



APPENDIX N

BUSHFIRE HAZARD ASSESSMENT
REPORT

BUSHFIRE ASSESSMENT REPORT

HOLCIM SALT ASH SAND OPERATIONS

**Lot 4 DP 774726
8 Oakvale Drive, Salt Ash**

Date: **19/9/2022**

Prepared for: **Holcim (Australia) Pty Ltd**

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1.0 EXECUTIVE SUMMARY AND COMPLIANCE TABLES

Holcim (Australia) Pty Ltd (Holcim) owns and operates the Salt Ash Sand Operations (the 'site' or the 'quarry'), a long-standing quarry at 8 Oakvale Drive, Salt Ash, New South Wales (Lot 4 DP 774726) that extracts, processes and transports sand products for use in the production of industrial and construction materials, such as glass and concrete.

The quarry, which has been in operation since 1980, produces a variety of dry form and wet processed sand for glass and construction applications.

Holcim propose to meet part of the increased forecast demand in natural sand in the Hunter and Greater Sydney regions by maximising the extraction of remaining sand resource from the quarry through a State significant development (SSD) application.

This report has assessed the project against the requirements of *Planning for Bush Fire Protection* (2019) and specific measures identified by *New South Wales Rural Fire Service*.

This report establishes that the proposed SSD application is capable of complying with the acceptable solutions of *Planning for Bush Fire Protection* (2019).

TABLE 1 – PROPERTY DETAILS AND TYPE OF PROPOSAL

Applicant Name	Holcim (Australia) Pty Ltd		
Site Address	8 Oakvale Drive, Salt Ash	Lot/Sec/DP	Lot 4 DP 774726
Local Government Area	Port Stephens	Forest Fire Danger Index	100
Bushfire Prone Land	Yes, mapped bushfire prone land		
Type of development	Extractive Industry	Type of Area	Existing sand quarry within forest
Special Fire Protection Purpose	No	Flame Temperature	1090K
Application Complies with DTS Provisions	Yes. Relevant specifications and requirements are satisfied	Referral to RFS required	No

TABLE 2.0 – BUSHFIRE THREAT ASSESSMENT OFFICE BUILDING

	North	East	South	West
Vegetation Structure	Grassland	Forest	Managed Land	Forest Remnant < 1 hectare in size
Asset Protection Zone	22 metres	52 metres	140 metres	112 metres
Accurate Slope Measure	Level	Level/Cross-slope	N/A	N/A
Slope Range	Level/Upslope	Level/Upslope	N/A	N/A
Bushfire Attack Level (BAL)	BAL-12.5	BAL-12.5	BAL-LOW	BAL-LOW

TABLE 2.1 – BUSHFIRE THREAT ASSESSMENT WORKSHOP, OIL STORE AND WEIGHBRIDGE

	North	East	South	West
Vegetation Structure	Grassland	Forest	Managed Land	Forest Remnant < 1 hectare in size
Asset Protection Zone	> 50 metres	24 metres	140 metres	132 metres
Accurate Slope Measure	Level	Level/Cross-slope	N/A	N/A
Slope Range	Level/Upslope	Level/Upslope	N/A	N/A
Bushfire Attack Level (BAL)	BAL-LOW	BAL-29	BAL-LOW	BAL-LOW

TABLE 2.2 – BUSHFIRE THREAT ASSESSMENT BAG SHED

	North	East	South	West
Vegetation Structure	Grassland	Managed Land	Managed Land	Forest Remnant < 1 hectare in size
Asset Protection Zone	22 metres	140 metres	140 metres	11 metres
Accurate Slope Measure	Level	N/A	N/A	5 degrees upslope
Slope Range	Level/Upslope	N/A	N/A	Level/Upslope
Bushfire Attack Level (BAL)	BAL-12.5	BAL-LOW	BAL-LOW	BAL-29

It is noted that much of vegetation located onsite will be cleared to allow sand extraction with the above based on current vegetation.

TABLE 3 – PLANNING FOR BUSHFIRE PROTECTION (2019)

Performance Criteria	Proposed Development Determinations	Method of Assessment
Asset Protection Zone	<p>Asset Protection Zones have been determined in accordance with Planning for Bush Fire Protection (2019).</p> <p>The Asset Protection Zone will be maintained for the life of development and defensible space is provided onsite.</p>	Acceptable Solution
Siting and Design	Buildings have been designed to minimise the risk of bushfire attack.	Acceptable Solution
Construction Standards AS3959 – 2018	<p>Bushfire Attack Levels have been determined in accordance with Planning for Bush Fire Protection (2019).</p> <p>The highest Bushfire Attack Level to the proposed building was determined to be BAL-29.</p> <p>Non-residential Class 5 to 8 buildings require no specific level of construction in accordance with AS3959 (2018) and National Construction Code 2019.</p> <p>Structural fire protection measures are deemed adequate if located outside the flame zone.</p>	Acceptable Solution
Private and or Public Road Infrastructure	The public road system is not affected or changed as part of this application.	Acceptable Solution
Property Access	Property access complies with Planning for Bushfire Protection (2019).	Acceptable Solution
Water and Utility Services	Water, electricity and gas services offer compliance with Planning for Bush Fire Protection (2019).	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2019), appendix 4.	Acceptable Solution

TABLE 4 – REVIEW OF SECRETARY’S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS) FOR BUSHFIRE

