

Bushfire Risk – Summary of Key Outcomes

The site for the proposed Buronga Peaking Power Plant is identified as bush fire prone within the Wentworth Shire Bush Fire Prone Land Map and has been assessed in accordance with the Rural Fires Act 1997.

Consultation was undertaken with the local Rural Fire Service to seek feedback on the proposal.

Mitigation measures are provided to ensure any risk of bush fire at the proposed Buronga Peaking Power Plant site is appropriately managed.

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13.1 Introduction

The proposed Development Site (the site) for the proposed Buronga Peaking Power Plant is identified as bush fire prone within the Wentworth Shire Bush Fire Prone Land Map and thus requires approval under the NSW Rural Fires Act 1997. A Bushfire Risk Assessment was undertaken and is provided within **Appendix F** of this Environmental Assessment. This chapter provides a summary of the assessment.

13.2 Existing Environment

13.2.1 Surrounding Land Use

The plant would be located on Crown land immediately adjacent to the TransGrid 220kV Buronga Switching Station on Arumpo Road, approximately 10km northeast of Buronga. This would facilitate connection into the national electricity grid. IPRA has secured land lease option arrangements with the leaseholder of this pastoral land, which is controlled by the Western Lands Commissioner. Land at and surrounding the site predominantly comprises stands of Mallee Woodland and Chenopod Shrubland. Land use is further mapped and described within **Chapter 12 Flora and Fauna** of this Environmental Assessment.

13.2.2 Proposed Site Layout

The proposed Buronga Peaking Power Plant Project would comprise three distillate-fired gas turbines with the electricity generated fed into the adjacent existing TransGrid 220kV Buronga Switching Station via step up transformers.

The proposed Peaking Power Plant would be called into service for a maximum of 10% of any one year. However, there would likely be the full time presence of at least one personnel on or close to the site during normal business hours attending to plant operation, maintenance and other site management works and whenever required to respond to alarm conditions. Infrastructure on site is proposed to include:

- 2 x 1,000 kL tanks of distillate and associated piping;
- 3 x demineralised and fire water tanks and associated piping;
- 3 x 40MW to 50MW distillate fired gas turbines;
- 3 x step-up transformers;
- 1 x wastewater and 1 x stormwater collection ponds;
- 1 x wastewater interceptor pit; and
- 1 x water treatment and reverse osmosis (RO) plant.

Associated buildings include workshop, amenities, office, control room and a switchgear room as detailed in **Chapter 4 Project Description**. The site will be benched at around 48m AHD.

13.3 Assessment of Impacts

13.3.1 Vegetation and Slope

Table 13-1 shows that the vegetation formation surrounding the proposed site is 'semi-arid woodland', which forms the main fire hazard of relevance to the proposal. Woodland vegetation occupies the flat terrain within and surrounding the site. The canopy cover of the Mallee eucalypts comprising the woodland is of low foliage projective cover (<10%). The ground layer is sparsely covered in a low density of shrubs and grasses, with low levels of leaf litter and organic matter, and large expanses of bare soil. Hence, fuel loads in the ground layer are low.

Effective slopes within and around the site are between 0-5°.

Table 13-1 Vegetation and Slope

Boundary	Vegetation Formation ¹	Effective Slope ²	Recommended APZ ³ (m)	Available APZ (m)
Northern (measured from distillate pipe)	Semi-arid Woodland	0-5°	15	20
Western (measured from western limit of turbines)	Semi-arid Woodland	0-5°	15	40
Eastern (measured from distillate pipe)	Semi-arid Woodland	0-5°	15	20
Southern (measured from distillate pipe)	Semi-arid Woodland	0-5°	15	20

13.4 Mitigation Measures

13.4.1 Setbacks and Asset Protection Zones (APZ)

The APZs required are shown in **Table 13-1**.

Asset Protection Zones, Slope and Access arrangements are shown in **Figure 13-1**.

Effective slopes within and around the site are between 0-5°. In Planning for Bushfire Protection 2006 (PBP) Table A2.5 indicates that for semi-arid woodland vegetation in the South Western fire region, with slopes of 0-5°, the APZ required on these boundaries is 15m, comprising an Inner Protection Area of 10m and an Outer Protection Area of 5m.

