habitat

Bush Fire Assessment Report

420-508 Perricoota Road, Moama

MARCH 2023

Boundary Adjustment
Lot 1 DP862181, Lot 2 DP 1231352, and Lots 1 & 2 DP854487

Prepared for

Perricoota Views Pty Ltd

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1. Introduction

1.1. Overview

This is a Bush Fire Assessment Report (BFAR) prepared in accordance with the submission requirements for Development Applications on bush fire prone land at Section A2.1 of Appendix 2 of the NSW Rural Fire Service's (RFS) document titled *Planning for Bush Fire Protection Guidelines 2019* ("the Guidelines"). The purpose of this BFAR is to demonstrate the level of compliance of the proposed development with the Guidelines.

The BFAR accompanies a Development Application for a proposed boundary adjustment. The land is presently described as Lot 1 in DP862181, Lot 2 in DP1231352 and Lots 1-3 in DP854487 and is addressed as 420-508 Perricoota Road, Moama. The proposal seeks to realign the lot boundary ahead of a future development of the larger parcel under a separate application.

The subject site is affected in part by a bushfire 'Vegetation Buffer' at its southern boundary, according to the NSW Bushfire Prone Land Map (see Figure 1).

In certain circumstances, Council must consult the RFS on measures to be taken to protect life, property and the environment from dangers that may arise from a bushfire. Development applications that are subject to Section 100B consultations under the *Rural Fires Act 1997* are to be referred to the RFS in relation to residential or rural residential subdivisions or development for a 'special fire protection purposes'.

In this instance, the development seeks approval for a rural-residential subdivision and the provisions of the Section 100B of the *Rural Fires Act 1997* apply.