Assessment Criteria	Compliance
The aims and objectives of Planning for Bushfire Protection (2019)	The aims and objectives are addressed in section 3.4 of this report.
Identification of potential ignition sources during construction and operation of the development	Potential ignition sources are detailed in section 7.0 of this report.
Handling and use of hazardous or dangerous goods (e.g. explosives for blasting and fuel)	The storage of fuels and hazardous materials are detailed in section 7.0 of this report.
Proposed bushfire protection measures for the development including vegetation management and fire suppression capabilities	Asset protection zones are based on Planning for Bushfire Protection (2019) and have the buildings located outside BAL-FZ. Fire response procedures from staff have been included in section 8.0 of this report.
Operational access for firefighting appliances to the site	Property access to the buildings complies with Planning for Bush Fire Protection (2019). Recommendations have been made on the safe access and egress of workers and firefighters along the haul road with adequate road widths and turning bays provided.
Emergency and evacuation planning	An emergency management plan shall be prepared for the site which considers bushfire.

2.0 INTRODUCTION

2.1 PROJECT DESCRIPTION

Holcim (Australia) Pty Ltd (Holcim) owns and operates the Salt Ash Sand Operations (the 'site' or the 'quarry'), a long-standing sand quarry at 8 Oakvale Drive, Salt Ash, New South Wales (Lot 4 DP 774726) that extracts, processes and transports sand products for use in the production of industrial and construction materials, such as glass and concrete.

The quarry, which has been in operation since 1980, produces a variety of dry form and wet processed sand.

Holcim propose to meet part of the increased forecast demand in natural sand in the Hunter region and beyond by maximising the extraction of remaining sand resource from the quarry through a State significant development (SSD) application.

The proposed development involves the extraction and processing of up to 550,000 tonnes per annum (tpa) of sand at the site using both dry extraction and dredging techniques. Holcim also propose to import up to 200,000 tpa of sand from their Tanilba Bay and Anna Bay operations, as well as other local extractive operations for processing at the site, resulting in a total of up to 750,000 tonnes of sand products processed and dispatched from the site per year (the 'project'). The project will operate for up to 30 years.

The importation of Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM) (hereafter referred to as 'fill') by road would be required during the project on an as required basis to rehabilitate the site, aiding in batter stabilisation, ground stabilisation and backfilling the dredge pond. Rehabilitation will take place progressively as sand extraction is completed in different parts of the site and will continue post extraction to shape the final landform.

The proposed disturbance footprint of the project covers an area of approximately 35.4 hectares (ha), and encompasses all areas to be disturbed by sand extraction (dry extraction and dredging) and processing operations. Approximately 33 ha of the project's disturbance footprint have historically been disturbed, or are approved for disturbance, associated with existing development consents for the quarry.

2.2 PURPOSE OF REPORT

The purpose of this report is to establish suitable bushfire mitigation measures for the project in order for the NSW Department of Planning and Environment, and NSW Rural Fire Service to make determination of the project pursuant to the requirements of Planning for Bushfire Protection 2019.

Development on Bush Fire Prone Land must satisfy the aim and objectives of Planning for Bush Fire Protection (2019). The aim of Planning for Bush Fire Protection is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, onsite amenity and protection of the environment.

More specifically, the objectives are to:

- (i) Afford occupants of any building adequate protection from exposure to a bush fire;
- (ii) Provide for a defensible space to be located around buildings;
- (iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- (iv) Ensure that safe operational access and egress for emergency service personnel and residents is available;
- (v) Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and
- (vi) Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).

The recommendations within this report address the aims and objectives of Planning for Bush Fire Protection (2019) to reduce the risk of ignition of the buildings in a bushfire event and provide a safe working environment.

2.2 EXISTING INFRASTRUCTURE

A depot was previously established in the northern part of the site as part of previous development consents and includes the following ancillary infrastructure:

- An amenities/office building providing an office, lunchroom, laboratory, toilet and shower.
- Weighbridge.
- Designated parking area for employees and visitors.
- Various processing plant and infrastructure.
- Vehicle wash down bay.
- Storage sheds for dry sand products.
- Bunded fuel storage facilities, oil storage shed and dedicated liquid petroleum gas (LPG) supply.
- Various maintenance sheds and workshops.
- Waste receptacles such as dumpsters and skip bins.



PHOTOGRAPH 1 – OFFICE BUILDING AND CARPARK

View of the existing office and carpark looking west. The office building is a lightweight clad walled, metal roofed building.



PHOTOGRAPH 2 – EASTERN FOREST

View of the arm of forest located east of the weighbridge and bounding the northern portion of the site. The forest is dominated by eucalypts and banksias with an understorey of native shrubs and grasses.



PHOTOGRAPH 3 – DIESEL FUEL STORE

View of the self-bunded diesel fuel store which is located adjacent the oil storage shed, diesel pump and workshop. The diesel fuel store has a 28,000 litre capacity.

2.3 PROJECT ESTABLISHMENT

The existing site depot and processing area of the quarry will remain in operation during the project.

Where additional infrastructure or establishment works are required, this will be delivered as part of the initial stages of the project and include:

- widening of the existing entrance road into the site along the northern lot boundary, including installation of an inbound weighbridge;
- relocation and upgrade of utility infrastructure where required;
- construction of new internal haul roads, and/or reconfiguration of existing internal haul roads;
- establishing a diesel-powered dredge; and
- construction of processing plant for the dredge, and associated diesel generators to power the plant (in the event an electric powered dredge is not feasible).

Site establishment activities requiring the clearing of vegetation and removal and stockpiling of topsoil will only occur as necessary to limit the area of disturbance at any one time. Minimising the area of disturbance would thereby reduce the potential for wind erosion of exposed sand.