Given that the Peaking Power Plant contains a number of separate above ground structures, it is recommended that the APZ apply from each structure. Hence, a fuel-free IPA would be implemented for 10m in all directions from structures that are at risk of bush fire attack, such as the distillate tanks, pipelines and administration buildings. As shown in **Figure 13.1** a 15m APZ can be created around

¹ As measured over 140m from the proposed boundary of the facility.

² As measured over 100m within the adjoining bushland.

³ Source: Table A2.4 of PBP.

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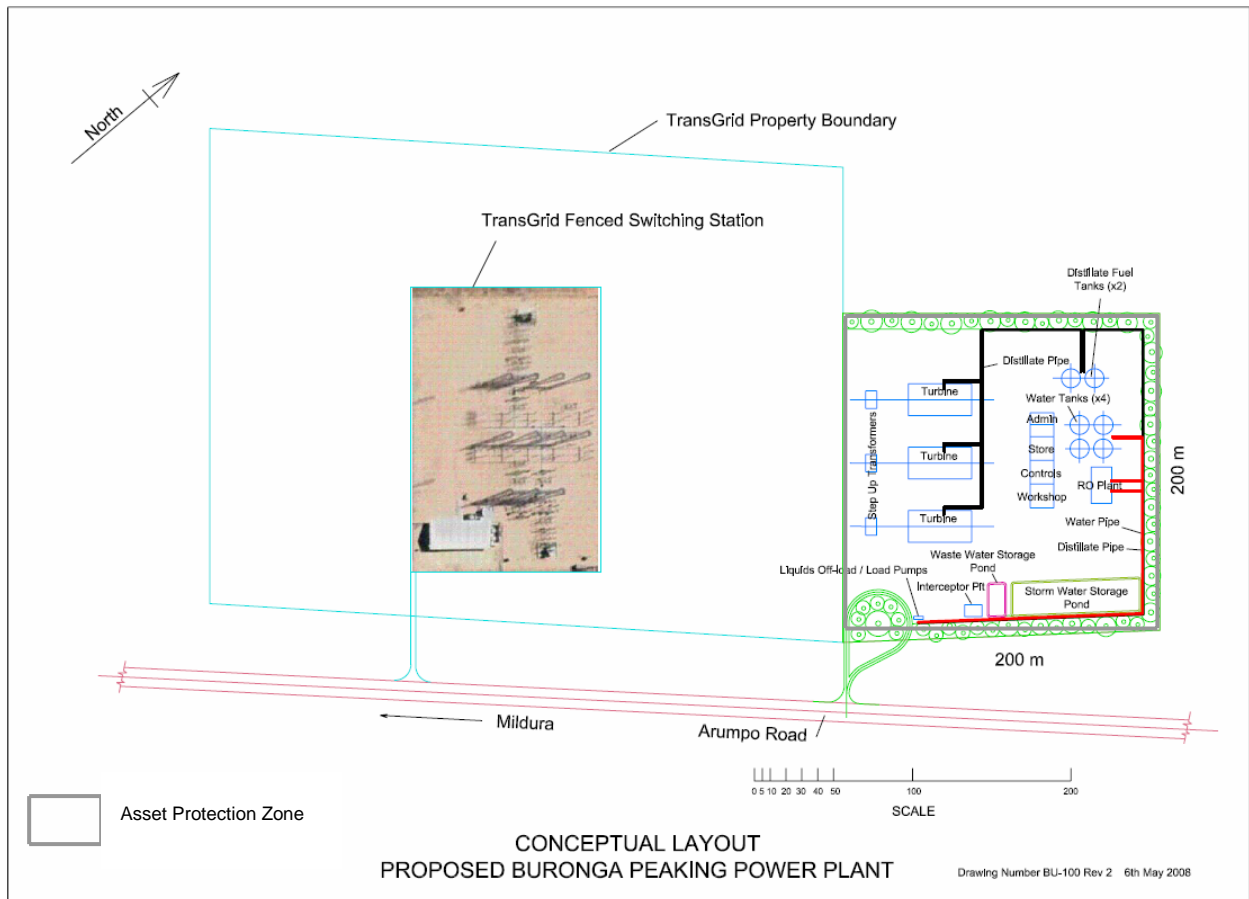
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the full perimeter of the site, measured from the proposed fenceline. Hence the actual APZ on each structure will be greater. Depending on the final locations of structures, and given the low density of vegetation present, only minor modifications to the adjacent vegetation would be required to create a satisfactory APZ on these boundaries.