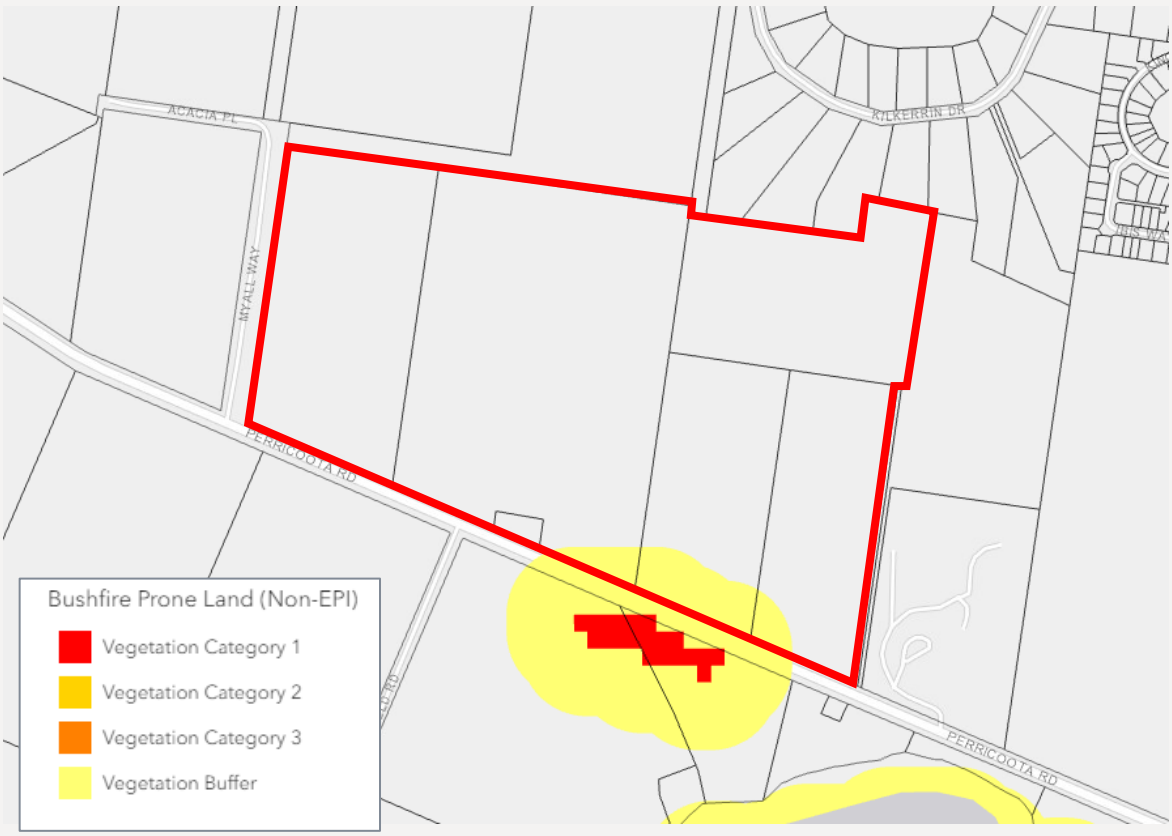

Figure 1 – Extract of Bushfire Prone Land Map

2. Site Analysis

2.1. Site Details

The subject land to which this application relates comprises four allotments described as Lot 1 DP862181, Lot 2 DP 1231352, and Lots 1–3 DP854487, which are addressed 420-508 Perricoota Road, Moama. These lots of form rectangular parcels that each address Perricoota Road to the south.

The site is located within a rural-residential area that is transitioning into higher density residential properties, to the northwest of the Moama township. It is located along Perricoota Road, which forms one of the primary roads into the city. The land is located near the Murray River to the south and the Rich River Golf Club to the south east.

2.2. Existing Conditions

The land is generally cleared rural land which has been used for intensive agricultural production and associated residential dwellings. Existing buildings and structures are located on each of the four existing lots, including dwellings and associated sheds.

The topography of the site is flat with little change in elevation across its profile. The site was formerly used for vineyards, with the produce trees having been cleared. As a result of this, the land is predominantly cleared and disturbed at the ground layer. Some overstorey vegetation is located throughout, notably in linear strips along most of the boundaries, and around each of the dwellings.

Vehicular access is provided to each existing allotment via independent driveways from Perricoota Road. Each of these driveways are well constructed with gravel finish. Perricoota Road itself is a sealed main road that provides appropriate rural access to the site with long sight lines.

The property is located within a transitioning rural to residential area and the land itself comprises existing rural properties. An existing electrical connection is available to the land and services the existing dwellings. Reticulated water and sewer are presently not available to the site, however are expected to be extended from adjoining residential estates as the area develops.

Figure 2 Aerial imagery of the site (Nearmap, November 2020)

2.3. Surrounding Development

The subject land is located in a transitioning rural area, currently comprising primarily of rural, rural lifestyle and establishing urban development.

Land to the north comprises residential development that extends from the Rich River Golf Club to the east. Land around this residential estate consists of transitioning rural land.

Land to the east contains an accommodation land use known as the Perricoota Vines Retreat holiday park. A nearby winery is also located further east. Land further east and southeast, comprises primarily residential urban development at the outskirts of the Moama township. Perricoota Road extends southeast away from the site towards the Moama CBD, approximately 5 kilometres from the site.

Land to the south opposite Perricoota Road consists of larger lot residential properties located along the Murray River foreshore. A houseboat construction yard is also located south along the foreshore further south. Land opposite the river comprises recreational parkland extending from the riverbank within Victoria.

Land to the west of the site consists of rural-residential properties containing dwellings and static water and shed arrangements similar to those found on the subject site. Similar development continues further west to the bank of the Murray River, which meanders nearby.

3. Description of Proposal

3.1. Overview

The proposal seeks approval to subdivide the existing lots into 140 residential lots, creation of new reserves and drainage infrastructure, remove scattered vegetation and carry out associated civil works.

The proposal also involves creation of a large central reserve and car parking area which will provide for open space needs of residents and act as an entry feature for the development.

A new neighbourhood commercial space is proposed in the location of Stage 2a, adjacent to the proposed Perricoota Road access point. This location is intended to serve a neighbourhood service function to the existing and future community.

Figure 3 – Proposed Subdivision Plan

4. Site Assessment

4.1. Vegetation

Consistent with the identification key in Keith (2004) and the Guidelines, vegetation within 140 metres from the subject land consists of 'grassland' and managed/low risk vegetation.

More specifically, vegetation to the immediate north mostly comprises managed land presently utilised as vineyards. Land extending to the western end of the north boundary is comprised of grassland hazard vegetation, where vineyard trees have been previously removed.

Land to the west of the subject land, beyond Myall Way, consists of vineyard areas and rural lifestyle residential properties, representing managed land.

