

James Street 2

- LEGEND**
- Vegetation Category 1
 - Vegetation Category 2
 - Vegetation Buffer - 100 metre and 30 metre

Newcastle City Council Bush Fire Prone Land Mapping

Map 1

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NORTH
Scale: 1:10000

2 Vegetation Assessment

The vegetation in and around the development estate boundaries, to a distance of 140m, has been assessed in accordance with PBP 2006. This assessment has been made via a combination of aerial photo interpretation and ground truthing exercises. Refer to Figure 2-1.

Vegetation Community classification have been undertaken across the development estate and within 140m of the development estate by RPS. The vegetation communities were delineated using the following regional vegetation community mapping package

- Lower Hunter and Central Coast Regional Biodiversity Strategy (NPWS 2000; House 2002); and

Vegetation communities were identified within the development estate and within 140m of the development estate as follows:

Table 2-1: Vegetation Classification

Vegetation Community	Classification of Vegetation Formation
Development Estate 1	
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest)
Coastal Plains Smooth - barked Apple Woodland	Dry Sclerophyll Forests (Open Forest)
Swamp Mahogany - Paperbark Swamp Forest	Dry Sclerophyll Forests (Open Forest)
Development Estate 2	
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest)
Coastal Plains Smooth-barked Apple Woodland	Dry Sclerophyll Forests (Open Forest)
Lower Hunter Spotted Gum – Ironbark Forest	Dry Sclerophyll Forests (Open Forest)
Swamp Mahogany - Paperbark Swamp Forest	Dry Sclerophyll Forests (Open Forest)
Development Estate 3	
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest).

Vegetation Community	Classification of Vegetation Formation
Coastal Plains Smooth-barked Apple Woodland	Dry Sclerophyll Forests (Open Forest).
Lower Hunter Spotted Gum – Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Development Estate 4	
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Lower Hunter Spotted Gum – Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Weeds and Disturbed Areas	Open Forest
Development Estate 5	
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Coastal Plains Smooth-barked Apple Woodland	Dry Sclerophyll Forests (Open Forest).
Lower Hunter Spotted Gum – Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Hunter Valley Moist Forest	Wet Sclerophyll Forests (Open Forest)
Development Estate 6	
Coastal Foothills Spotted Gum - Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Coastal Plains Smooth-barked Apple Woodland	Dry Sclerophyll Forests (Open Forest).
Lower Hunter Spotted Gum – Ironbark Forest	Dry Sclerophyll Forests (Open Forest).
Alluvial Tall Moist Forests	Wet Sclerophyll Forests (Tall Open Forest)
Hunter Valley Moist Forest	Wet Sclerophyll Forests (Open Forest)

These vegetation communities have been classified for bushfire purposes into structure and formation using the system adopted by Keith (2004) and using Table A2.1 within PBP (RFS, 2006). The vegetation type adjacent to the proposed development estate (with the exception of existing residential development of Minmi), in all directions is Open Forest

Note: Under this assessment, it has been assumed that retained vegetation within lots will be managed to an APZ standard. Riparian and drainage line vegetation retained for stormwater, ecological and visual purposes, the majority being classified as Open Forest to an approximate width of 40-60m have been assessed under the provisions outlined within PBP 2006. Those creeklines that will be retained with an approximate width of 20m have been classified as Rainforest vegetation (reduced) in accordance with page 52 of PBP 2006. PBP 2006 states that:

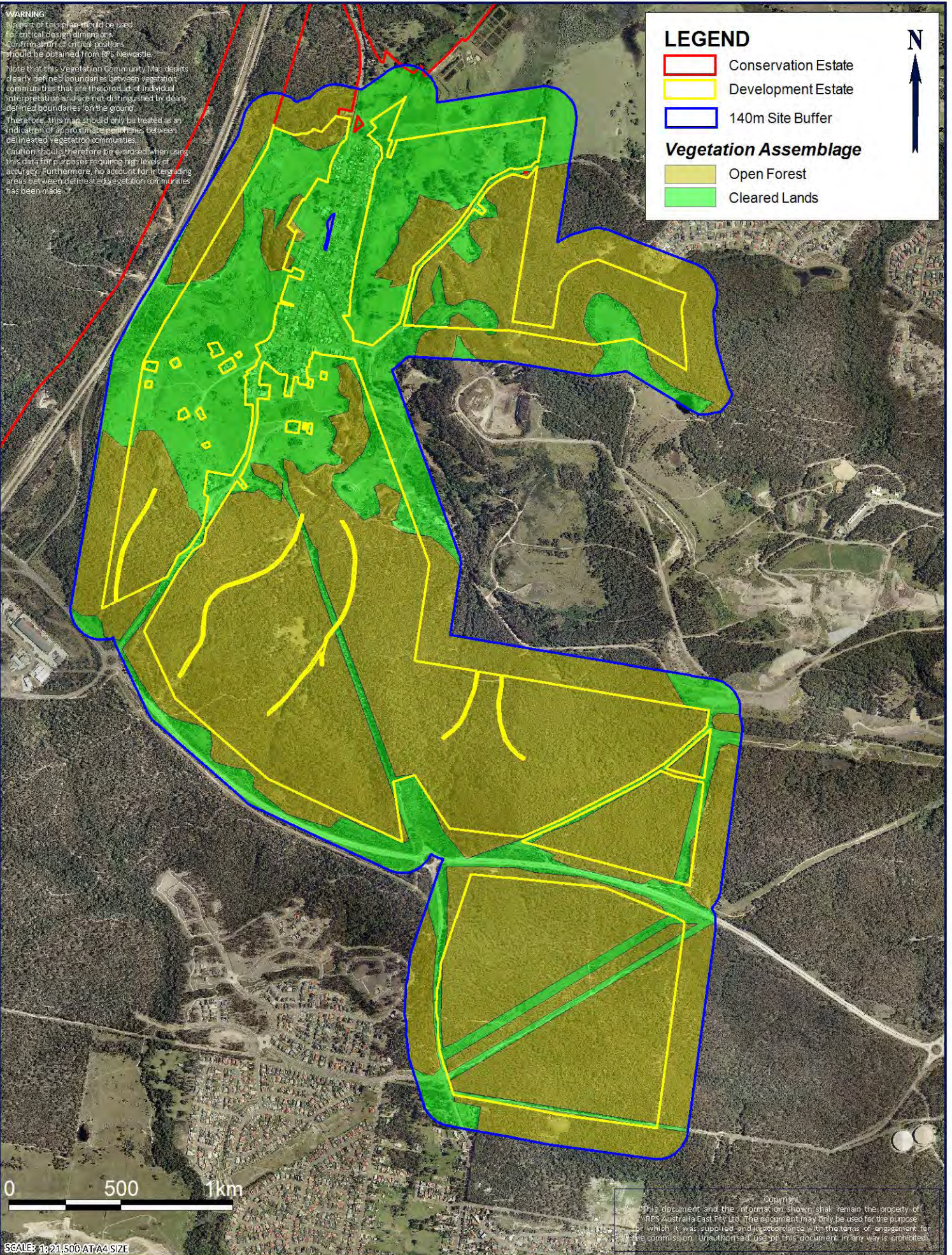
'Riparian areas are those areas in width which are no greater than 20 metres in width and are found on either bank of a river, creek or stream identified on a BFPLM, and are treated the same as rainforest'.

WARNING
 No part of this plan should be used for critical design dimensions. Confirmation of critical positions should be obtained from RPS Newcastle.

Note that this vegetation community map depicts clearly defined boundaries between vegetation communities that are the product of individual interpretation and are not distinguished by clearly defined boundaries on the ground. Therefore, this map should only be treated as an indication of approximate peripheries between delineated vegetation communities. Caution should therefore be exercised when using this data for purposes requiring high levels of accuracy. Furthermore, no account for intergrading areas between delineated vegetation communities has been made.

LEGEND

- Conservation Estate
 - Development Estate
 - 140m Site Buffer
- Vegetation Assemblage**
- Open Forest
 - Cleared Lands



SCALE: 1:21,500 AT A4 SIZE

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TITLE: FIGURE 2-1 VEGETATION WITHIN 140M OF THE SITE
 LOCATION: MINMI - LINK RD

DATUM: N/A
 PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 19/10/2010
 PURPOSE: BTA

LAYOUT REF: 24530-2 Figure 2.1 Vegetation B A4
 VERSION (PLAN BY) B (A.P.-M.D.-N.W.)

CLIENT: Coal & Allied Industries Ltd
 JOB REF: 24530-2

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3 Slope Assessment

In accordance with PBP (2006), an assessment of the slope throughout the development estate and for 100m around was undertaken to identify both the average slope and by identifying the maximum slopes present. These values help determine the level of gradient which will most significantly influence fire behaviour on the development estate. Refer to Figure 3-1 and Appendix 3 for each of the development estates.

3.1 Slope Classes

A Slope Class Map (Figure 3-1) has been produced for land within 140m of the proposed development estate. Further detail of the slope assessment for each of the development estates is shown in Section 3.2 Slope by degrees. The Slope Class Map has been produced using five slope classes as follows:

- 0 – 5°;
- 5° – 10°;
- 10° – 15°;
- 15° – 18°; and
- 18° + degrees.

The development estate has a predominately northerly aspect, with elevation ranging from approximately 100m AHD in the southern steep ridge lines of Development Estate 5, down to approximately 10m AHD in the more northern sections of Development Estates 1 and 2.

WARNING
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 for critical design dimensions.
 Confirmation of critical positions
 should be obtained from RPS Newcastle.



Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0°	5°	
2	5°	10°	
3	10°	15°	
4	15°	18°	
5	18°	+	



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TITLE: FIGURE 3-1: SLOPE CLASS MAP | LOCATION: MINMI-LINK ROAD

DATUM: DATUM
 PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 30/11/2010
 PURPOSE: BTA

LAYOUT REF: 24530 Hunter Valley\2010
 Drafting\Bushfire\Northern
 Lands\MLR\Fig 3-1 Slope
 Class Map A-A4.WOR
 VERSION (PLAN BY): MD (A-A3)

CLIENT: COAL & ALLIED
 JOB REF: 24530-2

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RPS

3.2 Slope by Degrees

A slope degree assessment has been produced for land within 100m of the Development Estates by using survey accurate contours of 2 metres to determine the slope that will affect bushfire behaviour. The Slope Degree Tables (Table 3-1 – Table 3-6) have been created to determine APZ's using the APZ Calculator (RFS, 2007) and determining the slope that will most likely influence bushfire behaviour.