In order to meet bushfire objectives the following alternate solutions have been proposed:

- Additional active fire suppression devices (see **Chapter 13.4.3**);
- Assessment and acceptance of potential asset damage; and
- Amelioration strategies as summarised in **Table 13-2** and presented in **Appendix F**.

Figure 13 -1 Proposed Concept Layout and Asset Protection Zone



13.4.2 Construction Standards

The site assessment for bushfire attack (undertaken using an FDI of 80 in accordance with the methodology identified in Table A 3.4 of PBP 2006), using available APZ distances, has identified that:

- Class 8 buildings proposed as part of the facility, such as the workshop, control room, store and administration building, will be within the category of bushfire attack of 'Medium', requiring construction standards to Level 1 of AS3959.
- All other items of plant (i.e. the water treatment/RO plant, water tanks, distillate tanks, turbines, transformers, interceptor pit and liquids off-load area) within the site are Class 10 structures.

The Building Code of Australia does not provide for bush fire specific performance measures for Class 10 buildings. Class 10 structures within the site will be built to Level 3 construction where practicable. A summary of Construction Level requirements is provided within **Appendix F** of this Environmental Assessment.

Additional protection to built structures within the site is provided by the inclusion of active mitigation, notification and suppression systems (see below).

13.4.3 Active Mitigation / Suppression

Increased protection for the sites assets would be achieved through a holistic approach to fire mitigation and management with the incorporation of active suppression devices, appropriate management and planning. This will significantly reduce fire risk to the site and surrounding areas.

Fire detection protection and containment concepts within the site would include:

- Incorporation of infra red beam heat detectors to ensure fire protection and management systems for the site are activated in case of fire from adjoining land;
- Water sprinkler or gaseous (eg CO₂) systems on fuel storage system, gas turbine enclosures, transformers, administration and control buildings and the workshop;
- Heat detectors and smoke alarms on built assets to enable automatic commencement of fire suppression which would include sprinkler systems and/or non ozone-depleting fire suppression and sealing of the enclosure to ensure fire is managed within structures;
- The site would be remotely monitored at all hours of day and night, signals and alarms from the site would be attended by a locally-resident Turbine Officer based close to the proposed facility; and
- Transportable foam mixing equipment and diesel powered fire pump would be provided within the site, to provide additional fire fighting capability.

An emergency response plan would also be implemented, following liaison with relevant local authorities and appropriate personnel. This would include a "Fire Protection and Management Manual" for the Peaking Power Plant which would also incorporate the circumstances under which the site should be attended in the event of off-site fire threats.

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13.4.4 APZ Creation / Maintenance

Vegetation within the proposed APZ would assist in visual, noise and burning ember / flying debris protection as well as acting as a wind break.

Asset Protection Zone Management would be incorporated within long term site management plans. This would include:

- Internal monitoring and fuel management programs including surface removal of leaf litter on an annual basis prior to the fire danger season; and
- Removal of any weed species present.

Vegetation within the APZ would be managed to provide:

- Clearly defined on ground APZ management boundaries - e.g. logs placed on the ground, tagged star pickets, boundary fence;
- A minimum height clearance above road of 4 metres;
- Tree canopy separation (by at least 2 metres where possible);
- Discontinuous shrub layer (clumps or islands of shrubs where possible; not rows);
- Vertical separation between vegetation stratum;
- Tree canopies not overhanging structures;
- Management and trimming of trees and other vegetation in the vicinity of power lines in accordance with the 'ISSC 3 Guideline For Managing Vegetation Near Power Lines' specifications issued by the Industry Safety Steering Committee (ISSC);
- No landscaping trees within 2 metres of any building; and
- Retain low ground covers:
 - Mowing / whipper snipper / slashing during the summer months;
 - Non combustible mulch e.g. stones; and
 - Planting of fire retardant species where possible.

With regard to plantings the following is proposed:

- Plantings would be restricted to fire retardant / less flammable species.
- Plantings would consist of native, local provenance stock.
- Preferably, plantings would include species present within onsite community assemblages.

13.4.5 Property Access Roads

In order to meet Planning for Bushfire Protection requirements the road system would be built to set standards and provide access to the proposed site for fire fighting vehicles.