The existing site depot and processing area will also be reconfigured to support the project and will include the following:

- upgrade of administration office and processing plant and infrastructure, where required; and
- installation of a 20,000 litre water storage tank for firefighting (as recommended by this report).

Some existing internal access roads would be retained and re-configured as required as the staging of extraction progresses. Additional internal access roads would be constructed to enable heavy vehicles to access and load sand products, before leaving the site via the existing weighbridge and site exit.

A perimeter haul road will be constructed progressively around the dredge pond as sand extraction progresses over seven stages.

Until the full extent of the dredge pond has been formed and the entire perimeter haul road is complete, a turning head will be constructed at the end of the perimeter haul road to allow vehicles to turn.

The perimeter haul road will be up to 10 metres wide and when complete (at the end of Stage 5) will enable movement of vehicles around the entire perimeter of the dredge pond and be used to support access for dredge and site maintenance, site inspections, backfilling, rehabilitation works and future site management.



FIGURE 1 – SITE CONSTRAINTS MAP

3.0 BUSHFIRE ATTACK ASSESSMENT

3.1 VEGETATION CLASSIFICATION

Potential bushfire hazards were identified from Port Stephens Council's Bushfire Prone Mapping as occurring within the investigation area. Aerial mapping and inspection of the site reveals that the bushfire prone land map is reasonably accurate in respect to the current bushfire hazard.

The major vegetative threats have been determined using Keith (2004) to derive vegetation structures listed in Planning for Bush Fire Protection (2019).

Primary Vegetation Structures have been identified in Figure 1 – Site Constraints Map and separation distances shown in Table 2 – Bushfire Attack Assessment.

3.2 EFFECTIVE SLOPE

Effective slope was measured using one metre contour data obtained from NSW Spatial Services and verified by a laser hypsometer on site. The laser hypsometer verified slope within the vegetation calculating effective fire run slope from five separate measurements in each dominant direction.

Effective Slopes have been identified in Figure 1 – Site Constraints Map and slope ranges are shown in Table 2 – Bushfire Threat Assessment.

3.3 BUSHFIRE ATTACK LEVELS

Bushfire attack levels and relevant construction levels in accordance with Planning for Bushfire Protection (2019) have been demonstrated in Section 1 Executive Summary and Compliance Tables.

Features on or adjoining the site that may mitigate the impact of a high intensity bushfire on the proposed development

The bushland in close proximity to the buildings, is located upslope, which will result in reduced fire intensity and rate of spread. The vegetation to the east of the site forms a narrow arm leading to reduced potential headwidth and good access to fight fire.

Likely environmental impact of any proposed bushfire protection measures

Significant clearing of the bushland is required for the project with environmental studies to be completed.