The slope of vegetation surrounding each development estate to 100m is documented in the below Table 3-1 – Table 3-6.

Table 3-1: Slope Degree Assessment for Development Estate 1

Direction from Development Estate		Slope
Development Estate 1 (a)		
Drainage Line		Flat
East		Cross-slope / Upslope
South		Cross-slope
Development Estate 1 (b)		
North		Downslope 5.7 degrees
East		Downslope 4 degrees
South	East	Cross-slope
	West	Upslope 4.8 degrees
West		Cross-slope
West		Downslope 8.5 degrees

Table 3-2: Slope Degree Assessment for Development Estate 2

Direction from Development Estate		Slope
Drainage Lines (40-80m)		Flat
South Western Drainage Line		Upslope 8 degrees
South	East	Cross
		Upslope 4.1 degrees
		Upslope 9.1 degrees
	West	Upslope 8.2 degrees
West		Cross
		Upslope 5.7 degrees
		Upslope 8.2 degrees

Table 3-3: Slope Degree Assessment for Development Estate 3

Direction from development Estate		Slope
Drainage Lines (40-80m)		Flat
South	East	Cross-slope
		Upslope 7.9 degrees
		Cross-slope
	West	Upslope 2.3 degrees
		Cross-slope
		Upslope 11.3 degrees
East	East	Upslope 7.9 degrees
		Flat
		Cross-slope

Table 3-4: Slope Degree Assessment for Development Estate 4

Direction from Development Estate		Slope
East	North	Cross-slope
		Flat
		Cross-slope
		Downslope 2.3 degrees
		Cross-slope
	South	Downslope 4.5 degrees
		Downslope 6.8 degrees
		Downslope 7.9 degrees
		Cross-slope
		Flat
West	North	Downslope 3.4 degrees
		Downslope 6.8 degrees
		Downslope 4.5 degrees
	South	Downslope 6.8 degrees
		Downslope 4.5 degrees
		Downslope 11.3 degrees
		Cross-slope
South	East	Upslope 11.3 Degrees
		Upslope 2.8 Degrees
	West	Upslope 5.7 Degrees

Table 3-5: Slope Degree Assessment for Development Estate 5

Direction from Development Estate		Slope
Development Estate 5 (a)		
North	East	Upslope 5.7 degrees
		Cross-slope
	West	Downslope 3.4 degrees
South	East	Cross-slope
		Upslope 11 degrees
		Upslope 9.1 degrees
		Upslope 6.3 degrees
	West	Upslope 10.2 degrees
		Upslope 13.5 degrees
		Upslope 13.5 degrees
		Upslope 13.5 degrees
West	South	Upslope 15.6 degrees
		Downslope 4.6 degrees
		Cross-slope

East		Downslope 8 degrees
		Flat
Development Estate 5 (b)		
North	East	Downslope 19.8 degrees
	West	Downslope 19.8 degrees
East		Flat
South		Cross-slope
Development Estate 5 (c)		
North	East	Downslope 13.5 degrees
	West	Downslope 15.6 degrees
South	East	Upslope 4.6 degrees
	West	Upslope 4.6 degrees
Development Estate 5 (d)		
	East	Upslope 5.7 degrees
		Upslope 11.9 degrees
		Cross-slope
North		Upslope 2.9 degrees
		Cross-slope
	West	Upslope 8 degrees
		Upslope 5.7 degrees
	East	Upslope 3.4 degrees
South		Upslope 11.3 degrees
		Upslope 9.6 degrees
	West	Upslope 5.1 degrees

Table 3-6: Slope Degree Assessment for Development Estate 6

Direction from Development Estate		Slope
Drainage Lines (40m)		Flat
North	East	Upslope 4.6 degrees
	West	Upslope 9 degrees
	North	Downslope 12.5 degrees
East		Cross-slope
		Downslope 5.5 degrees
	South	Cross-slope
South	East	Downslope 7.4 degrees
		Cross-slope
	West	Upslope 9.1 degrees
West	North	Upslope 5.7
		Upslope 3.4
	South	Upslope 6.8

4 Asset Protection Zones

4.1 Definitions

4.1.1 APZ's

An APZ is defined as an area surrounding a development zone that is managed to reduce the bushfire hazard to an acceptable level. The required width of the APZ varies with slope and the type of hazard. An APZ can consist of both an Inner Protection Area (IPA) and an Outer Protection Area (OPA). The respective IPA and OPA widths for the APZ's required under this proposal are as detailed in Section 4.2 and Figure 4-1.

An APZ can include the following:

- Lawns;
- discontinuous gardens;
- swimming pools;
- driveways;
- detached garages;
- open space / parkland;
- car parking;
- roads;
- fire trails;
- swales; and
- cycleways and formed walkways.

