APPENDIX M

BUSHFIRE HAZARD ASSESSMENT

BUSHFIRE ASSESSMENT REPORT

STOCKTON SAND QUARRY DREDGING

LOT 3 DP 664552, Lots 1 and 2 DP 1006399
Coxs Lane, Fullerton Cove

Date: **14/10/2019**

Prepared for: **Boral**

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Due to current and future demand for sand in the Hunter and Sydney regions, Boral is seeking approval for continued and expanded operations at the site through a State Significant Development (SSD) application. The proposed development (hereafter referred to as the 'Project') involves the extraction of sand from the inland vegetated dunes by front-end loader/excavator to a depth of 4 metres (m) Australian Height Datum (AHD) and subsequent dredging from 4 m AHD to 15 m below sea level (-15 m AHD). The Project would seek to permit a site wide increase on the dispatch limit to 750,000 tonnes per annum (i.e. the windblown sand extraction area and the Project operations combined) up until 2028 after which the site wide limit would reduce to no more than 500,000 tonnes per annum. The Project would be for a period of up to 25 years, subject to demand of sand resources.

This report has assessed the project against the requirements of section 4.14 of the NSW E*nvironmental Planning and Assessment Act 1979*, AS3959 (2009) Building in Bushfire-Prone Areas and Planning for Bush Fire Protection (2006).

This report establishes that the project is capable of complying with the acceptable solutions of Planning for Bush Fire Protection (2006).

TABLE 1 – PROPERTY DETAILS AND TYPE OF PROPOSAL

Applicant Name	Boral Resources (NSW) Pty Ltd		
Site Address	Coxs Lane, Fullerton Cove	**Lot/Sec/DP**	Lot 3 DP664552, Lots 1 and 2 DP 1006399
Local Government Area	Port Stephens	**FDI**	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 – BUSHFIRE THREAT ASSESSMENT PORTABLE OFFICE BUILDING

	North	East	South	West
AS3959 (2009) Vegetation Structure	Forest	Forest	Forest	Scrub
Asset Protection Zone	65 metres	25 metres	25 metres	25 metres
Accurate Slope Measure	8 degrees downslope	12 degrees upslope	12 degrees upslope	12 degrees upslope
Slope Range	6 to 10 degrees downslope	Level/Upslope	Level/Upslope	Level/Upslope
AS3959 (2009) Bushfire Attack Level (BAL)	BAL-19	BAL-29	BAL-29	BAL-19

TABLE 3 – PLANNING FOR BUSHFIRE PROTECTION (2006) 4.3.5 COMPLIANCE

Performance Criteria	Proposed Development Determinations	Method of Assessment
Asset Protection Zone	Asset Protection Zones have been determined in accordance with AS 3959 (2009) Method 1 Simplified Procedure and Planning for Bush Fire Protection (2006). The Asset Protection Zone will be maintained for the life of development and defendable space is provided onsite.	Acceptable Solution
Siting and Design	Buildings have been designed to minimise the risk of bushfire attack.	Acceptable Solution
Construction Standards **AS3959 – 2009**	Bushfire Attack Levels have been determined in accordance with AS 3959 (2009) Method 1 Simplified Procedure and Planning for Bush Fire Protection (2006). The highest Bushfire Attack Level to the proposed building was determined to be BAL-29. Non-residential Class 5 to 8 buildings require no specific level of construction in accordance with AS3959 (2009) and National Construction Code 2019. Structural fire protection measures are deemed adequate if located outside the flame zone.	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 (2006) S4.1.3.	Acceptable Solution

Water and Utility Services	Water, electricity and gas services offer compliance with Planning for Bush Fire Protection (2006) section 4.1.3.	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2006), appendix 5.	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 (2006)	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.
Storage of fuels and other hazardous materials (e.g. explosives for blasting)	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 AS3959 (2009) 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 (2006) S4.1.3. 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 existing emergency management plan has been prepared for the site which considers bushfire.

