 100
Current land zoning:	IN1 – General Industrial; E2 – Environmental
Type of development proposed:	Industrial

1.1 Description of proposal

The proposal is for State Significant Development (SSD) application for the construction of industrial warehouse buildings and accompanying facilities, landscaping and onsite parking associated with Lots 201, 202, 203 and 204 (**Figure 1 – Figure 5**). The proposed development is located within an approved industrial subdivision (DA 839.1/2019).

The proposed development is located on land classified as bush fire prone on the Fairfield City Council bush fire prone land (BFPL) map[1].

1.2 Assessment process

The proposal was assessed in accord with Section 4.14 of the *Environmental Planning and Assessment Act 1979* and '*Planning for Bush Fire Protection*' (RFS 2019), herein referred to as PBP. This report demonstrates that the proposal, together with the recommendations within this report conform to the relevant specifications and requirements under PBP.

This assessment is based on the following information sources:

- Background documentation provided by ESR;
- Information contained within the site plan from ESR;
- GIS analysis including online spatial resources (i.e. SIX Maps, Near Maps and the NSW Government Planning Portal); and
- Site Inspection by ELA in July 2019.

As the proposal does not include residential subdivision or special fire protection purpose developments (as defined by Section 100B of the *Rural Fires Act 1997*), the infill provisions of PBP relating to commercial and industrial development will apply to future buildings. PBP identifies the following

[1] https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

specific provisions for Class 5 to 8 buildings (as defined by the National Construction Code (NCC)) that require addressing for this type of development.

As stated within Section 8.3.1 of PBP, NCC Class 5 to 8 buildings (which include offices, factories, warehouses and other commercial or industrial facilities) do not have specific bushfire performance requirements under the NCC and as such building construction standards under AS *3959* 'Construction of buildings in bushfire-prone areas' (Standards Australia 2018) do not apply as a set of deemed to satisfy provisions. The general fire safety constructions provisions within the NCC are taken as acceptable solutions but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning, and landscaping/vegetation management.

The objectives of PBP for this type of development are:

- to provide safe access to/from the public road system for firefighters providing property protection during a bushfire and for occupant egress for evacuation
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development
- to provide adequate services of water for the protection of buildings during and after the passage of bushfire, and to locate gas and electricity so as not to contribute to the risk of fire to a building and;
- provide for the storage of hazardous materials away from the hazard wherever possible.

Table 2 identifies the bushfire protection measures assessed and whether an acceptable or performance solution is being proposed by the proponent.

Table 2: Summary of bushfire protection measures assessed

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	☑	☐	3.1
Access	☑	☐	3.2
Water supplies	☑	☐	3.3
Electricity services	☑	☐	3.2
Gas services	☑	☐	3.3
Construction standards	☑	☐	3.4
Landscaping	☑	☐	3.5

1.3 Significant environmental features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the SSD process.

The impact footprint of the bushfire protection measures (e.g. Asset Protection Zone (APZ)) is clearly identified within this report and therefore capable of being assessed by suitably qualified persons as required. The Department of Planning, Industry and Environment (DPIE) is the determining authority for this development; they will assess more thoroughly any potential environmental issues.

1.4 Aboriginal cultural heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report and if required, will be covered by other parts of the SSD process.

The impact footprint of the bushfire protection measures (e.g. APZ) is clearly identified within this report and therefore capable of being assessed by suitably qualified persons as required. DPIE is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

1.5 Location and description of subject land

The subject land is located within the suburb of Horsley Park, located west of the Prospect Reservoir, in a newly established industrial area. To the south and west of proposed lot 201 is rural land, whilst situated to the east of Lot 203 and 204 is a managed environmental zoned, followed by an environmental conservation area.

Figure 1 shows the masterplan area and **Figure 2** to **Figure 5** show the site plan for each lot.

Figure 6 shows the subject land in relation to the nearest bushfire hazard.