Land to the south includes the Perricoota Road reserve along the southern frontage and is considered to represent managed land. There is a patch of vegetation along this reserve, however it is a smaller patch which is less than 20 metres wide and does not adjoin immediately another vegetation hazard. Land opposite this road comprises agricultural land representing a grassland and managed land.

Land to the east is also identified as managed land, being a property used for accommodation purposes known as the Perricoota Vines Retreat fronts, and a vineyard located beyond the rear boundary of this land.

In summary, the majority of the surrounding site is interfaced to vineyard properties or accommodation, which represent a managed landscape. The wide Perricoota Road reserve is located to the south and contains patches of vegetation, but not to an extent that is categorised as a risk area.

4.2. Slope

The slope of the site and the land beneath the surrounding hazards are identified as flat in all directions and is therefore not considered to potentially exacerbate fire behaviour.

4.3. Significant Environmental Features

The subject land is predominantly cleared of significant patches of vegetation or scattered remnant trees. The distributions of trees are generally limited to planted trees surrounding dwellings, along lot boundaries and along fence lines. A review of the NSW Biodiversity Values Map was undertaken, and there were no portions of the site affected. The site is identified as "non-native" on the State Vegetation Map, and is not subject to any other environmental protection by the Local Environmental Plan. Consequently, there are no significant environmental features identified on the site.

4.4. Threatened Species

As outlined above, the site does not contain substantial vegetation given its highly degraded conditions. It is not considered likely that any threatened fauna species would be present on the site given the lack of habitat. The degradation of the land has also left the site in a cleared state and is anticipated to contain few native ground cover species, if at all. There is a low likelihood of threatened flora species on the site. Overall, the proposal is not considered to pose a significant risk to the survival of any threatened species.

4.5. Aboriginal Heritage

A search of the NSW AHIMS database for registered cultural heritage items has been undertaken. This search identified no items of Aboriginal cultural heritage within the subject land. The nearest item is located in a nearby property to the east.

5. Bushfire Protection Measures

5.1. Asset Protection Zones

Having regard to the assessment and site conditions above, an Asset Protection Zone (APZ) has been calculated in accordance with the recommendations of Table A1.12.3 of the Guideline as reproduced below:

Table 1 – Minimum distance for APZs – residential development, FFDI 80 areas

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
	Distance (m) from the asset to the predominant vegetation formation				
Rainforest	9	12	15	20	25
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	20	25	31	39	48
Grassy and Semi-Arid Woodland (including Mallee)	11	13	17	21	27
Forested Wetland (excluding Coastal Swamp Forest)	8	10	13	17	22
Tall Heath	16	18	20	22	25
Short Heath	9	10	12	13	15
Arid-Shrublands (acacia and chenopod)	6	7	8	9	10
Freshwater Wetlands	5	6	6	7	8
Grassland	10	11	12	14	16

The subject land is located within the 'Southern Riverina', which has a FFDI of 80.

The land surrounding the site is generally managed land, being vineyards, and other paddock areas that are used for rural production. Some of these areas have been cleared of vegetation, with others only contained minor scattered trees.

Generally, the areas to the west and north are considered to be grassland and have flat topography conditions. There is some vegetation classified as grassland with a flat/upslope topography south of Perricoota Road, however the existing road reserve can provide a sufficient width of more than a 10 metre APZ which would be required for a grassland hazard area.

Having regard to the assessment and site conditions above, it has been calculated that an Asset Protection Zone of 10 metres to the north is required for the development for a grassland hazard. The road reserve of Myall Way at the west, Perricoota Road at the south will provide Asset Protection Zones for the development.

Specifically, the development is considered not to require provision of an Asset Protection Zone to the east given the surrounding land is predominantly low risk 'managed' lands, being managed residential properties.

5.2. Bushfire Protection Measures for Residential and Rural Residential Subdivisions

Table 2 provides an assessment of the proposed subdivision against the performance criteria and acceptable solutions as specified in Section 5 of the Guidelines.