2.0 INTRODUCTION

2.1 PROJECT DESCRIPTION

Boral Resources (NSW) Pty Ltd (Boral) owns and operates the Stockton Sand Quarry (hereafter referred to as the 'site' or the 'quarry'), a long standing operation that currently extracts sand from the windblown (transgressive) sand dunes of Stockton Bight and transports up to 500,000 tonnes of sand product per year for use in the building, landscaping and construction markets.

Due to current and future demand for sand in the local Hunter and Sydney regions, Boral is seeking approval for continued and expanded operations at the site through a State Significant Development (SSD) application. The proposed development (hereafter referred to as the 'Project') involves the extraction of sand from the inland vegetated dunes by front-end loader/excavator to a depth of 4 metres (m) Australian Height Datum (AHD) and subsequent dredging from 4 m AHD to 15 m below sea level (-15 m AHD). The Project would seek to permit a site wide increase on the dispatch limit to 750,000 tonnes per annum (i.e. the windblown sand extraction area and the Project operations combined) up until 2028 after which the site wide limit would reduce to no more than 500,000 tonnes per annum. The Project would be for a period of up to 25 years.

The site contains an existing operation located approximately 375 m south east of the Project site, referred to as the windblown sand extraction area (or pit 7). The windblown sand extraction area is approved to operate until 2028 and dispatch up to 500,000 tonnes per annum from the site (refer to condition 6 of DA 140-6-2005).

Sand from the former inland extraction area was only extracted to 5 m AHD under the original 1996 development consent. The sand resource above 5 m AHD was exhausted in 2007 and in accordance with the conditions of consent the operations have ceased. The Project involves the extraction of sand from within the former inland extraction area (inclusive of pits 1 – 6) from the existing ground level to a depth of 15 m below sea level (-15 m AHD). As extraction will intercept the groundwater table (at approximately 1 m AHD) the primary method of sand extraction will involve dredging.

There is an estimated 9 million tonnes of sand resource within the Project extraction area.

Mobile plant and equipment utilised at the site would operate across both project areas and a docket system at the weighbridge would monitor outgoing product as a site total.

The Project is to be undertaken progressively in six stages, commencing with Stage 1. Similar to previous operations of the inland extraction area, sand extraction will involve clearing and grubbing of established vegetation from previous rehabilitation and possible screening of accumulated leaf litter and organic matter. Cleared

vegetation will either be mulched or stockpiled on-site for later reuse in rehabilitation. Similarly, any stripped topsoil would be retained for use in rehabilitation efforts across the site.

Sand will first be removed via a front-end loader which pushes into the exposed sand face. As the sand is relatively free-flowing, material falls towards the front-end loader at the natural angle of repose.

The sand will then be screened and stockpiled before a front-end loader then loads road trucks in-pit with screened raw sand for transport off-site via the weighbridge.

Following initial extraction of sand above the water table to a depth of 4 m AHD, a pond will then be created and will be made large enough to float a dredge and accommodate fresh water pumping for the proposed wash plant.

The dredge will move progressively through the extraction area generally following the nominated stages. In most cases, the sand in each extraction stage is fully extracted unless constraints are encountered.

The dredge will move backwards and forwards across the active dredge pond. The sand / water mix will be pumped directly from the dredge via a pontoon-mounted pipeline to the wash plant in the processing area. The dredge manoeuvres around the pond and its position is stabilised tie ropes connected to the banks around the active pond.

The dredge will then progressively extract sand in a south westerly direction in a staged process. Extraction will then move to the east and culminate with relocation of the proposed processing and stockpile area to a confined area in Stage 1 and subsequent dredging of the majority of the Stage 1 extraction area (to be known as Stage 6).

2.2 PURPOSE OF REPORT

The purpose of this report is to establish suitable bushfire mitigation measures for the proposed continued sand quarry operations on lands identified as Lot 3 DP664552, Lots 1 and 2 DP 1006399, Coxs Lane, Fullerton Cove, in order for the approval authority to make determination of the proposed development pursuant to the requirements of section 4.14 of the *NSW Environmental Planning and Assessment Act 1979*.

Development on Bush Fire Prone Land must satisfy the aim and objectives of Planning for Bush Fire Protection (2006). 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 defendable 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).