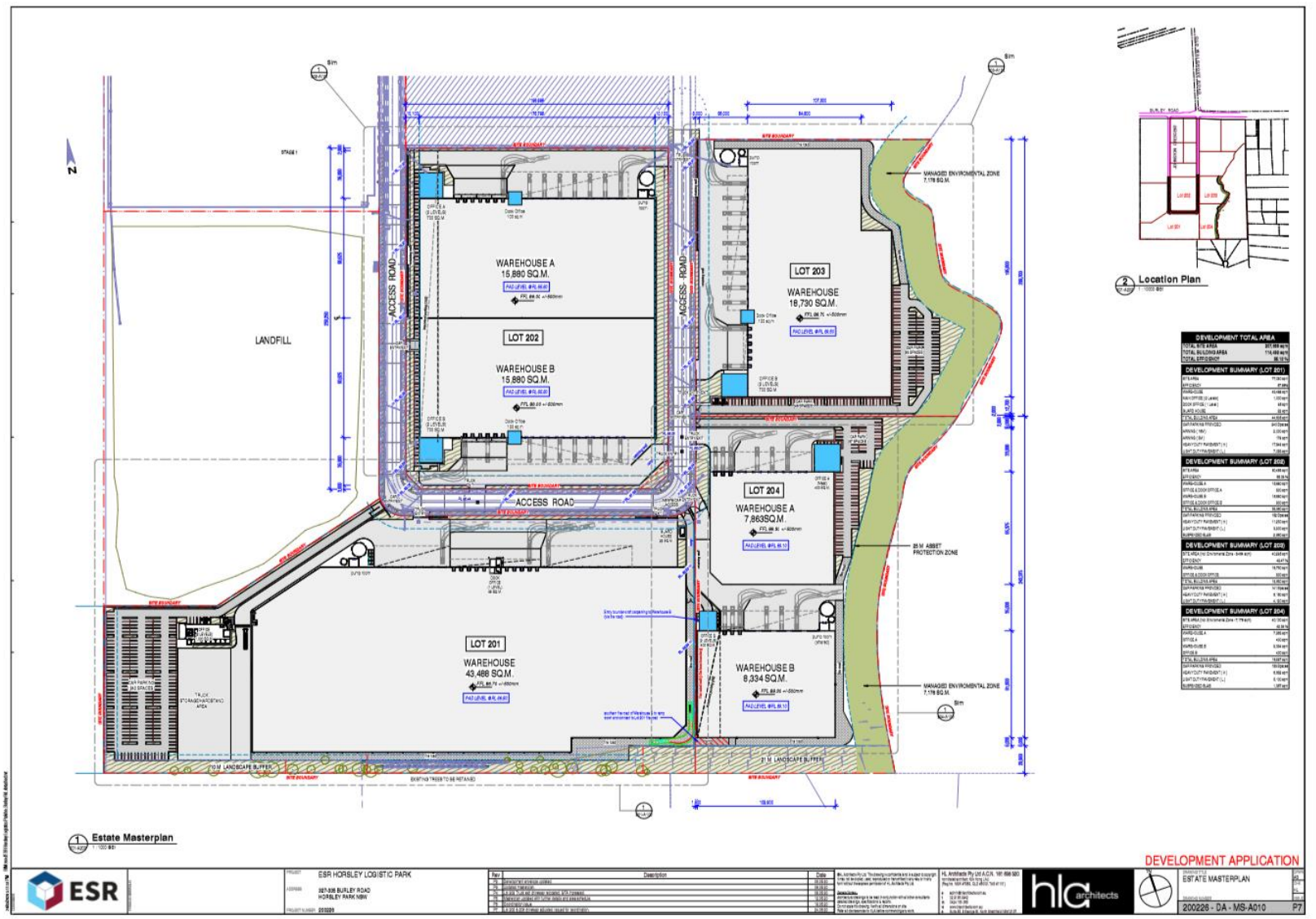

Figure 1: Masterplan Area

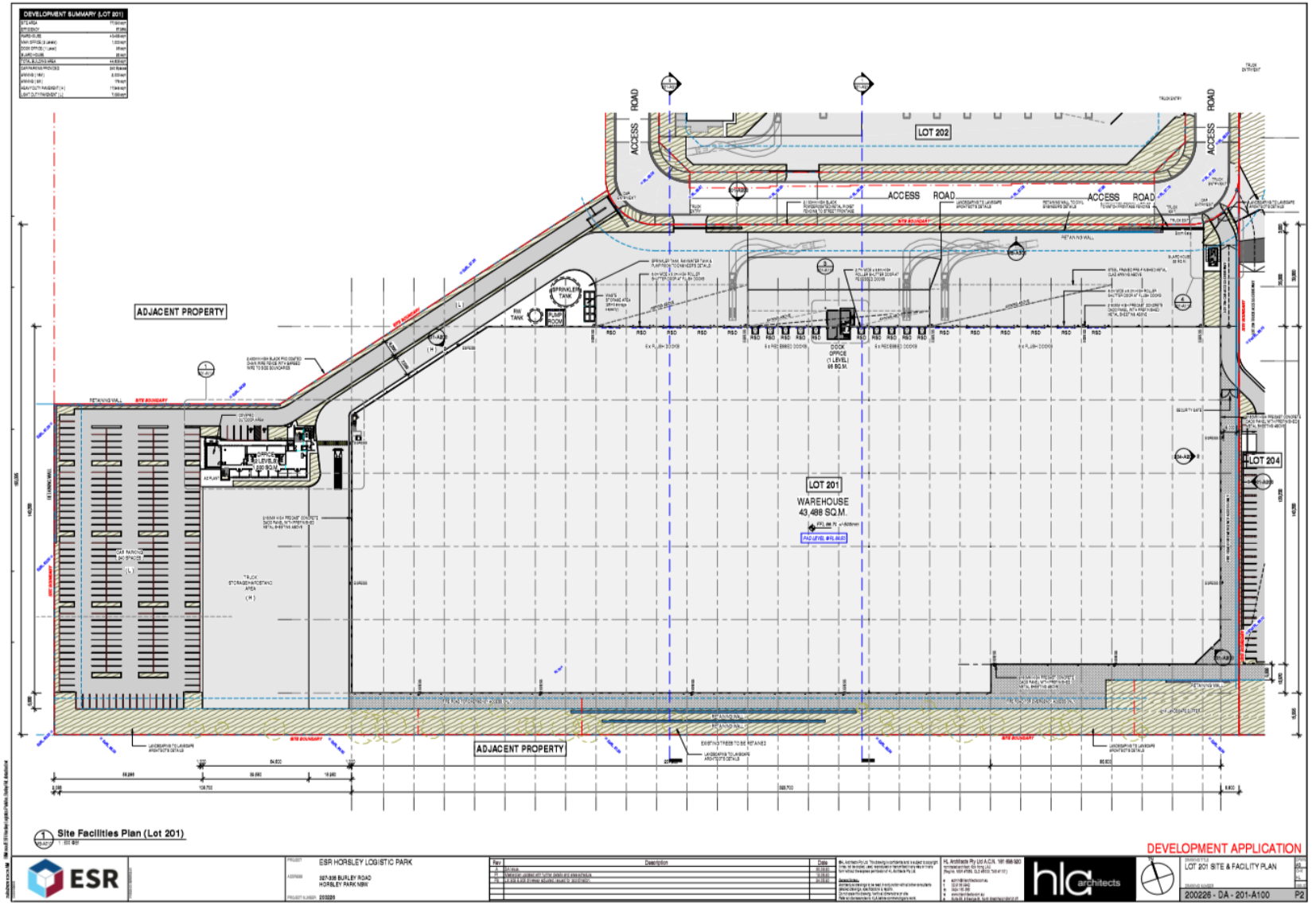

Figure 2: Site plan – Lot 201

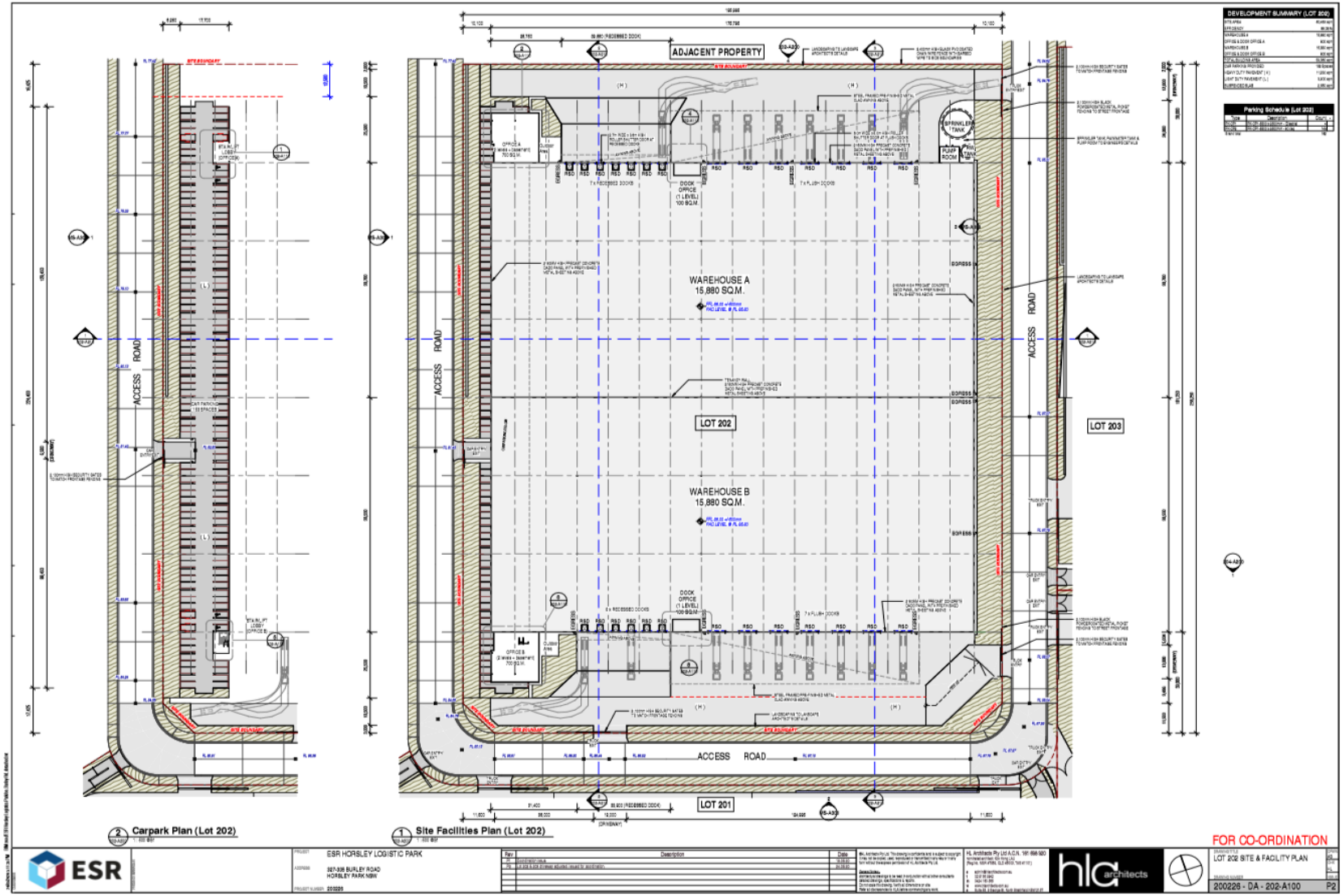

Figure 3: Site Plan – Lot 202

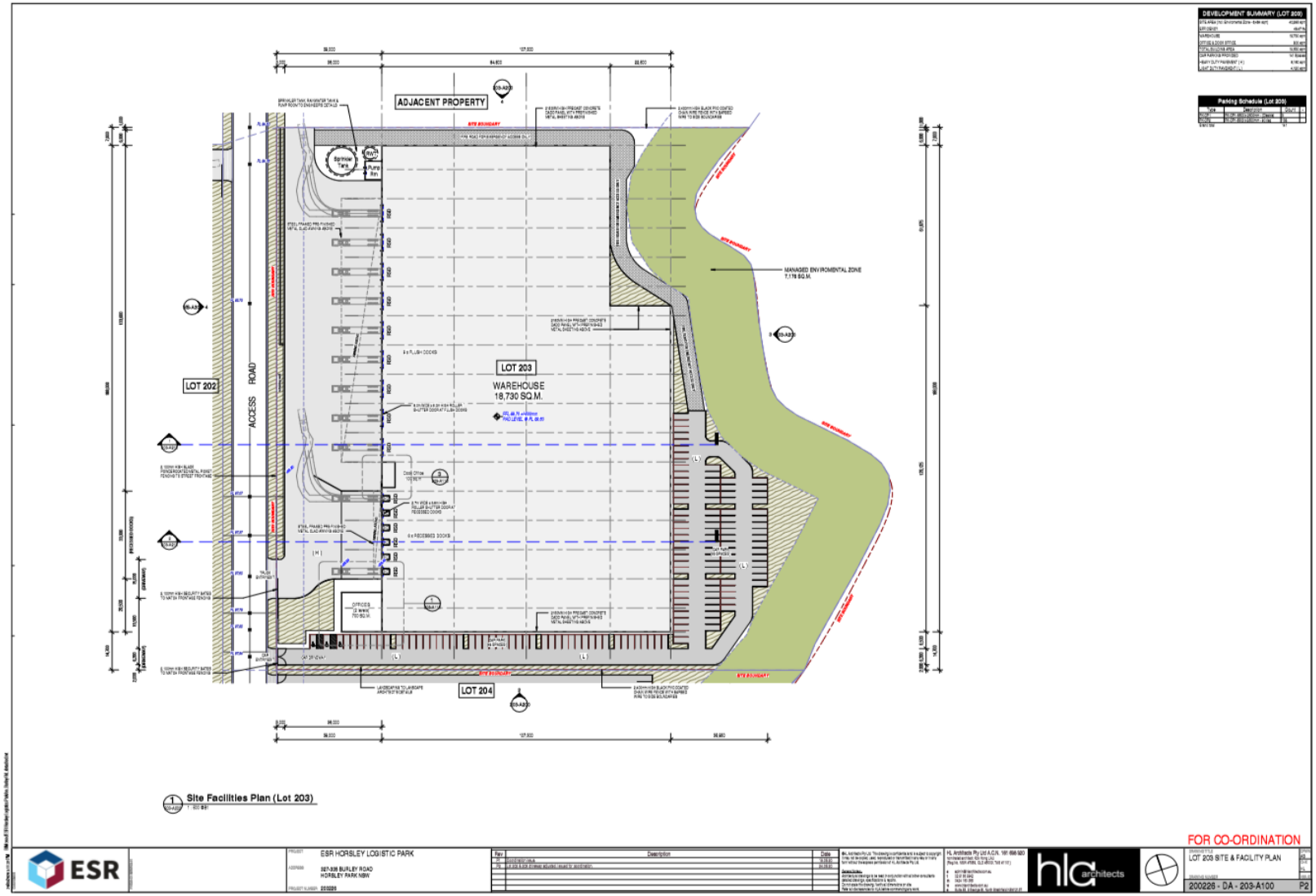

Figure 4: Site Plan – Lot 203

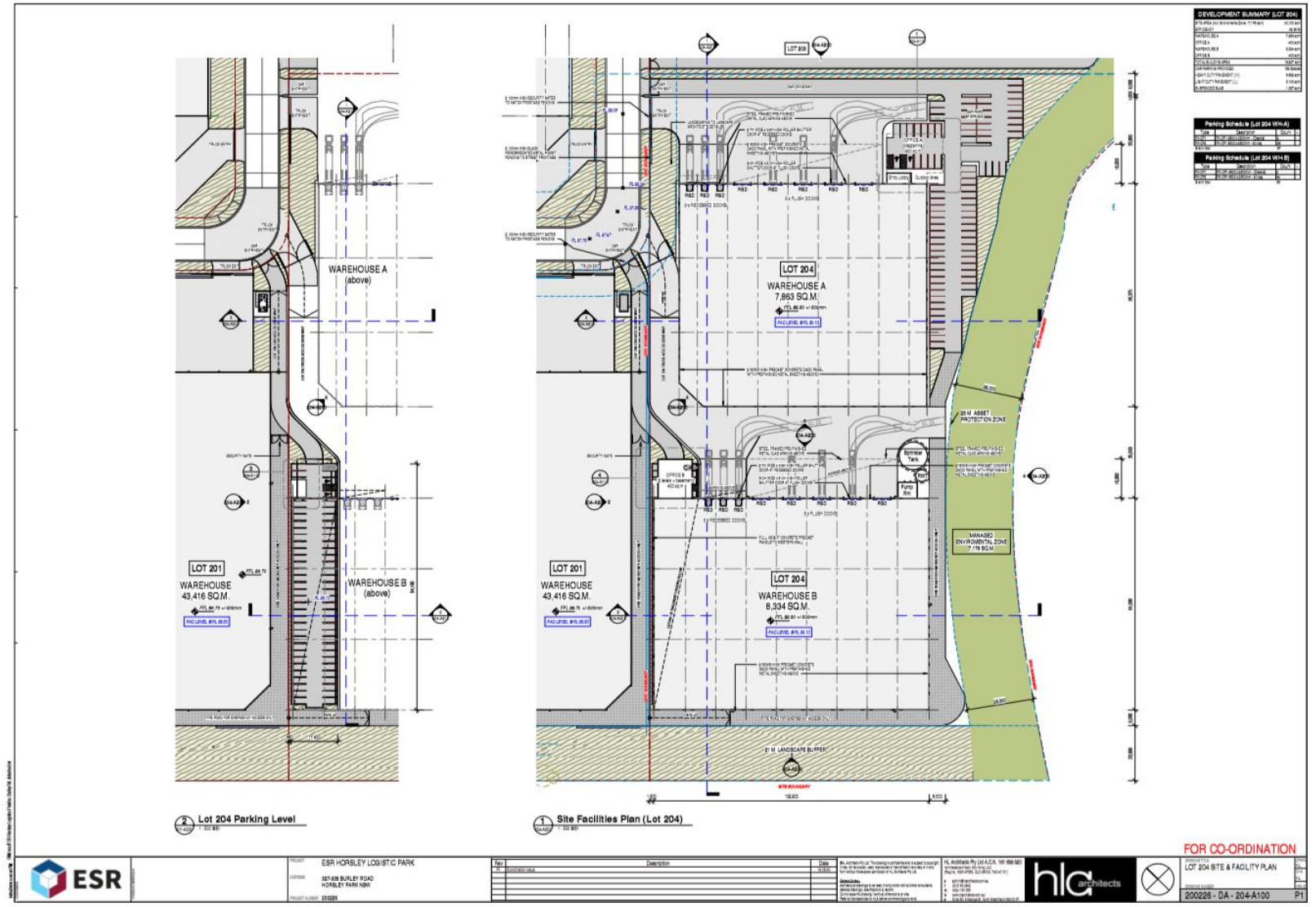

Figure 5: Site Plan – Lot 204

2. Bushfire hazard assessment

2.1 Process

The site assessment methodology set out in Appendix 1 of PBP has been utilised in this assessment to determine the required APZ and Construction requirements. **Figure 6** and **Table 3** show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the proposed development from various directions.