4.1.2 Inner Protection Area (IPA)

The IPA extends from the edge of the development to the OPA. The IPA aims to ensure that the presence of fuels which could contribute to a fire event / intensity, are minimised close to the development. The performance of the IPA must be such that:

- there is minimal fine fuel at ground level which could be set alight by a bushfire; and
- any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

The presence of a few shrubs or trees in the IPA is acceptable provided that they:

- do not touch or overhang any buildings;
- are well spread out and do not form a continuous canopy;

- are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
- are located far enough away from any dwelling so that they will not ignite the dwelling by direct flame contact or radiant heat emission.

Woodpiles, wooden sheds, combustible material storage areas, large areas / quantities of garden mulch, stacked flammable building materials etc. should not be permitted in the IPA.

4.1.3 Outer Protection Area (OPA)

The OPA is located adjacent to the hazard. Within the OPA any trees and shrubs should be maintained in a manner such that the vegetation is not continuous. Fine fuel loadings should be kept to a level where the fire intensity expected will not impact on adjacent developments.

4.2 Determining APZs

The subject site lies within the Lake Macquarie and Newcastle Government Area and therefore is assessed under an FDI (Fire Danger Index) rating of 100.

In accordance with Table A2.4 within PBP (RFS, 2006), the appropriate width setbacks (Refer to Table 4-1 to Table 4-6 and Figure 1-3 for APZ widths for proposed residential development within the site.) have been calculated based on the topography and the vegetation present in and around the Development Estate. These prescribed distances will be required between neighbouring vegetation and the proposed residential development within the site. It is expected this area will be maintained to an APZ standard with minimal fuel loads and appropriate landscaping.

Table 4-1: APZ widths for Development Estate 1

Development Estate 1			
Direction from Development Estate	Vegetation Type	Slope	APZ
Development Estate 1 (a)			
Drainage Line	Open Forest	Flat	20m
East	Open Forest	Cross-slope /Upslope	20m
South	Open Forest	Cross-slope	20m

Development Estate 1 (b)				
North	Open Forest	Downslope 5-10°	35m	
East	Open Forest	Downslope 0-5°	25m	
	East	Open Forest	Cross-slope	20m
South	Open Forest	Upslope	20m	
	West	Open Forest	Cross-slope	20m
West	Open Forest	Downslope 5-10°	35m	

Table 4-2: APZ widths for Development Estate 2

Development Estate 2			
Direction from Development Estate	Vegetation Type	Slope	APZ
Drainage Lines	Open Forest	Flat	20m
South	Open Forest	Cross-slope/Upslope	20m
West	Open Forest	Upslope	20m

Table 4-3: APZ widths for Development Estate 3

Development Estate 3			
Direction from development Estate	Vegetation Type	Slope	APZ
Drainage Lines	Open Forest	Flat	20m
South	Open Forest	Cross-slope/Upslope	20m
East	Open Forest	Flat/Cross-slope	20m
South-West	Open Forest	Upslope	20m

Table 4-4: APZ widths for Development Estate 4

Development Estate 4				
Direction from Development Estate	Vegetation Type	Slope	APZ	
	North	Open Forest	Cross-slope/Flat	20m
East	Drainage Line	Open Forest	Flat	20m
North		Open Forest	Flat	20m
West	Drainage Line	Open Forest	Flat	20m
South		Open Forest	Upslope	20m

Table 4-5: APZ widths for Development Estate 5

Development Estate 5				
Direction from Development Estate	Vegetation Type	Slope	APZ	
Development Estate 5 (a)				
North	East	Open Forest	Upslope	20m
		Open Forest	Cross-slope	20m
		Open Forest	Downslope 0-5°	25m
West	West	Open Forest	Cross-slope	20m
	Drainage Line	Open Forest	Flat	20m
Development Estate 5 (b)				
	Drainage Line	Open Forest	Flat	20m
	South	Open Forest	Cross-slope	20m
	East (retained veg in lots)	Open Forest	Upslope/Cross-slope	20m
Development Estate 5 (c)				
	Drainage Line	Open Forest	Flat	20m
	East	Open Forest	Upslope/Cross-slope	20m
	South	Open Forest	Upslope/Cross-slope	20m
Development Estate 5 (d)				
	Drainage Line	Rainforest	Flat	10m

Table 4-6: APZ widths for Development Estate 6

Direction from Development Estate	Vegetation Type	Slope	APZ	
Drainage Lines	Open Forest	Flat	20m	
	Open Forest	SFPP - Flat	60m	
North	East	Open Forest	Upslope	20m
	West	Open Forest	Upslope	20m
	North	Open Forest	Downslope 10-15°	50m
East		Open Forest	Cross-slope	20m
		Open Forest	Downslope 5-10°	35m
	South	Open Forest	Cross-slope	20m
	East	Open Forest	Downslope 5-10°	35m
South		Open Forest	Cross-slope	20m
		Open Forest	SFPP - Cross-slope	60m
		Open Forest	Cross-slope	20m
	West	Open Forest	Upslope	20m
West	North	Open Forest	Upslope	20m
		Open Forest	Upslope	20m
	South	Open Forest	Upslope	20m

For the majority of the development a perimeter road has been implemented between bushfire hazards and future dwellings, this will form all or part of the required APZs. Any remaining APZ or part of APZ will be established within allotments where required. A strategic approach was undertaken over the concept design process to predictively design

allotments to provide for an adequate building envelope within allotments requiring an APZ.