The site is accessed from the south west via Arumpo Road. A turn off lane will be constructed to allow safe access to the site. The turn off lane will be built in accordance with Wentworth Shire and RTA guidelines (refer **Chapter 10 Traffic and Transportation**).

The proposed property access would ensure:

- Class 8 buildings within the site are located less than 200m from the public road system;
- A minimum height clearance of 4 metres;
- 6m wide sealed carriageway with at least 1 metre either side;
- A centre line radius of 20m;
- A sealed road surface;
- An RFS compatible lock within the locked gate system; and
- All operational plant land within vegetated boundaries would be flat and covered with a sealed or similar surface, suitable for the movement of vehicles.

13.4.6 Water Supplies

A dedicated water capacity of 150kL will be reserved for fire protection purposes and up to 300kL of additional plant process water in storage tanks would also be available on site. Additional water for fire fighting would be available from the on site stormwater collection pond (see **Figure 13-1**).

Facilities would include:

- Water access points (RFS compatible) designed to provide active protection of class 8 buildings using a maximum hose length of 60m and 20m maximum distance from truck to water access points;
- Water access point to be provided next to the bunded liquids off-load area (see **Figure 13-1**);
- All above ground water pipes external to the building would be built of metal including any taps;
- Shielded pumps (where provided);
- Above ground tanks to have their stands protected and be constructed of concrete, metal or comparable fire resistant material;
- Suitable (RFS compatible) connections including a 65mm “storz” outlet with a gate type or ball type valve; and
- Water sprinkler or gaseous (eg CO₂) systems on fuel storage system, gas turbine enclosure, step-up transformers, administration and control buildings, and workshop.

A transportable diesel fire pump and foam mixing trailer would be available on site to assist in rapid control of fire and or management of risk of fire developing at the site from external sources.

13.4.7 Gas and Electricity Supplies

The proposal does not include the installation of gas.

Electricity generated would be supplied from the site into the grid and small amounts imported when the plant is not in operation. This electricity supply arrangement would involve above ground power lines. Fire hazard relating to these lines has been mitigated through both the active and passive mitigation measures proposed with this Environmental Assessment.

A regular inspection of lines would be undertaken to ensure that no part of a tree is closer to a power line than the distance set out in accordance with the 'ISSC 3 Guideline For Managing Vegetation Near Power Lines' specifications issued by the ISSC.

13.5 Summary

Table 13-2 presents a summary of mitigation measures as a result of the bush fire assessment.

Table 13-2 Summary of Mitigation Measures

Mitigation Measures	Implementation of mitigation measures		
	Design	Construction	Operation
Each gas turbine enclosure would be equipped with infra red fire detectors, fixed heat detectors and fuel spill sensors mounted at the base of the turbine units. The enclosure would be protected with carbon dioxide or similar non ozone-depleting fire suppression and sprinklers to provide fire detection and suppression in the unlikely event of a fire within the turbine enclosure.	✓		✓
The site as a whole would be monitored by infra red beam heat detectors to ensure fire protection and management systems for the site are activated in case of fire from adjoining land. The distillate tanks would be equipped with fire detection instrumentation, stationary sprinkler system and transportable foam mixing equipment and fire pump. The transportable distillate fired fire pump and foam mixing equipment would provide a wider fire protection capability across the site.	✓		✓
Distillate storage would be managed in accordance with the requirements of the Occupational Health and Safety Act 2000 and the Occupational Health and Safety Regulation 2001. The distillate tanks would be installed in accordance with relevant WorkCover requirements and Australian Standard AS1940:2004 Storage and Handling of Flammable and Combustible Liquids.	✓		✓
The site would be equipped with a dedicated 150kL of reserved "Fire Protection Water" with up to 300kL of additional plant process water in storage tanks. In addition, water from the on site stormwater collection pond would also be available for fire fighting and control.	✓		✓
Asset Protection Zone Management would be incorporated within long term site management plans. This would include internal monitoring and fuel management programs; removal of leaf litter on an annual basis prior to the fire season; removal of any weed species present; management and trimming of trees and other vegetation in the vicinity of power lines in accordance with the 'ISSC 3 Guideline For Managing Vegetation Near Power Lines' specifications issued by ISSC.	✓	✓	✓