2.2 Vegetation assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation has been determined from the Native vegetation of the Cumberland Plain, Western Sydney vegetation maps (OEH, 2013) and NearMap Imagery captured January 2020

2.3 Slope assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

The effective slope has been determined from 2 m contour data and revised where required by site assessment.

2.4 Summary of assessment

Bush fire prone vegetation affecting the proposed development includes a grassland hazard present to the south and west of Lot 201. The effective slope under the vegetation falls into the slope category of '>0-5 degrees downslope'. To the east, beyond the managed environmental zone adjacent to Lot 203 and 204, woodland vegetation is present within the environmental conservation area. The effective slope under this hazard is within the slope category of '>0-5 degrees downslope. The environmental conservation area is greater than 100 m from Lot 201 and Lot 202.

In all other directions, there are managed lands in the form of land cleared for future industrial and residential development and road reserves associated with the existing subdivision construction.

Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	Required APZ (PBP 2018)	Proposed APZ	PBP 2018 Bushfire Attack Level (BAL)	Comments
1	>0° to 5° downslope	Woodland	16 m	≥16 m	BAL-29: 16 to <23 m BAL-19: 23 to <32 m BAL-12.5: 32 to 100 m BAL-LOW: >100 m	APZ applicable to Lot 203 and 204. APZ is provided within Subject Land by 25 m Managed Environmental Zone adjacent to Lot 203 and 204
2	>0° to 5° downslope	Grassland	12 m	≥12 m	BAL-29: 12 to <17 m BAL-19: 17 to <25 m BAL-12.5: 25 to 50 m BAL-LOW: >50 m	APZ applicable to Lot 201 and is provided within Subject Land by Landscape Buffer adjacent to Lot 201
3	>0° to 5° downslope	Grassland	12 m	≥12 m	BAL-29: 12 to <17 m BAL-19: 17 to <25 m BAL-12.5: 25 to 50 m BAL-LOW: >50 m	APZ applicable to Lot 201 and is provided within Subject Land by Proposed Car Park of Lot 201
all other directions	Managed Land					