The specific objectives for residential and rural residential subdivisions with a dwelling entitlement as outlined within the Guidelines are provided as follows:

- *minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks should be avoided);*
- *minimise vegetated corridors that permit the passage of bush fire towards buildings;*
- *provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;*
- *ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bush fire attack mechanisms;*
- *ensure the ongoing maintenance of APZs;*
- *provide adequate access from all properties to the wider road network for residents and emergency services;*
- *provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression; and*
- *ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.*

The proposed subdivision is generally consistent with these specific objectives as follows:

- the subdivision provides an appropriate interface to the adjoining bushfire hazard that will be managed ongoing.
- the subdivision does not contain any vegetated corridors that will permit the passage of bush fire towards dwellings;
- the land does not contain any ridgetops or steep land.
- the APZ has been designed to achieve the relevant requirements of the Guidelines (see below for further details).
- the APZs will be managed ongoing by lot owners.
- the subdivision will be serviced via the existing connected road network and all-weather driveways, which provide appropriate access for evacuation purposes or access for emergency service vehicles..
- direct access is made available to the site via Perricoota Road.
- the existing properties are provided with the appropriate water connections via raw water supply that can be used for firefighting purposes.

Table 2 – Residential subdivision compliance table (adapted from the Guidelines)

Performance Criteria	Acceptable Solutions	Response
Asset Protection Zones		
▪ Potential building footprints must not be exposed to radiant heat levels exceeding 29kW/m² on each proposed lot.	▪ APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	▪ Classifiable bushfire hazards include grassland hazards to the west, north and south and internally of the site. ▪ An APZ has been calculated in accordance with Table A1.12.3 of PBP 2019, which requires an APZ of 10 metres for the grassland hazard with a flat/upslope topography. ▪ The APZ will be provided on proposed lots and will be secured via the creation of a Section 88B Instrument over this land. The APZ on the west and south will be accommodated within existing managed road reserves.
▪ 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.	▪ Where the APZ will be contained within the land, it will be managed and maintained ongoing.
▪ The APZ is provided in perpetuity.	▪ APZs are wholly within the boundaries of the development site.	▪ The APZ will be partly contained within the site boundaries of proposed lots and secured via the implementation of a Section 88B Instrument. The APZ will be partly contained in road reserves, which ensures retention and management in perpetuity.
▪ APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	▪ The APZ is located on lands with a slope less than 18 degrees.	▪ The subject land does not have a slope greater than 18 degrees.

Landscaping		
▪ Landscaping is designed and managed to minimise flame contact and radiant heat to the buildings and the potential for wind-driven embers to cause ignitions.	▪ Landscaping is in accordance with Appendix 4; and ▪ Fencing is constructed in accordance with Section 7.6.	▪ The development may involve only minimal landscaping with landscaping only anticipated from the establishment of nature strips and private gardens in future development. It is not expected that this will contribute to the bushfire risk.
Access		
▪ Fire fighting vehicles are provided with safe, all-weather access to structures.	▪ property access roads are two-wheel drive, all-weather roads; ▪ perimeter roads are provided for residential subdivisions of three or more allotments; ▪ subdivisions of three or more allotments have more than one access in and out of the development; ▪ traffic management devices are constructed to not prohibit access by emergency services vehicles; ▪ maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; ▪ all roads are through roads ▪ dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a	▪ Proposed new internal roads are included as part of this proposed subdivision. ▪ There are no traffic management devices proposed that would prohibit access by emergency services.

	minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; ▪ where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; ▪ where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and ▪ one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	
▪ The capacity of access roads is adequate for firefighting purposes.	▪ The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loading firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.	▪ The existing access arrangements are designed to be sufficient to carry fully loaded fire fighting vehicles.
▪ There is appropriate access to water supply.	▪ Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression. ▪ hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning; and ▪ there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	▪ Internal water supply is provided to all proposed lots.