This report addresses the matters identified in A4.1 of appendix 4 of Planning for Bush Fire Protection (2006) and demonstrates that the proposal satisfies the aims and objectives of Planning for Bush Fire Protection (2006) by satisfying the performance criteria within section 4.3 of the document. The specific objectives for infill development are as follows:

- Ensure that the bushfire risk to adjoining lands is not increased;
- Provide minimum defendable space;
- Provide better bushfire protection, on a re-development site, than the existing situation. This should not result in new works being exposed to greater risk than an existing building;
- Ensure that the footprint of the proposed building does not extend towards the hazard beyond existing building lines on neighbouring land;
- Not result in an increased bushfire management and maintenance responsibility on adjoining landowners, unless they have agreed to the development; and
- Ensure building design and construction enhances the chances of occupant and building survival.

The recommendations within this report address the aims and objectives of Planning for Bush Fire Protection (2006) to reduce the risk of ignition of the buildings in a bushfire event and provide a safe working environment.

2.2 EXISTING INFRASTRUCTURE

Boral established a fenced depot as part of the previous inland extraction area project, this compound has been maintained as part of the ongoing operation. The fenced depot contains the following infrastructure:

- an amenities/office building providing an office, lunchroom, toilet and shower;
- weighbridge;
- designated parking area for employees and visitors; and
- maintenance shed for the front-end loader and a 4,200 litre above ground bunded fuel tank.

The existing site depot will be reconfigured to support the Project and will include the following:

- installation of a new prefabricated office building;
- relocation of light vehicle parking;
- relocation of entry gates (inside Boral's boundary); and
- relocation of onsite of storage facilities.

The Project will also include the following new or augmented infrastructure:

- construction of a new entry road. The new haul road will link to the existing haul road in the south eastern extent of Stage 1 and enable continued access to the windblown sand extraction area. The road will be two way configuration (i.e. trucks moving in and out) and a separated exit road will be constructed to allow exiting vehicles to cross the weighbridge (refer to Figure 3);
- a pad for the wash plant and diesel generators will be constructed as soon as practicable after vegetation removal and sand extraction in the northern portion of the Stage 1 extraction area; and
- relocation of the parking area to the south and relocation of the security gates northward across the entry road which will enclose the parking area and the new entry road. The docketing kiosk registering vehicles entering the site will also be relocated.

PHOTOGRAPH 1 – SITE PHOTO

View of the existing site office, amenities, workshop and weighbridge looking south. A processing plant will be located south of the cluster of buildings within the Stage 1 extraction area.

PHOTOGRAPH 2 – WESTERN VEGETATIVE THREAT

View of coastal scrub located west of the workshop with coastal dune forest located further west. The forest is dominated by eucalypts and banksias with an understorey of native shrubs and grasses.