The Concept Plan indicates that these proposed roadways provide a buffer between the adjacent vegetation and the development estate and vegetation to be retained within the site, including open space parks, riparian buffers and vegetation buffers. The proposed perimeter and public roads within the development estate are therefore likely to provide either the entire or majority of the required APZs, with any remaining part of the APZ (if required) being able to be established within the allotments.

The primary school precinct located within the southern section of Estate 6 will have an APZ imposed upon the eastern and southern boundaries.

The ongoing site bushfire management will be implemented under an overarching Bushfire Management Plan (that will be prepared under the Statement of Commitments). Management activities including APZ maintenance will be the role and responsibility of the end user, depending on location this may be:

- DECCW/NPWS; or
- Council; or
- The land owner.

5 Water Supply

Associated with any kind of development upon the land, it is expected that water mains will be extended into the development estate. Access to this supply should be provided for fire-crews in the form of readily accessible and easily located fire hydrants. Fire hydrant spacing, sizing and pressure should comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. Hydrants are not to be located within any road carriageway.

6 Access / Egress (Evacuation)

(RFS, 2006) recommends a perimeter road be designed for any future residential development. A perimeter road forms part of the APZ and will provide a separation between the building and the boundary of the bush fire hazard.

Any perimeter road should be fully sealed and have a minimum road reserve width of 8m minimum kerb to kerb with the following design specifications:

- roads should be two wheel drive, all weather roads;
- roads should be two-way: i.e. at least two traffic lane widths with shoulders on each side, allowing traffic to pass in opposite directions;
- roads should be through roads where possible, any dead end roads should not be more than 200m in length with a 12m radius turning circle and clearly sign posted as such;
- the capacity of road surfaces and bridges should be sufficient to carry fully loaded fire fighting vehicles (approximately 28 tonnes or 8 tonnes per axle); and
- roads should be clearly sign posted and buildings clearly numbered.

The Concept Plan indicates that a perimeter road has been proposed for the majority of the development estate. The perimeter roads comply with the above requirements. The perimeter roads will allow a defensible space between vegetation and housing whilst also acting as an APZ.

According to PBP (2006), the design specifications for **internal public road** require that roads:

- be two-wheel drive all weather roads;
- non perimeter roads comply with Table 6-1 (below) – Road widths for Category 1 Tanker;

Table 6-1: Minimum widths for fire fighting access of non-perimeter public roads

Curve radius (inside edge metres)	Swept Path (metres width)	Single land (metres width)	Two way (metres width)
<40	3.5	4.5	8.0
40 – 69	3.0	3.9	7.5
70 – 100	2.7	3.6	6.9
>100	2.5	3.5	6.5

- the perimeter road is linked to the internal road system at an interval of no greater than 500m in urban areas;
- not be hindered by an overuse of traffic calming devices such as speed humps and chicanes;
- public roads do not have a cross fall exceeding 3 degrees;
- all roads are through roads, but if unavoidable then dead ends should be not more than 200m in length, incorporate a minimum 12m turning circle and should be clearly sign posted as dead ends;
- curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres and minimal in number, to allow for rapid access and egress;
- the minimum distance between inner and outer curves is 6m;
- maximum grade for sealed roads do not exceed 15° and an average grade of not more than 10° or other gradient specified by road design standards, whichever is the lesser gradient;
- there is a minimum vertical clearance to a height of 4m above the road at all times;
- the capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes for all other areas). Bridges clearly indicate load rating;
- public roads between 6.5m and 8m wide are no parking on one side with the services (hydrants) located on the side to ensure accessibility to reticulated water for suppression;
- one way public access roads are no less than 3.5m wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression;
- parking bays are a minimum of 2.6m wide from kerb edge to road pavement. No services or hydrants are located within the parking bays; and
- public roads directly interfacing the bush fire hazard vegetation should provide roll top kerbing to the hazard side of the road.

The Concept Plan provides for internal public roads within the development estate. Many of the proposed internal public roads are dead ends, and thereby will need to comply with the PBP requirements. According to PBP 2006 dead end roads should be not more than 200m in length, incorporate a minimum 12m turning circle and should be clearly sign posted as a dead end. The proposed design of the road network will need to comply with the requirements of PBP 2006. Deviations from the 200m maximum length may be considered (depending on the situation) through a performance-based assessment at the future project application stage for subdivision.

According to PBP (2006), the design specifications for **property access roads** require that roads:

- where possible at least one alternative property access is provided for individual dwellings (or group of dwellings) that are located more than 200m from a public through road;
- a minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban area with a distance greater than 70 metres from the nearest hydrant point to the most external part of the proposed building;

Note: No specific access requirements apply in a urban area where a 70m unobstructed path can be demonstrated between the most distant 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 fighting vehicles (i.e. a hydrant or water supply).

- a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches;
- on forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20 metres long by two metres wide;
- internal roads for rural properties have 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 crossfall is not more than 10°;
- maximum grades for sealed roads do not exceed 15 ° and not more than 10 ° for unsealed roads; and
- access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way. In the case of a right of way, unconstrained access to the NSW Rural Fire Service must be provided for at all times.