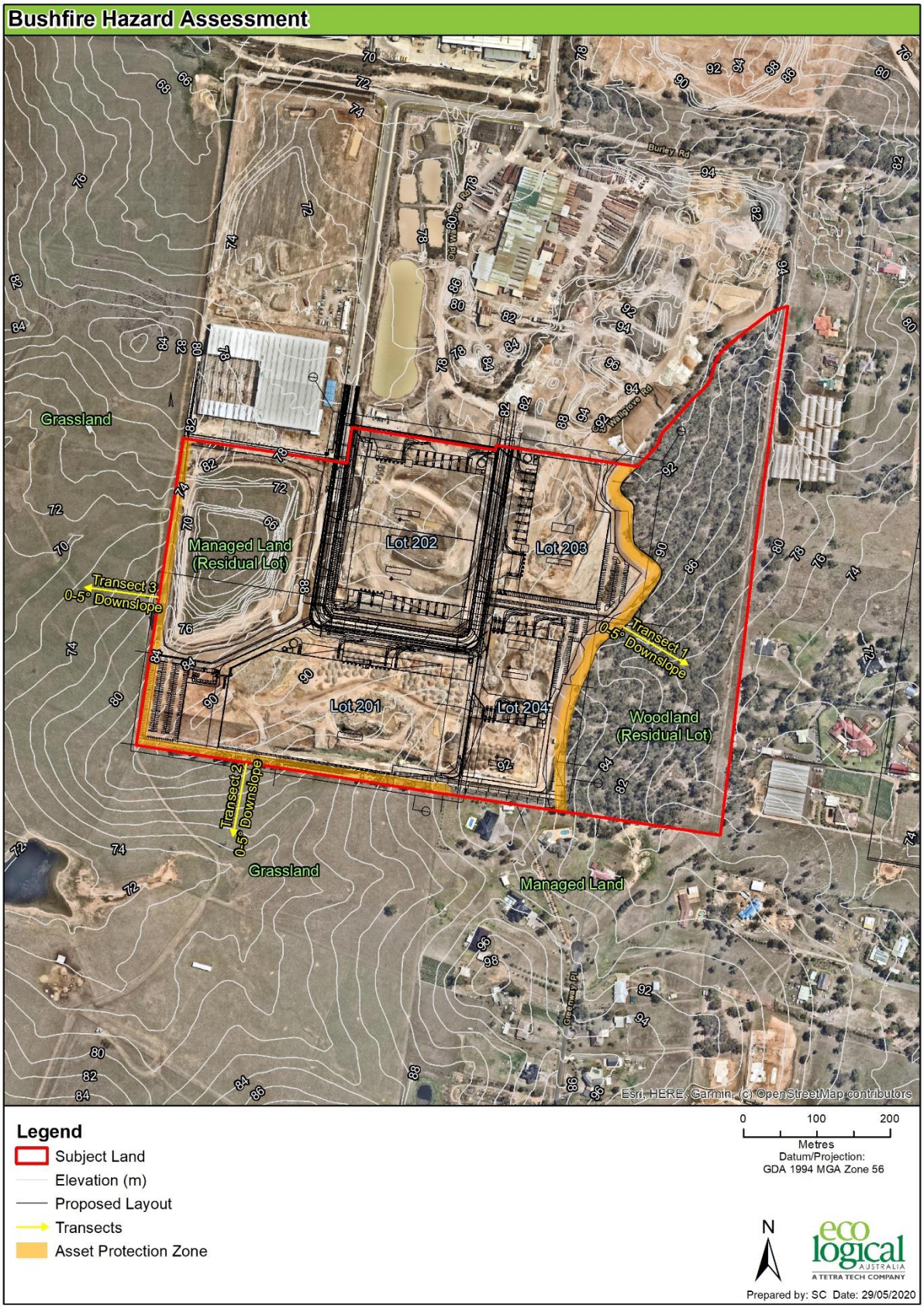

Figure 6: Bushfire hazard assessment

3. Bushfire protection measures

3.1 Asset Protection Zones

Table 3 shows the dimensions of the required APZ and where relevant, information on how the APZ is to be provided is included. The footprint of the APZ is also shown on **Figure 6**.

The compliance of the proposed APZ with regards to Section 7.4 of PBP, is detailed in **Table 4**.

Table 4: APZ requirements and compliance (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot.	APZs are provided in accordance with tables A1.12.2 and A1.12.3 based on the FDI.	Complies APZ provided in accordance with table A1.12.2 as shown in **Table 3** and **Figure 6**.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	To comply APZ to be managed in accordance with PBP. Fuel management specifications provided in **Appendix A**.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies APZ located wholly within development site.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	Complies APZ is not located on slopes greater than 18°.

3.2 Access

Access to the approved subdivision is via access roads off Burley Road. A fire tanker or pumper would attend to a property fire at Lots 201, 202, 203 and 204 via these access roads, and have direct access to buildings via planned driveways, which are designed as truck access points to the proposed warehouses. This includes an access point between Lots 203 and 204 and the managed environmental zone.

The compliance of the proposed property access with regard to Section 7.4 of PBP is detailed in **Table 5**.

Table 5: Property access requirements (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided withsafe, all-weather access to structuresand hazard vegetation.	Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Complies Property will be accessed by a public road and paved access driveways.
The capacity of access roads is adequate for firefighting vehicles	The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges and causeways are to clearly indicate load rating.	Can comply The advice of a relevant authority or suitably

Performance Criteria	Acceptable Solutions	Compliance notes
		qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 7.4a of PBP.
There is appropriate access to water supply.	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005;	Can comply
	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Can comply
Firefighting vehicles can access the dwelling and exit the property safely.	At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road;	Complies Access road has two entry points
	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply:	Not applicable
	Minimum 4m carriageway width;	Complies
	In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;	Not applicable
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	Can comply
	Provide a suitable turning area in accordance with Appendix 3 of PBP;	Can comply
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 7.4a of PBP.
	The minimum distance between inner and outer curves is 6m;	
	The crossfall is not more than 10 degrees;	
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;	
	A development comprising more than three dwellings has access by dedication of a road and not by right of way.	Not Applicable
	Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. the gradients applicable to public roads also apply to	Not Applicable

Performance Criteria	Acceptable Solutions	Compliance notes
	community style development property access roads in addition to the above.	