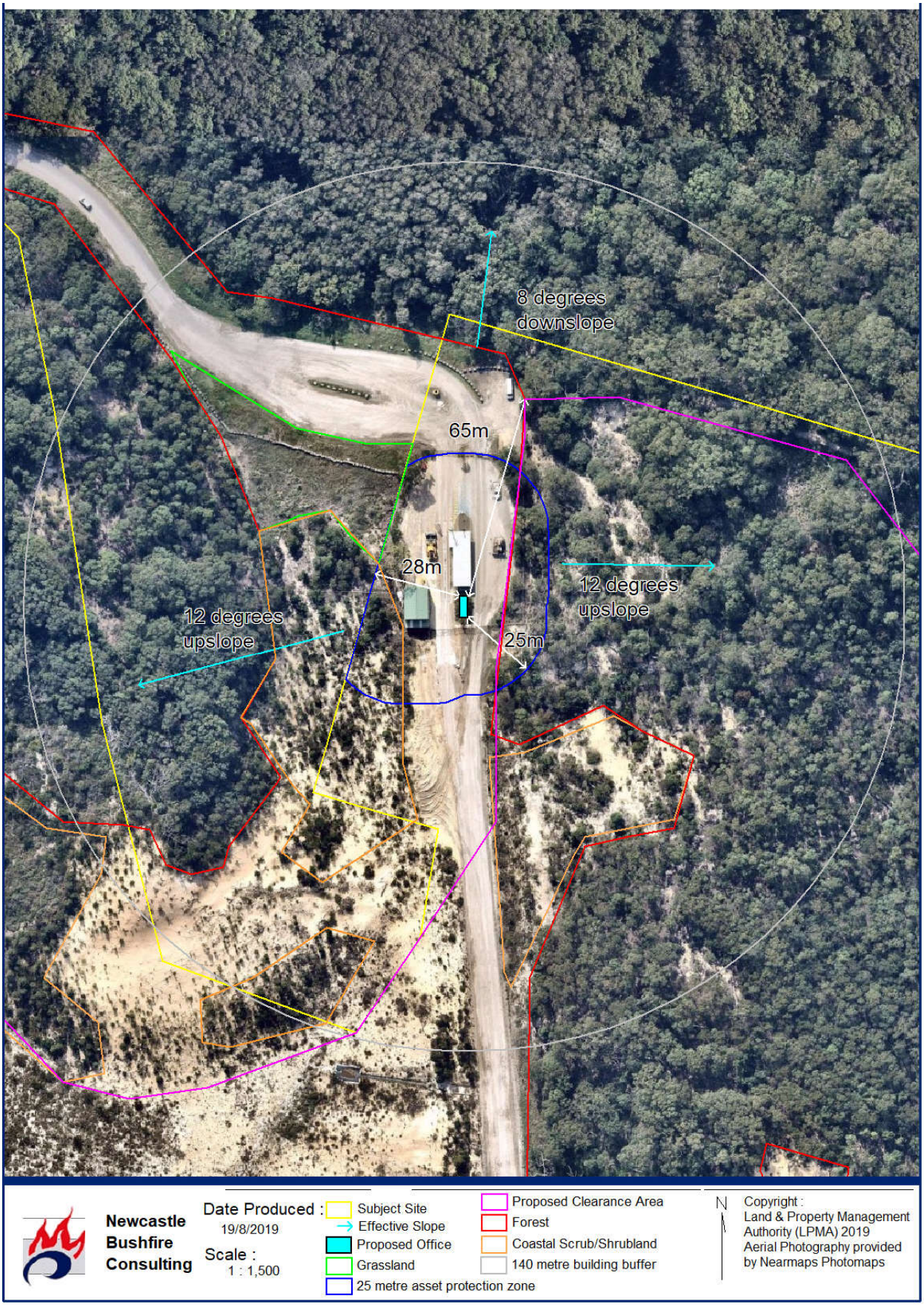

FIGURE 1 – SITE CONSTRAINTS MAP

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 (2006). General vegetation structures have been translated to AS3959 (2009) groupings.

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 2 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 5 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 AS3959 (2009) have been demonstrated in Section 1 Executive Summary and Compliance Tables.

<u>Features on or adjoining the site that may mitigate the impact of a high intensity bushfire on the proposed development</u>
The bushland in close proximity to the buildings, is located upslope, which will result in reduced fire intensity and rate of spread. A large portion of the site near the buildings has been mined previously, with a significantly reduced fuel load.

<u>Likely environmental impact of any proposed bushfire protection measures</u>
Significant clearing is required for the proposed sand mine expansion with environmental studies to be completed.

FIGURE 2 – LOCALITY MAP
Courtesy of OpenStreetMap

PHOTOGRAPH 3 – SITE ACCESS

View of property access to Coxs Lane which provides good access and egress to the site. The current and future access is designed for trucks larger than a medium rigid vehicle with good access to fight fire.

3.4 COMPLIANCE WITH AIMS AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

The aims and objectives of Planning for Bushfire Protection (2006) 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 defendable space to be located around buildings
Defendable space is available around the buildings in the existing site depot. 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 25 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. The buildings excepting the relocatable office building are existing with the primary vulnerability being the subfloor.

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 5 of Planning for Bush Fire Protection 2006 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. Electrical supplies are located underground.