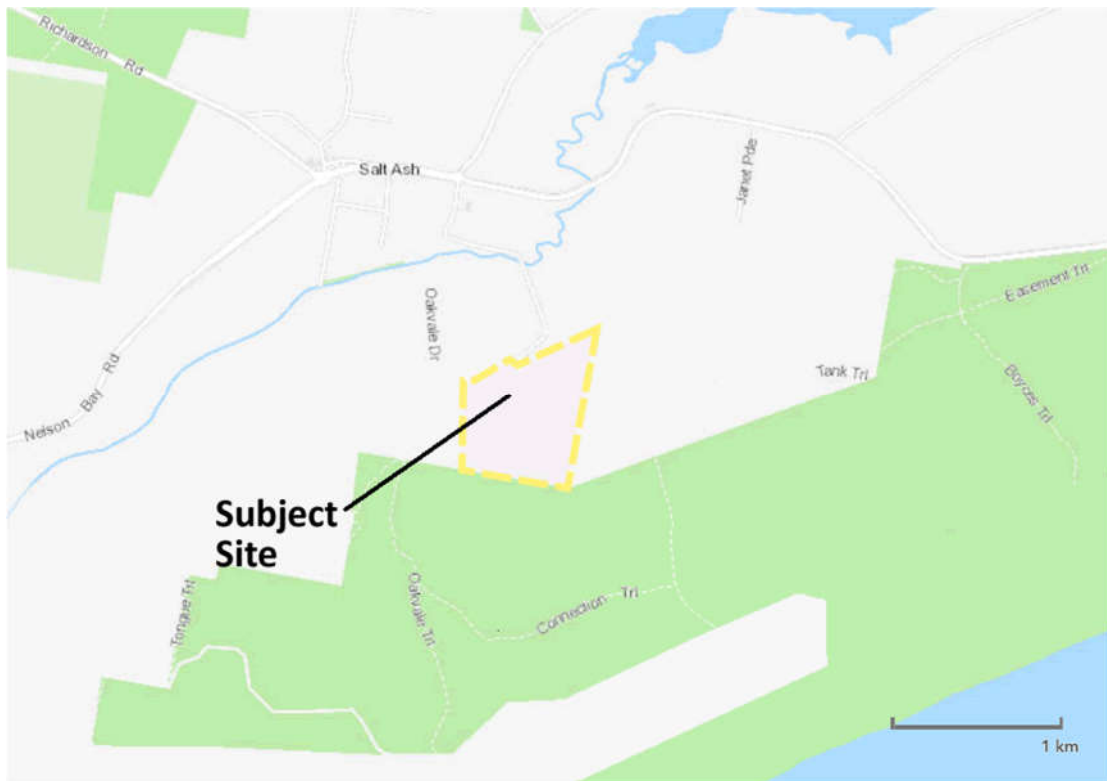


FIGURE 2 – LOCALITY MAP

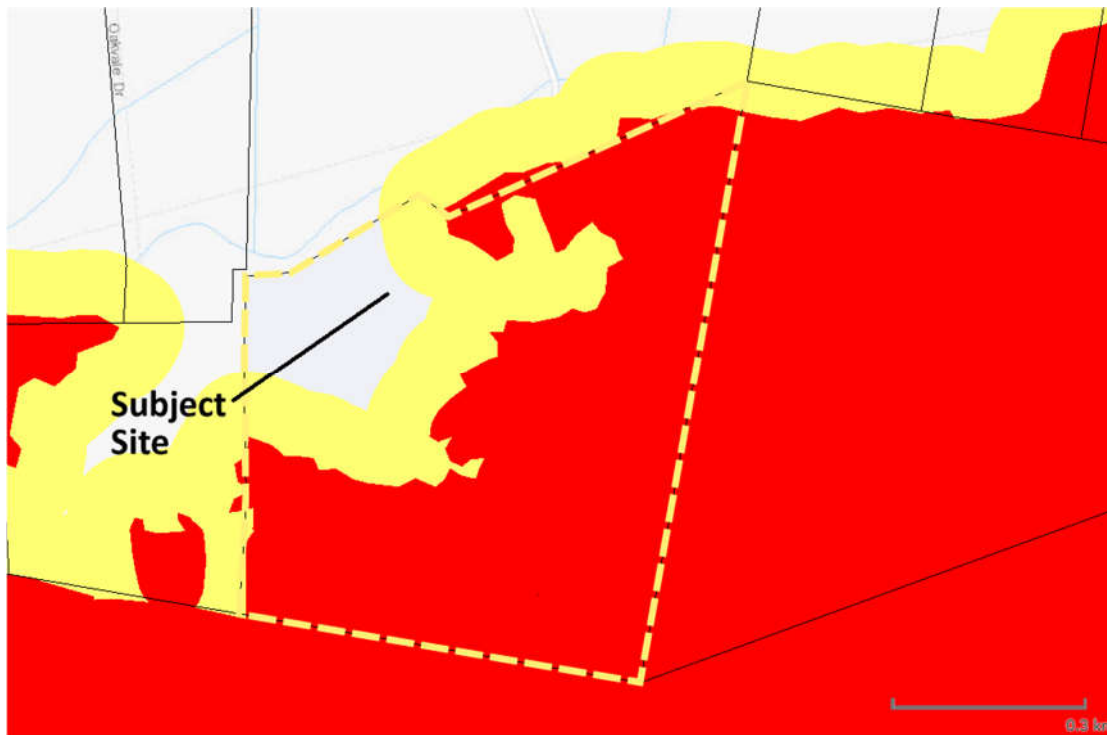


FIGURE 3 – BUSHFIRE PRONE LAND MAP

3.4 COMPLIANCE WITH AIMS AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

The aims and objectives of Planning for Bushfire Protection (2019) are addressed below for a non-combustible industrial building:

Afford occupants of any building adequate protection from exposure to a bush fire

Following the establishment of an asset protection zone, the buildings within the existing site depot will have a reduced exposure to bushfire. Evacuation planning in the event of bushfire should clearly indicate to workers to evacuate early in a direction away from the fire.

Provide for a defensible space to be located around buildings

Defendable space is presently available around the office building and some of the other structures. In the event of bush fire, firefighters will have direct access to the bushland via the internal road network of the quarry which will support firefighting efforts. In the event a fire front impacts on the buildings, defendable space is available surrounding the buildings from where the fire would be fought. A minimum 24 metre asset protection zone is recommended around the buildings.

Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition

Following establishment of the asset protection zones the buildings in the existing site depot will be outside of BAL-FZ and exposed to BAL-29. Structural fire resistance will be adequate if outside the flame zone.

Ensure that safe operational access and egress for emergency service personnel and building users is available

The property access to the buildings offers compliance with Planning for Bush Fire Protection access requirements. The road will be designed for the movements of large vehicles which exceeds the minimum widths of Planning for Bush Fire Protection.

Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ)

The Quarry Manager shall maintain landscaping and fuel management in accordance with Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.

Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting)

A 20,000 litre static water supply is required for the project and should be equipped with firefighting fittings. Existing electrical supplies are located underground.

4.0 UTILITY SERVICES AND INFRASTRUCTURE

4.1 WATER SERVICES

The quarry is greater than a hectare in size with no hydrant access. A static water supply with provision for a minimum 20,000 litres shall be provided for the project.

The following requirements should be adhered to for the water supply:

- a) a connection for firefighting purposes is located within the Inner Protection Area (IPA) or non-hazard side and away from the structure; 65 millimetre (mm) Storz outlet with a ball valve is fitted to the outlet;
- b) ball valve and pipes are adequate for water flow and are metal;
- c) supply pipes from tank to ball valve have the same bore size to ensure flow volume;
- d) underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;
- e) a hardened ground surface for truck access is supplied within 4m;
- f) above-ground tanks are manufactured from concrete or metal;
- g) raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F of AS 3959);
- h) unobstructed access can be provided at all times;
- i) underground tanks are clearly marked;
- j) tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;
- k) all exposed water pipes external to the building are metal, including any fittings;

4.2 ELECTRICITY SERVICES

The existing electrical transmission lines are located underground and require no additional protection measures.