3.3 Water supplies

The compliance of the proposed water supply with regards to Section 7.4 of PBP is detailed in **Table 6**.

Table 6: Water supply requirements (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
An adequate water supply is providedfor firefighting purposes.	• Reticulated water is to be provided to the development, where available; • A static water supply is provided where no reticulated water is available.	Complies Proposed serviced by a reticulated water.
Water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations	• Fire hydrant spacing, design and sizing comply with the Australian Standard AS 2419.1 (SA 2005); • Hydrants are not located within any road carriageway; and • Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 7.4a of PBP.
Flows and pressure are appropriate	• Fire hydrant flows and pressures comply with AS 2419.1 (SA 2005).	
The integrity of the water supply is maintained	• All above-ground water service pipes are metal, including and up to any taps.	

3.4 Electricity services

The compliance of the proposed supply of electricity services with regards to Section 7.4 of PBP is detailed in **Table 7**.

Table 7: Requirements for the supply of Electricity services (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground; and Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and No part of a tree is closer to a power line than the distance set out in ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016).	Complies Electricity services to the subject site are located underground.

3.5 Gas services

The compliance of the proposed supply of gas services (reticulated or bottle gas) with regards to Section 7.4 of PBP is detailed in **Table 8**:

Table 8: Requirements for the supply of gas services (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 – The Storage and handling of LP gas, the requirements of relevant authorities, and metal piping is used; All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side; Connections to and from gas cylinders are metal; Polymer-sheathed flexible gas supply lines are not used; and Above-ground gas service pipes are metal, including and up to any outlets.	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 7.4a of PBP.

3.6 Construction standards

The building construction standard for proposed buildings is based on determination of the Bushfire Attack Level (BAL) in accordance with PBP and then applying the appropriate construction specifications based on this rating and the selected standard for construction in bushfire prone areas. The separation distances for the identified BALs are provided in **Table 3**.

The compliance of the proposed construction with regard to Section 7.4 of PBP is detailed in **Table 9**.

Table 9: Construction requirements (adapted from table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	BAL is determined in accordance with tables A1.12.5 to A1.12.6 of PBP; and	Complies BAL determined using table A1.12.5 of PBP.
	Construction provided in accordance with the NCC and as modified by section 7.5	Can comply Construction in accordance with AS 3959 No dwelling located in BAL-FZ therefore s7.5.3 does not apply.
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with section 7.6 of PBP.	Can comply Specification detailed in **Section 3.6.4** of this report.
Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with section 8.3.2 of PBP.	N/A

3.6.1 Bushfire Attack Level (BAL)

The building construction standard is based on the determination of the BAL in accordance with Appendix 1 of PBP. The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

The proposal is exposed to a maximum of BAL-29 identified in **Table 3**.

3.6.2 Construction requirements

The NCC does not provide for any bush fire specific performance requirements for Class 5 to 8 buildings. As such AS3959 and NASH Standard are not considered as a set of Deemed to Satisfy (DtS) provisions, however compliance with the NCC for construction requirements for buildings in designated bush fire prone areas must be considered when meeting the aims and objectives of PBP. These requirements are specified in:

- AS 3959:2018 Construction of buildings in bushfire prone areas (SA 2018);
- NASH Standard: Steel Framed Construction in Bushfire Areas 2014 (NASH 2014).

Construction shall comply with Section 3 and the below identified sections of AS 3959:2018 (SA 2018) or NASH Standard 1.7.14 (NASH 2014) as appropriate:

Lot 201

- Roof and sub floor= BAL-29 (Section 7);
- Southern elevation = BAL-29 (Section 7); and
- Eastern, western and northern elevation = BAL-19 (Section 6).

Lot 202

- Roof and sub floor= BAL-LOW (Section 4);
- Eastern, southern, western and northern elevation = BAL-LOW (Section 4).

Lot 203

- Roof and sub floor= BAL-29 (Section 7);
- Eastern elevation = BAL-29 (Section 7); and
- Eastern, western and northern elevation = BAL-19 (Section 6).

Lot 204

- Roof and sub floor= BAL-29 (Section 7);
- Eastern elevation = BAL-29 (Section 7); and
- Southern, Western and northern elevation = BAL-19 (Section 6).

3.6.3 Additional construction requirements

For construction complying with the specifications detailed in AS 3959:2018 (SA 2018), the additional ember protection provisions identified in section 7.5 in PBP applies as required.

For construction complying with the specifications detailed in the NASH standard (NASH 2014), all gaps in roofing assemblies shall be limited to 2 mm unless protected with ember guards made of non-combustible materials, a mesh or perforated sheet with a maximum aperture of 2 mm made of corrosion-resistant steel or bronze or protected with mineral wool or other non-combustible material.