The above road specifications are the acceptable solutions as detailed within PBP (RFS, 2006). Deviations from the above acceptable solutions for access may be considered (depending on the situation) through a performance-based assessment.

6.1 Emergency Evacuation

The Traffic and Transport Report (Hyder, 2010) states that the forecasts indicate that the proposal will result in a small impact on overall traffic generated in the long-term on the existing network. Therefore, it is anticipated that in the case of an emergency evacuation the road network will adequately manage the resultant increase in traffic volume.

7 Fire Fighting Capability

Any fire within the Development Estate would be attended in the first instance by the Wallsend NSW Fire Brigade or Minmi Rural Fire Service.

Consideration must be given to the provision of adequate turning circles for any fire tanker that services the development estate. The proposed perimeter roads and internal public roads within the Concept Plan would satisfactorily serve such a function.

To facilitate quick and efficient action by the Fire Brigade upon arrival, it is recommended that all necessary connections / pumps etc be clearly marked and visible, and in good working order.

8 Dwelling Design and Construction

On 6 March 2009 Council of Standards approved the revised Australian Standard AS3959-2009 *Construction of buildings in bushfire prone areas* (AS3959-2009). This standard was published by Standards of Australia on 10 March 2009 and replaces the 1999 version of the document.

AS3959-2009 was formally adopted by the BCA as the national standard on 1 May 2010.

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2009, and accordingly the designer/architect should be made aware of this recommendation. It may be necessary to have dwelling plans checked by the architect involved to ensure that the proposed dwelling meets the relevant Bushfire Attack Level (BAL) as detailed in AS3959-2009.

The determinations of the appropriate BAL are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by assessing the:

- Relevant FDI = 100
- Flame temperature
- Slope
- Vegetation classification; and
- Building location.

The following BAL, based on heat flux exposure thresholds, are used in the standard:

(a) **BAL – LOW** The risk is considered to be **VERY LOW**

There is insufficient risk to warrant any specific construction requirements but there is still some risks.

(b) **BAL – 12.5** The risk is considered to be **LOW**

There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 k/m².

(c) **BAL – 19** The risk is considered to be **MODERATE**

There is a risk of ember attack and burning debris ignited by wind borne embers and a likelihood of exposure to radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m².

(d) **BAL-29** The risk is considered to be **HIGH**

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux no greater than 29 kW/m².

(e) **BAL-40** The risk is considered to be **VERY HIGH**

There is much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux no greater than 40 kW/m².

(f) **BAL-FZ** The risk is considered to be **EXTREME**

There is an extremely high risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux greater than 40 kW/m².

Using the Addendum: Appendix 3 (NSW Rural Fire Service, 2010), the information relating to vegetation, slope as presented within this report and according to Table 2.4.2 of AS3959-2009 the BAL for future lots within the Development Estate was calculated. Table 8-1 to Table 8-6 show the required BAL.

Table 8-1: BAL widths for Development Estate 1

Development Estate 1					
Direction from Development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL
Development Estate 1 (a)					
Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
East	Open Forest	Cross-slope /Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
Development Estate 1 (b)					
North	Open Forest	Downslope 5-10°	35m	31-<39m	BAL-40
				39-<53m	BAL-29
				53-<69m	BAL-19
				69-<100m	BAL-12.5
East	Open Forest	Downslope 0-5°	25m	25-<32m	BAL-40
				32-<43m	BAL-29
				43-<57m	BAL-19
				57-<100m	BAL-12.5
East	Open Forest	Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
West	Open Forest	Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
West	Open Forest	Downslope 5-10°	35m	31-<39m	BAL-40
				39-<53m	BAL-29
				53-<69m	BAL-19
				69-<100m	BAL-12.5

Table 8-2: BAL widths for Development Estate 2

Development Estate 2					
Direction from development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL
Drainage Lines	Open Forest	Flat	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Cross-slope/Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
West	Open Forest	Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5

Table 8-3: BAL widths for Development Estate 3

Development Estate 3					
Direction from development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL
Drainage Lines	Open Forest	Flat	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Cross-slope/Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
East	Open Forest	Flat/Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South-West	Open Forest	Upslope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5

Table 8-4: BAL widths for Development Estate 4

Development Estate 4						
Direction from Development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL	
East	North	Open Forest	Cross-slope/Flat	20m	20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5
East	Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5
North	Open Forest	Flat	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
West	Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5
South	Open Forest	Upslope	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	

Table 8-5: BAL widths for Development Estate 5

Development Estate 5						
Direction from Development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL	
Development Estate 5 (a)						
East	Open Forest	Upslope	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
North	Open Forest	Cross-slope	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
North	Open Forest	Downslope 0-5°	25m	25-<32m	BAL-40	
				32-<43m	BAL-29	
				43-<57m	BAL-19	
				57-<100m	BAL-12.5	
West	Open Forest	Cross-slope	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
West	Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5