Perimeter Roads		
▪ Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	▪ are two-way sealed roads; ▪ minimum 8m carriageway width kerb to kerb; ▪ parking is provided outside of the carriageway width; ▪ hydrants are located clear of parking areas; ▪ are through roads, and these are linked to the internal road system at an interval of no greater than 500m; ▪ curves of roads have a minimum inner radius of 6m; ▪ the maximum grade road is 15 degrees and average grade of not more than 10 degrees; ▪ the road crossfall does not exceed 3 degrees; and ▪ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	▪ It is acknowledged however that the proposed subdivision does not utilise perimeter roads. Notwithstanding, this is considered appropriate in this instance as the adjoining land to the north and west is expected to be developed for residential purposes and appropriate links are to be provided with these properties. The proposed lots at these interfaces are also significant and can accommodate internal access requirements along boundaries if deemed necessary.
Non-Perimeter Roads		
▪ access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	▪ minimum 5.5m carriageway width kerb to kerb; ▪ parking is provided outside of the carriageway width; ▪ hydrants are located clear of parking areas; ▪ roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; ▪ curves of roads have a minimum inner radius of 6m;	▪ All new internal roads will be constructed to urban standards, in accordance with Council's Engineering Guidelines, which is compliant with this requirement.

	▪ the road crossfall does not exceed 3 degrees; and ▪ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	
▪ Fire fighting vehicles can access the dwelling and exit the property safely.	▪ 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: ▪ minimum 4m carriageway width; ▪ 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; ▪ Provide a suitable turning area in accordance with Appendix 3; ▪ Curves have a minimum inner radius of 6 metres and are minimal in number to allow for rapid access and egress. ▪ The minimum distance between inner and outer curves is 6 metres. ▪ The crossfall is not more than 10 degrees.	▪ The subject land is located within a proposed urban area and will not have long driveways.

	▪ 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. 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 community style development property access roads in addition to the above.	
Water Supplies		
▪ Adequate water supplies is provided for firefighting purposes.	▪ Reticulated water is to be provided to the development where available. ▪ A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and ▪ Static water supplies shall comply with Table 5.3d.	▪ The subject land is to be connected to the reticulated water network.
▪ water supplies are located at regular intervals; and ▪ the water supply is accessible and reliable for firefighting operations.	▪ fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005; ▪ 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.	▪ The subject land will be connected to Council's reticulated water supply and fire hydrants will be included within the road network.

▪ flows and pressure are appropriate.	▪ fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	▪ All fire hydrants will be constructed in accordance with the relevant Australian Standard.
▪ the integrity of the water supply is maintained	▪ all above-ground water service pipes are metal, including and up to any taps; and ▪ above-ground water storage tanks shall be of concrete or metal	▪ No water supply tanks are proposed.
Electricity Services		
▪ Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings	▪ Where practicable, electrical transmission lines are underground. ▪ Where overhead electrical transmission lines are proposed as follows: o lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and o no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).	▪ Electricity supply to the existing dwellings is to be provided via underground supply.
Gas Services		
▪ location and design of gas services will not lead to ignition	▪ Reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used.	▪ The subject land is connected to reticulated gas, which will be provided in accordance with AS 1596.

of surrounding bushland or the fabric of buildings.	▪ All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. ▪ connections to and from gas cylinders are metal ▪ Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used. ▪ above-ground gas service pipes are metal, including and up to any outlets.	

6. Conclusion & Recommendations

The development application seeks approval for a proposed boundary adjustment at 420-508 Perricoota Road, Moama.

The subject land is affected by the Vegetation Buffer bushfire hazard and an assessment is required against the relevant provisions of the Guidelines.

Appropriate bushfire protection measures in the form of a 10 metre APZ is to be applied along the western, northern and southern boundaries of the development. The southern and western APZ's are to be applied to the adjoining road reserves, which will be managed public road reserves under the control of Council. The northern APZ is to be applied to the internal area of proposed lots and secured in perpetuity via the establishment of an easement. The APZ's are to be managed ongoing by the landowners to ensure that the bushfire risk is maintained.

It is noted that these APZ's could be extinguished at the time that future development progresses to the north and removes any directly adjoining hazard area to this interface.

Accordingly, the proposed development is considered to satisfy the relevant objectives, performance measures and decision criteria set out in the Guidelines. The proposal is generally compliant with the Guidelines because:

- The subject land allows defendable space within the site;
- Future dwellings can be provided on mostly level portions of the land with minimal site cut and fill required;
- The proposal is accessible to fire fighting vehicles;
- Suitable access arrangements are proposed to allow safe access and egress in bushfire emergency events; and
- The existing driveways are capable of accommodating heavy vehicles and fire personnel.

Notwithstanding the above, the following recommendations are made for the proposed development to ensure the requirements of the Guidelines are satisfied.

Any future development on the proposed lots should also comply with the Guidelines.