3.6.4 Fences and gates

To comply with section 7.6 of PBP, all fencing and gates in BFPL are to be constructed of hardwood or non-combustible material. Where fencing connects directly to any proposed building(s) or in areas of BAL-29 or greater, they should be made of non-combustible material.

3.7 Landscaping

The compliance of the proposed landscaping with regard to Section 7.4 of PBP is detailed in **Table 10**.

Table 10: Landscaping requirements and compliance (adopted from table 7.4a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions.	Compliance with the NSW RFS 'asset protection zone standards' (see Appendix 4 of PBP);	To comply To be managed in accordance with PBP. Fuel management specifications provided in **Appendix A**
	A clear area of low-cut lawn or pavement is maintained adjacent to the house;	To comply
	Fencing and retaining walls are constructed in accordance with section 7.6; and	To comply Specification detailed in Section 3.6.4 of this report
	Trees and shrubs are planted such that: the branches will not overhang the roof; the tree canopy is not continuous; and if proposed, a windbreak is located on the elevation from which fires are likely to approach.	To comply

4. Conclusion

The proposed new industrial buildings, complies with the specifications and requirements of '*Planning for Bush Fire Protection 2019*', as outlined in **Table 11** below.

Table 11: Development Bushfire Protection Solutions and Recommendations

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	APZ dimensions are detailed in **Table 3** and shown in **Figure 6**. Identified APZ to be maintained in perpetuity to the specifications detailed in **Appendix A**.	☑	☐	3.1
Access	The proposed development will be accessed by two truck and vehicle access points as per **Table 5**.	☑	☐	3.2
Water supplies	Reticulated water supply to meet PBP acceptable solution specifications identified in table 7.4a of PBP.	☑	☐	3.3
Electricity service	Electricity supply located underground.	☑	☐	3.4
Gas service	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	☑	☐	3.5
Construction standard	The proposed structure is to be constructed to the following BAL rating based on the construction specifications detailed in either AS 3959-2018 or the NASH standard: • Roof and sub floor= BAL-29 (Section 7); • Southern elevation = BAL-29 (Section 7); and • Eastern, western and northern elevation = BAL-19 (Section 6). Including additional ember provisions detailed in section 7.5 of PBP as required.	☑	☐	3.6
Landscaping	Any future landscaping meets the requirements of PBP listed in **Appendix A** and fencing/retaining walls to be constructed from hardwood or non-combustible material.	☑	☐	3.7

5. Recommendations

It is recommended that the development be issued a Bush Fire Safety Authority. The proposal has been assessed as BAL-29 for Lots 201, 203 and 204; and BAL-LOW for Lot 202.

The proposal will be able to satisfy the aim and objectives of PBP for non-habitable development.

Deanne Hickey
Senior Environmental Consultant

Mick George
Principle Consultant, NRM and Bushfire

6. References

Eco Logical Australia, Bushfire Protection Assessment –Horsley Park Logistics Masterplan (2020).

Industry Safety Steering Committee 3 (ISSC3). 2016. ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets. November 2016. NSW.

National Association of Steel Framed Housing (NASH). 2014. *Steel Framed Construction in Bush Fire Prone Areas*. NASH

NSW Rural Fire Service (RFS). 2019. Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners - issued December 2019. Australian Government Publishing Service, Canberra.

Office of Environment and Heritage. (OEH) 2013. Native vegetation of the Cumberland Plain, Western Sydney vegetation maps, Sydney.

Standards Australia (SA). 2005. *Fire hydrant installations - System design, installation and commissioning*, AS 2419.1, SAI Global, Sydney.

Standards Australia (SA). 2014. *The storage and handling of LP Gas*, AS/NZS 1596:2014. SAI Global, Sydney.

Standards Australia (SA). 2018. *Construction of buildings in bushfire-prone areas,* AS 3959:2018. SAI Global, Sydney.

Appendix A - Asset protection zone and landscaping standards

The following APZ management specifications in **Table 12** apply to the APZs specified in **Table 3** and shown in **Figure 6**. These APZ management specifications should be considered for any landscaping and ongoing management within the subject land.

The APZs identified in **Table 3** are to be maintained in perpetuity and management undertaken on an annual basis (as a minimum) and prior to the commencement of the fire season.

Further details on APZ implementation and management can be found on the NSW RFS website (https://www.rfs.nsw.gov.au/resources/publications).

Table 12: APZ management specifications

Vegetation Strata	Inner Protection Area (IPA)	Outer Protection Area (OPA)
Trees	Tree canopy cover should be less than 15% at maturity; Trees (at maturity) should not touch or overhang the building; Lower limbs should be removed up to a height of 2 m above ground; Canopies should be separated by 2 to 5 m; and Preference should be given to smooth barked and evergreen trees.	Tree canopy cover should be less than 30%; and Canopies should be separated by 2 to 5 m.
Shrubs	Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided; Shrubs should not be located under trees; Shrubs should not form more than 10% ground cover; and Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.	Shrubs should not form a continuous canopy; and Shrubs should form no more than 20% of ground cover.
Grass	Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and Leaves and vegetation debris should be removed.	Should be kept mown to a height less than 100 mm; and Leaf and other debris should be removed.

ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au