4.3 GAS SERVICES

- Reticulated or bottled gas to be installed and maintained in accordance with AS 1596 (2002) and the requirements of the relevant authorities. Metal piping is to be used.
- Fixed gas cylinders to be kept clear of flammable material by a distance of 10 metres and shielded on the hazard side of the installation.
- Gas cylinders close to buildings are to have the release valves directed away from the building and at least two metres from flammable material with connections to and from the gas cylinder being of metal.
- Polymer-sheathed, flexible gas supply lines to gas meters adjacent to the buildings are not to be used.

5.0 PROPERTY ACCESS

Property access is by way of Oakvale Drive (private road), providing access from the public road system to the quarry.

The existing and proposed access roads onsite shall comply with section 7 of Planning for Bush Fire Protection (2019). The new internal access roads shall comply with the following:

- a minimum carriageway width of four metres.
- a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.
- curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.
- the minimum distance between inner and outer curves is six metres.
- 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.
- the perimeter access road shall be 10 metres wide with no passing bays required.

6.0 LANDSCAPING MAINTENANCE

It is recommended that landscaping is undertaken for the site depot in accordance with Appendix 4 of Planning for Bush Fire Protection (2019) and maintained for the life of the development.

Trees should be located greater than two metres from any part of the roofline of a building. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 metres from an exposed window or door. Trees should have lower limbs removed up to a height of two metres above the ground.

The landscaped area should be maintained free of leaf litter and debris. The gutter and roof should be maintained free of leaf litter and debris. Landscaping should be managed so that flammable vegetation is not located directly under windows.

Ground fuels such as fallen leaves, twigs (less than 6mm in diameter) and branches should be removed on a regular basis, and grass needs to be kept closely mown and, where possible, green.