Development Estate 5 (b)					
Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
East (retained veg in lots)	Open Forest	Upslope/Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
Development Estate 5 (c)					
Drainage Line	Open Forest	Flat	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
East	Open Forest	Upslope/Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
South	Open Forest	Upslope/Cross-slope	20m	20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5
Development Estate 5 (d)					
Drainage Line	Rainforest	Flat	10m	10-<11m	BAL-40
				11-<16m	BAL-29
				16-<23m	BAL-19
				23-<100m	BAL-12.5

Table 8-6: BAL widths for Development Estate 6

Direction from Development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL	
Drainage Lines	Open Forest	Flat	20m	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
	Open Forest	SFPP - Flat	60m	60-<100m	BAL-12.5	
North	East	Open Forest	Upslope	20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
	West	Open Forest	Upslope	20m	20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5
East	North	Open Forest	Downslope 10-15°	50-<64m	BAL-29	
				64-<82m	BAL-19	
				82-<100m	BAL-12.5	
				20-<25m	BAL-40	
	East	Open Forest	Cross-slope	20m	25-<35m	BAL-29
					35-<48m	BAL-19
					48-<100m	BAL-12.5
					35-<39m	BAL-40
South	Open Forest	Downslope 5-10°	35m	39-<53m	BAL-29	
				53-<69m	BAL-19	
				69-<100m	BAL-12.5	
				20-<25m	BAL-40	
South	East	Open Forest	Downslope 5-10°	25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
				35-<39m	BAL-40	
	South	Open Forest	Cross-slope	20m	39-<53m	BAL-29
					53-<69m	BAL-19
					69-<100m	BAL-12.5
					20-<25m	BAL-40
West	East	Open Forest	Cross-slope	25-<35m	BAL-29	
				35-<48m	BAL-19	
				48-<100m	BAL-12.5	
				20-<25m	BAL-40	
	South	Open Forest	SFPP - Cross-slope	60m	60-<100m	BAL-12.5
					20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19
West	North	Open Forest	Upslope	48-<100m	BAL-12.5	
				20-<25m	BAL-40	
				25-<35m	BAL-29	
				35-<48m	BAL-19	
	West	Open Forest	Upslope	20m	48-<100m	BAL-12.5
					20-<25m	BAL-40
					25-<35m	BAL-29
					35-<48m	BAL-19

Direction from Development Estate	Vegetation Type	Slope	APZ	Distance from Vegetation	BAL
South	Open Forest	Upslope	20m	48-<100m	BAL-12.5
				20-<25m	BAL-40
				25-<35m	BAL-29
				35-<48m	BAL-19
				48-<100m	BAL-12.5

No Level of construction (AS3959-2009) applies for any dwelling built greater than 100m from the Open forest.

Given the information in Tables 8-1 to 8-6, all future dwellings within the proposed allotments will comply with AS3959-2009.

9 Conclusion and Recommendations

It is clear from this investigation and assessment that the Minmi Link Road site constitutes BFPL. Therefore, the proposed future development will have to be carried out in accordance with the specifications contained within PBP 2006 as assessed and presented within this report.

If the recommendations contained within this report are duly considered and incorporated, it is considered that the fire hazard present is containable to a level considered necessary to provide an adequate level of protection to life and property on the development estate.

In summary, the following key recommendations have been generated to enable the development estate to meet the relevant legislative requirements:

- APZ's from 10 metres to 60 metres will be for adequate protection from vegetation external to the development estate. The Concept Plan indicates proposed roadways around parts of the development to provide a buffer between the adjacent vegetation and the development estate. The proposed perimeter and public roads within the development estate are therefore likely to provide for the majority of the required APZ's, with the remainder of the APZ being accommodated within the allotments.
- Any proposed development should be linked to the existing mains pressure water supply and that suitable hydrants be clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure should comply with AS2419.1, 2005.
- Roads should be constructed in accordance with section 4.1.3 (1), PBP 2006 as outlined in section 6 of this report. Any lessening of these requirements will require a performance-based assessment to be undertaken with the future project applications for the subdivision of land.
- Any future dwelling within the development estate should have due regard to the specific considerations given in the BCA, which makes specific reference to the Australian Standard (AS3959 – 2009) construction of buildings in bushfire prone areas. Assessment in accordance with AS3959-2009 has shown that any future dwelling will be able to comply with this standard.
- It is recommended that a Fuel Management Plan (FMP) be prepared for the development estate. This plan will detail the required strategies to create the required APZ's and management of these APZ's in such a manner to preserve the natural and cultural features of the development estate, while reducing the risk of bushfire.

Finally, it is believed that the implementation of the measures and recommendations forwarded within this report would contribute to the amelioration of the potential impact of any bushfire upon the development estate, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