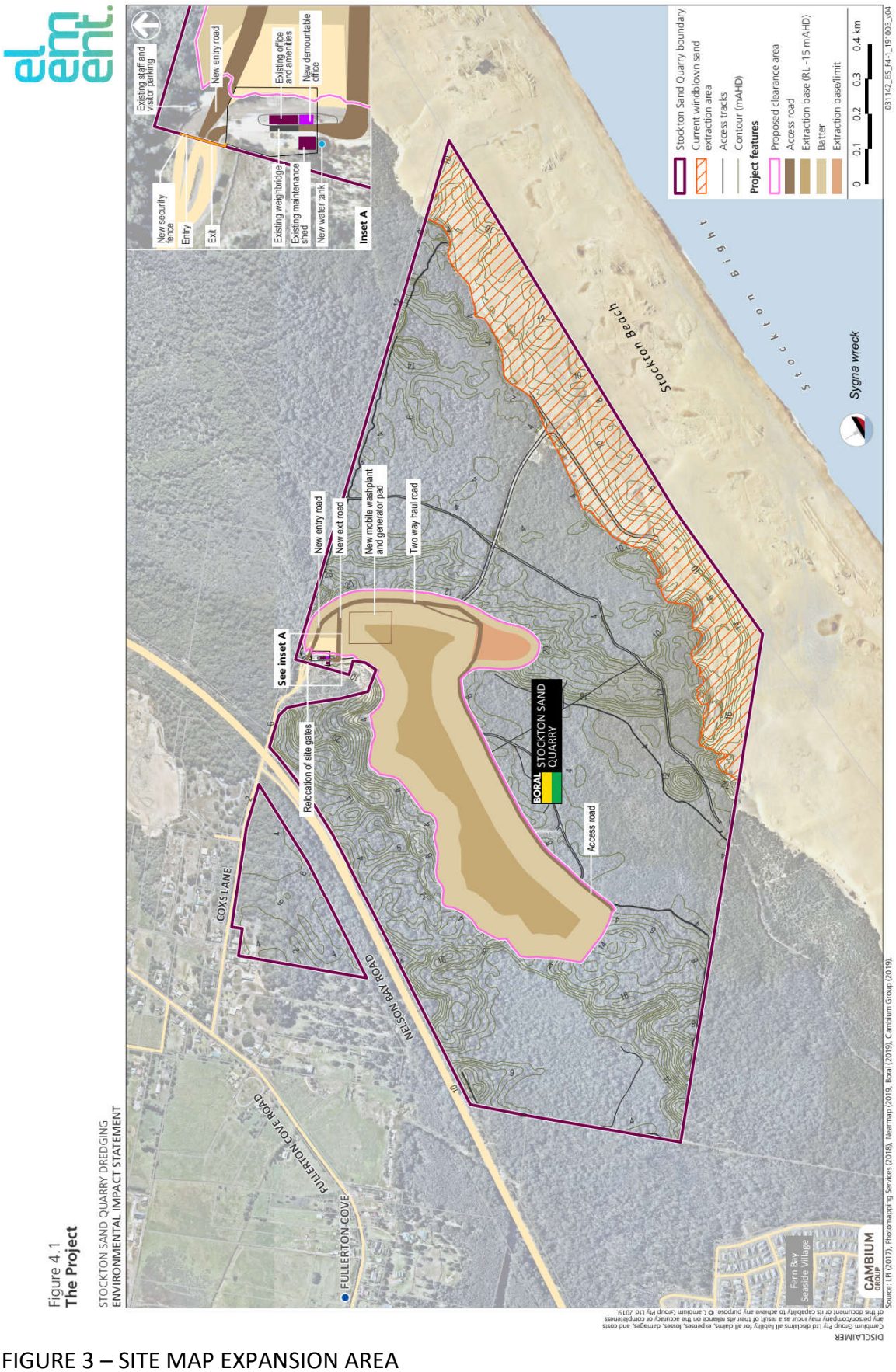

FIGURE 3 – SITE MAP EXPANSION AREA

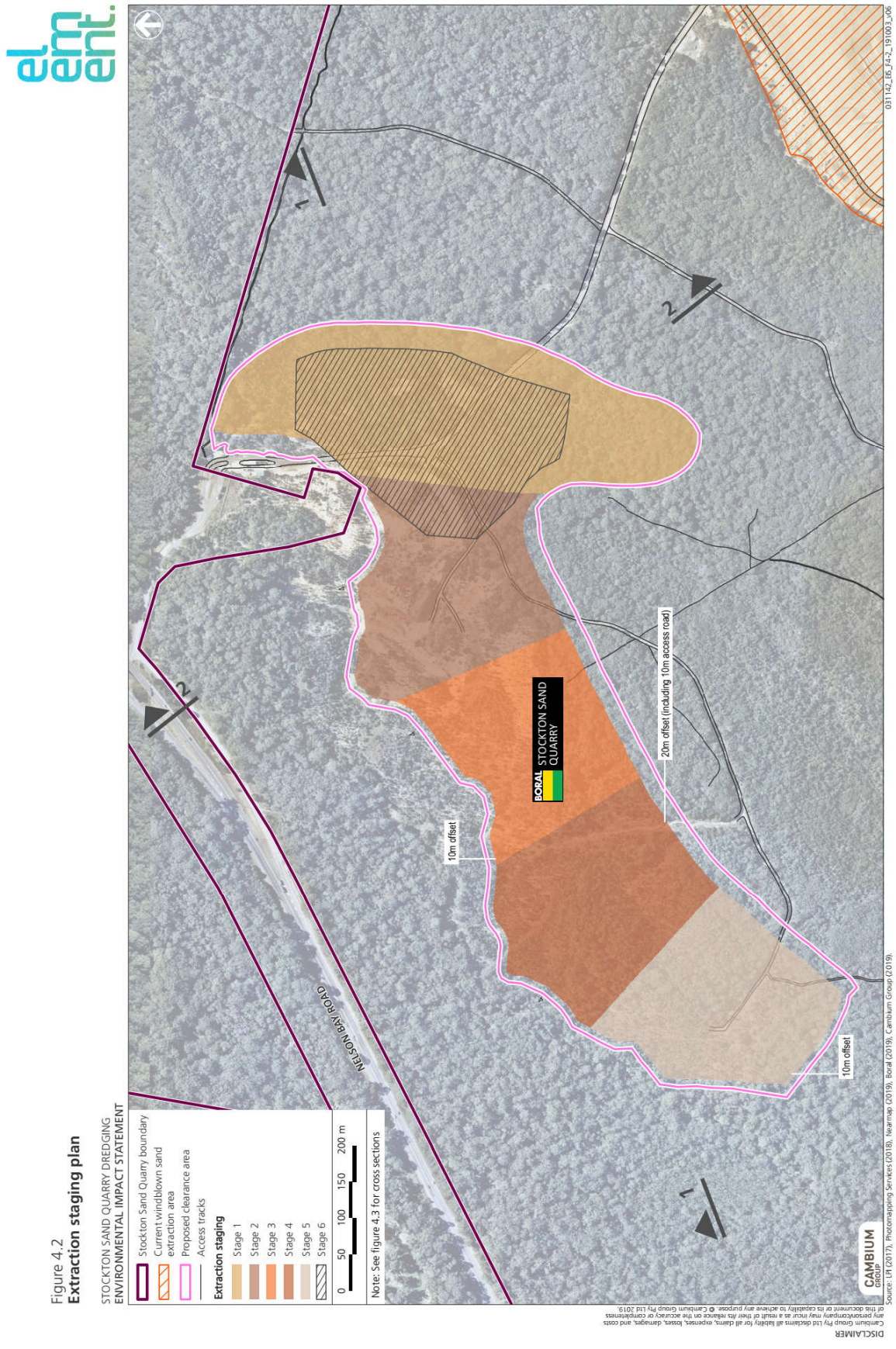

FIGURE 4 – STAGING PLAN

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:

- The water source shall be made available or located within the inner protection area (IPA) and away from the structure.
- A hardened ground surface for truck access is to be supplied up to and within 4 metres of the water source.
- A 65mm metal Storz outlet with a gate or ball valve shall be provided.
- The water tank if located above ground shall be of a non-combustible material.
- Tanks and associated fittings on the hazard side of the building shall be provided with adequate shielding to mitigate the impact of flame contact and radiant heat and provide safe access for fire fighters.
- The gate or ball valve, pipes and tank penetration are adequate for full 50mm inner diameter water flow through the Storz fitting and are metal.
- All associated fittings to the tank shall be non-combustible.
- An 'SWS' marker shall be obtained from the local NSW Rural Fire Service and positioned for ease of identification by brigade personnel and other users of the SWS. In this regard:
  a) Markers must be fixed in a suitable location so as to be highly visible; and
  b) Markers should be positioned adjacent to the most appropriate access for the static water supply.

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 the dwelling are to have the release valves directed away from the building and at least 2 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 Coxs Lane, providing access from the public road system to the quarry via a right of way on crown land.

The existing property access roads onsite shall comply with section 4.1.3 of Planning for Bush Fire Protection (2006). The new property access 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.
- internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius.
- 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 property access road should be upgraded to have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay.

There will be a new haul road constructed around the east of Stage 1 and a perimeter road constructed progressively along the southern edge of the Project area as dredging progresses.

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

6.0 LANDSCAPING MAINTENANCE

It is recommended that landscaping is undertaken for the site depot in accordance with Appendix 5 of Planning for Bush Fire Protection (2006) and maintained for the life of the development.

Trees should be located greater than 2 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 2 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.

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 depot that should reduce the chances of a bushfire starting.

The proposed development 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:

- 4,500 litre diesel storage tank. Additional metal cowling provided between the shed wall and the tank;
- the site has an approved flammables cabinet for flammable items to be stored in;
- Spray cans are located in a ventilated cupboard off the ground. This is an approved cabinet for pressurised spray cans; and
- The fuel ute has a 400 litre diesel tank with a quick hitch connector that will reduce fuel spillage.

There are no explosives stored onsite. The fuel ute is recommended to be stored in the workshop or offsite, when the site is unmanned.

Recommended Upgrade. The workshop is recommended to have the polycarbonate roofing to be replaced with metal roof sheeting.

8.0 FIRE RESPONSE PROCEDURE FROM STAFF

The following procedure shall be detailed in the Bushfire Evacuation Plan however should be used for 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. The existing water cart may assist firefighters in extinguishing small fires.

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 building, shall be maintained to a distance of 25 metres where onsite as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of Planning for Bush Fire Protection 2006 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.
2. The workshop is recommended to have the polycarbonate roofing to be replaced with metal roof sheeting.
3. The new haul roads shall comply with section 4.1.3 and Appendix 5 of Planning for Bush Fire Protection 2006 with the roads being a minimum 6.5 metres in width with a turning bay at the termination of the road, having a minimum 12 metre outer radius.
4. Water, electricity and gas are to comply with section 4.1.3 of Planning for Bush Fire Protection (2006).
   Water Services
   a. A 20,000 litre static water supply with firefighting fittings is required.
5. Landscaping for the site depot is to be undertaken in accordance with Appendix 5 of Planning for Bush Fire Protection (2006) and managed and maintained in perpetuity.
6. It is recommended that the Quarry Manager incorporate the new building into the existing emergency evacuation plans prepared for the workplace with specific consideration of bushfire evacuation planning.

10.0 CONCLUSION

The final recommendation is that the Project offers compliance with Planning for Bush Fire Protection (2006). 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.

11.0 APPENDIX 1.0 – ASSET PROTECTION ZONES SUMMARY

Below is a summary of Asset Protection Zones outlined in appendix 5 of Planning for Bush Fire Protection (2006) 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 (2009) 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 (2006) Planning for Bush Fire Protection

New South Wales Rural Fire Service (2010) Planning for Bush Fire Protection Appendix 3 Amendment

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 (2006) 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 (2009) 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.