Figure 3.2
Indicative extraction staging plans

HOLCIM SALT ASH SAND OPERATIONS
ENVIRONMENTAL IMPACT STATEMENT

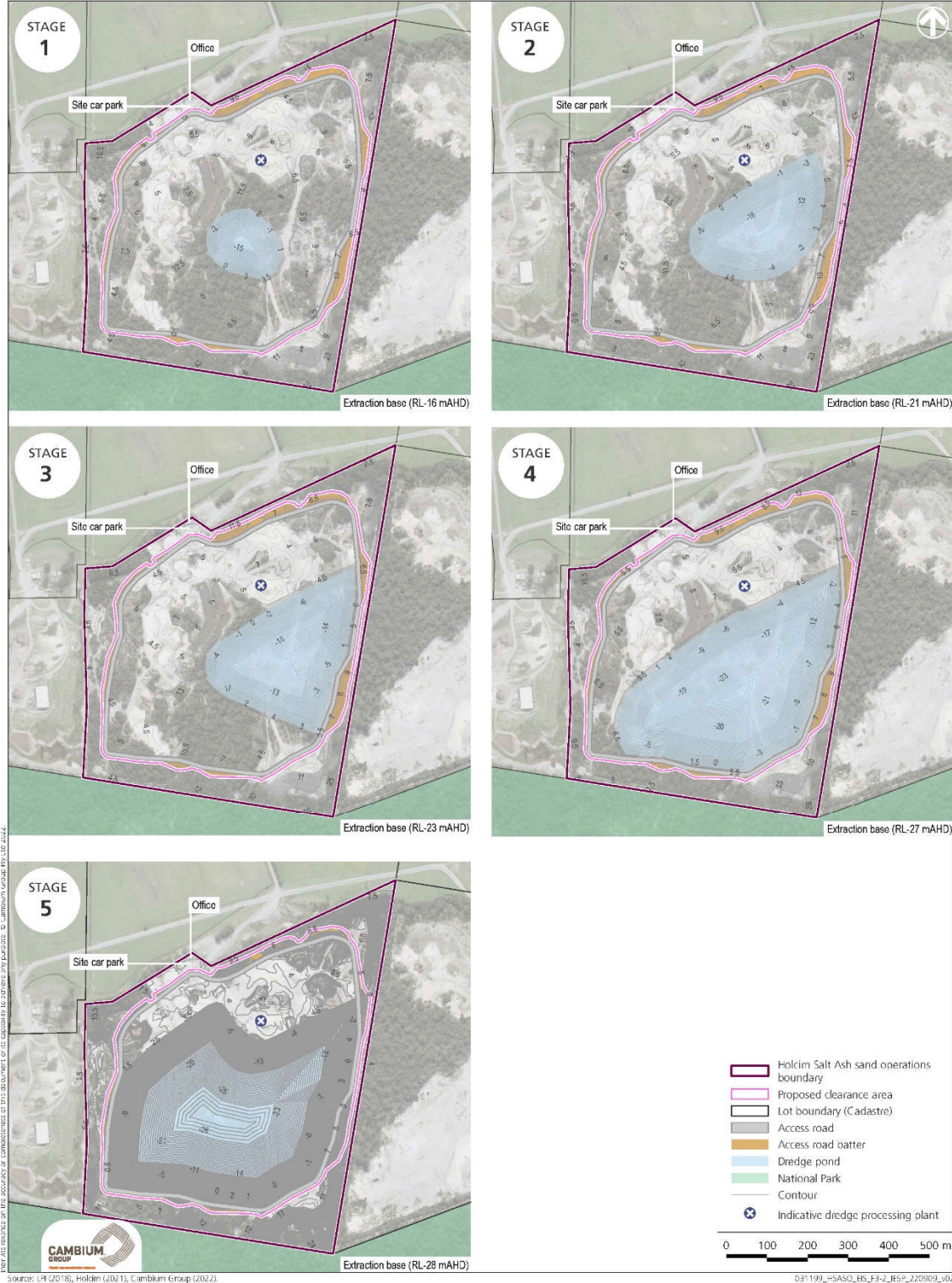
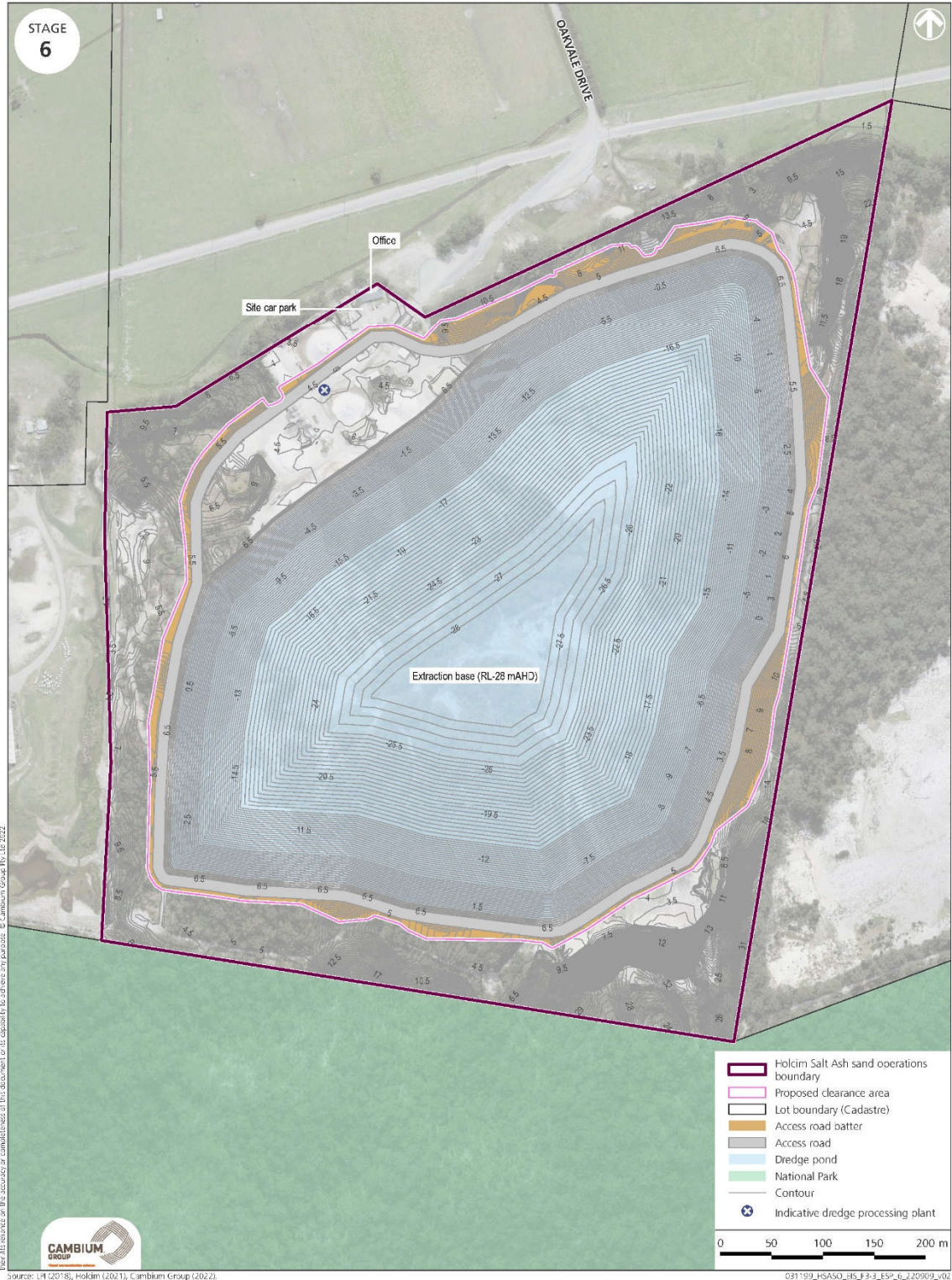


FIGURE 4 – PROPOSED DEVELOPMENT PLAN STAGES 1 TO 5

Figure 3.3
Extraction staging plan - Stage 6

HOLCIM SALT ASH SAND OPERATIONS
ENVIRONMENTAL IMPACT STATEMENT



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Source: L14 (2018), Holdam (2021), Cambium Group (2022).

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FIGURE 5 – PROPOSED DEVELOPMENT PLAN STAGE 6

Figure 3.4
Extraction staging plan - Stage 7

HOLCIM SALT ASH SAND OPERATIONS
ENVIRONMENTAL IMPACT STATEMENT

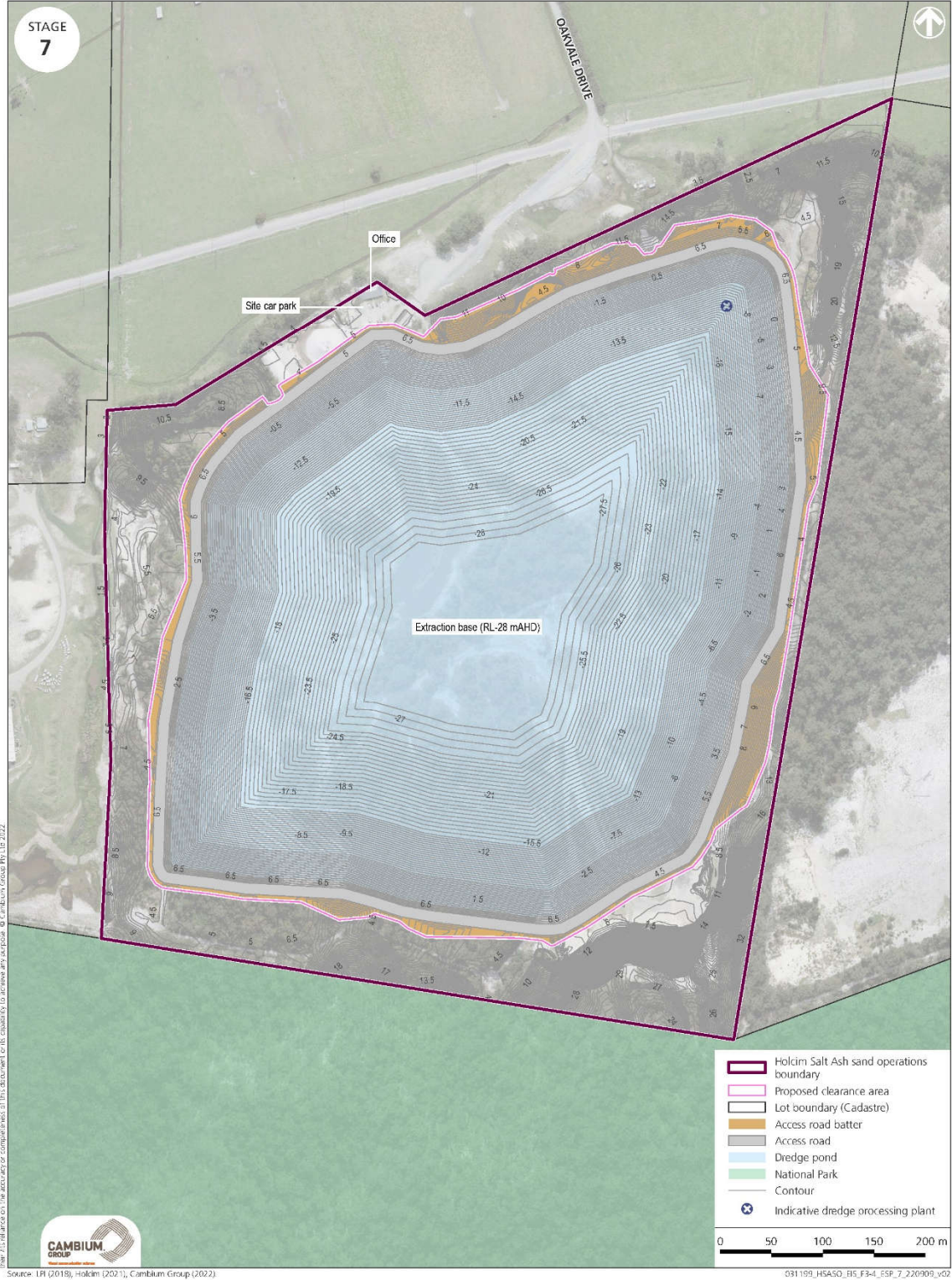


FIGURE 6 – PROPOSED DEVELOPMENT PLAN STAGE 7

7.0 POTENTIAL IGNITION SOURCES DURING CONSTRUCTION AND OPERATION

The following potential ignition sources are identified that could affect the occurrence and growth of a fire:

- Equipment faults, such as electrical short circuit or fuel leak on a machine;
- Lightning strike;
- Hazard reduction burn;
- Intentional arson; and
- Lit cigarettes or matches being carelessly thrown on the ground.

It is noted that there is a designated smoking area onsite within the site that should reduce the chances of a bushfire starting.

The project includes the quarrying of sand which is an inert material. The varying stages of the development will involve clearing of bushland, with limited opportunity for fire to start if machinery is maintained and the bushland is not burned.

Storage of Hazardous Materials

The existing workshop within the site depot holds a number of hazardous and flammable materials, with the building locked up when no workers are onsite. The following flammable items and mitigation strategies have been utilised onsite:

- 28,000 litre diesel storage tank. The tank and diesel pump are recommended to be relocated to be northwest of the workshop;
- A 50,000 litre diesel storage tank shall be added adjacent the proposed dredging facility. A minimum 45 metre asset protection zone shall be provided surrounding the tank. It is expected the forest will be cleared to far greater a distance through future stages of the project;
- the site has an approved flammables cabinet for flammable items to be stored in;
- the oil storage shed is a metal shed presently exposed to BAL-29.

There are no explosives stored onsite. Any mobile machinery is recommended to be stored within a building or undercover, when the site is unmanned, if possible.

8.0 FIRE RESPONSE PROCEDURE FROM STAFF

An emergency management plan shall be prepared for the site. The following procedure is recommended to be incorporated within the emergency management plan relating to bushfire. The following details initial response to a fire:

- Ensure the safety and wellbeing of oneself.
- Removing where possible any further danger(s).
- Ensuring the safety of uninjured people and preventing where possible further injury to victims.
- Informing the fire warden and any firefighters of the nature and the location of the emergency.
- Administer or organise first aid care for the injured if trained.
- Search area if practicable.
- Keep doors and windows closed to minimise fire spread.
- Close window shutters.
- Consider the risk of further fire, explosions or of the fire spreading.

The fire warden shall be contacted in the first instance, where possible, due to having greater experience of the site and specific fire training.

Mechanical tools, or plant machinery may be used to extinguish a small fire.

Any fires shall be responded to as quickly as possible if they are deemed safe to extinguish.

Employees are not trained as firefighters and any larger fires which may place the health of staff in danger, shall not be fought. NSW Fire and Rescue or NSW Rural Fire Service may respond to the site. Employees may assist the firefighters through the use of heavy machinery.

9.0 RECOMMENDATIONS

Based upon an assessment of the plans and information received for the project, it is recommended that development consent be granted subject to the following conditions:

1. Following the approval of the development and for the life of the development, the property around the buildings (excepting the bag shed), shall be maintained to a distance of 24 metres where onsite as an inner protection area (IPA) as outlined within Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.

Note: the trees located north of the office are located offsite and require no pruning or removal. The row of trees is identified as a low-threat windbreak.

2. Following the approval of the development and for the life of the development, the land west of the bag shed, shall be maintained to a distance of 11 metres as an inner protection area (IPA) as outlined within Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.
3. Any new internal access roads shall comply with section 7 of Planning for Bush Fire Protection 2019.
4. The 28,000 litre diesel storage tank and diesel pump is recommended to be relocated to be northwest of the workshop;
5. The proposed 50,000 litre diesel storage tank and dredge shall have a minimum 45 metres managed as an inner protection area (IPA) as outlined within Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.
6. Water, electricity and gas are to comply with section 7 of Planning for Bush Fire Protection (2019).

Water Services

- a. A 20,000 litre static water supply with firefighting fittings is required.
7. Landscaping for the site depot is to be undertaken in accordance with Appendix 4 of Planning for Bush Fire Protection (2019) and managed and maintained in perpetuity.
8. It is recommended that the Quarry Manager ensure the existing emergency management plans prepared for the workplace have specific consideration of bushfire emergency management planning.

10.0 CONCLUSION

The final recommendation is that the project offers compliance with Planning for Bush Fire Protection (2019). There is potential for bushfire attack at the quarry and a list of recommendations has been included in the above assessment to reduce that risk. The provision of a static water supply for firefighting purposes, increase in asset protection zones and emergency management planning will result in a better bushfire outcome than if the development did not proceed.

11.0 APPENDIX 1.0 – ASSET PROTECTION ZONES SUMMARY

Below is a summary of Asset Protection Zones outlined in appendix 4 of Planning for Bush Fire Protection (2019) and the NSW Rural Fire Services “Standards for Asset Protection Zones.” The property owner(s) should obtain these two documents and familiarise themselves with their content.

Generally

Asset Protection Zones (APZ) refer to the area between the bushfire threat and the asset (i.e. building). The APZ may contain two areas; the Inner Protection Area (IPA) and the Outer Protection Area (OPA). Some areas should be managed entirely as an Inner Protection Area (IPA). Refer to the plans for locations of APZ and distances from Assets.

Inner Protection Area (IPA)

The inner protection area is located adjacent to the asset and is identified as a fuel-free zone.

A. Shrubs (consisting of plants that are not considered to be trees)

1. Shrubs must be located away from a building’s glazing and vent openings.
2. Avoid planting around entry-ways if the vegetation is flammable.
3. A maximum 20% of the Inner Protection Area may contain shrubs.
4. A minimum 1.5 metre separation of shrubby vegetation from the building shall be maintained.
5. Shrubs must not have a connection with the tree canopy layer; remove/trim shrubs or underprune trees.
6. Ensure turf is suitably mown and/or grasslands are continually slashed to restrict to max 100mm high.

B. Trees: Maintain a minimum 2-5 metre canopy separation.

1. Trees are allowed in the inner protection area however they should not touch or overhang buildings. No tree should be within 2 metres of the roofline.
2. Underprune branches between the shrub layer and the canopy layer.
3. Ensure branches do not overhang buildings.
4. Ensure all trees in the IPA within 3 metres of buildings do not provide a serious fire threat.
5. Trees should have lower limbs removed up to a height of 2 metres above the ground.

Outer Protection Area (OPA)

The Outer Protection Area (OPA) is located adjoining the vegetation. The OPA should be maintained as a fuel-reduced area. This assumes trees may remain but with a significantly reduced shrub, grass, and leaf litter layer. In many situations leaf litter and the shrub layer may not require maintenance at all.

A. Shrubs:

1. Reduce or trim large stands of shrubs

B. Trees:

1. Existing trees can be retained.
2. Ensure a separation is available between shrubs and tree canopy.
3. Reduce tree canopy so there is no interlocking canopy.

12.0 REFERENCES AND DISCLAIMER

References

Standards Australia (2018) AS3959 Construction of Buildings in Bushfire-Prone Areas

Keith D. (2004) "Ocean Shores to Desert Dunes," Department of Environment and Conservation, Sydney.

Environmental Planning and Assessment Act (1979)

New South Wales Rural Fire Service (2019) Planning for Bush Fire Protection

Disclaimer

Despite the recommendations in this report, it is impossible to remove the risk of fire damage to the building entirely. This report assesses and provides recommendations to reduce that risk to a manageable level. It is of paramount importance that the recommendations are adhered to for the life of the structure and that all maintenance is performed, to ensure a level of protection is provided to the building, occupants and firefighters.

Planning for Bush Fire Protection (2019) states that notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains.

AS3959 (2018) Building in Bushfire-Prone Areas states that the standard is designed to lessen the risk of damage to buildings occurring in the event of the onslaught of bushfire. There can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.