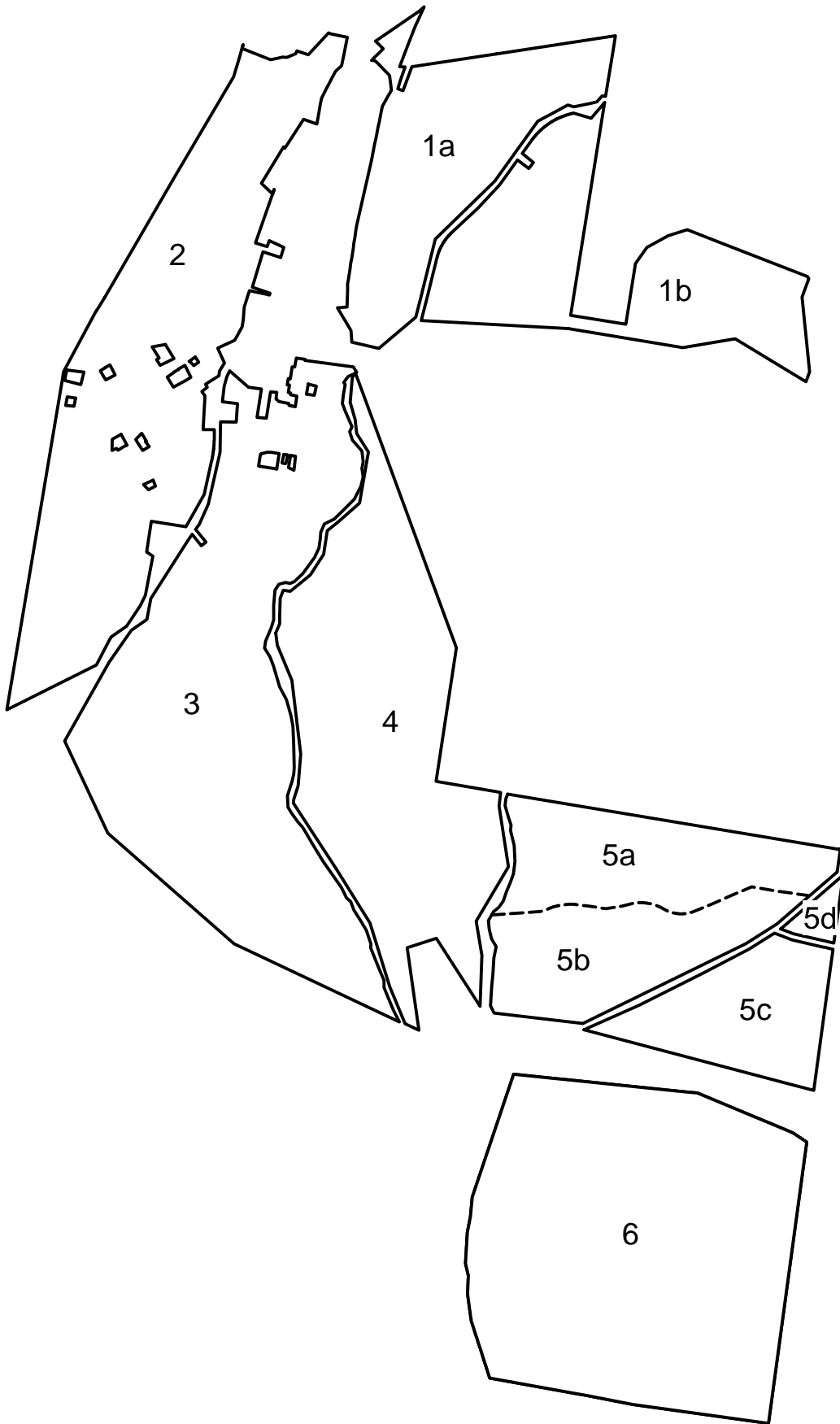
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Appendix I

Development Estate Locations

WARNING
No part of this plan should be used
for critical design dimensions.
Confirmation of critical positions
should be obtained from RPS Newcastle.



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TITLE: APPENDIX 1: DEVELOPMENT
ESTATE LOCATIONS

LOCATION: MINMI-LINK ROAD

DATUM: DATUM
PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 30/11/2010
PURPOSE: BTA

LAYOUT REF: MLRAppendix 1 - DE
Locations A-A3.WOR
VERSION (PLAN BY): MD (A-A3)

CLIENT: COAL & ALLIED
JOB REF: 24530-2



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RPS

Appendix 2

DGEAR's

**CONCEPT PLAN – MINMI, NEWCASTLE LINK ROAD, AND STOCKRINGTON (MP10_0090)
ENVIRONMENTAL ASSESSMENT REQUIREMENTS UNDER PART 3A OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979**

Project Description	<p>Concept Plan for Minmi, Newcastle Link Road and Stockrington including the:</p> <ul style="list-style-type: none"> • Development of 520 hectares at Minmi, Newcastle Link Road comprising: <ul style="list-style-type: none"> ○ 3,300 residential dwellings; ○ 2 mixed use village centres; ○ associated infrastructure and facilities; ○ indicative lot and road layouts; and ○ indicative development staging. • Dedication of approximately 1,964 hectares for conservation.
Site	The site comprises land surrounding the existing Minmi village and to the north and south of Newcastle Link Road, and land on the western side of the F3 Freeway at Stockrington.
Proponent	Coal and Allied Industries Pty Ltd.
Date of Issue	19 August 2010
Date of Expiration	(2 years from date of issue)
General requirements	<p>The Environmental Assessment (EA) for the Concept Plan must include:</p> <ol style="list-style-type: none"> (1) An executive summary. (2) A description of the project including: <ol style="list-style-type: none"> (a) need for the project; (b) alternatives considered; (c) various components and staging of the project (including relevant maps); and (d) a map indicating the proposed development footprint and conservation lands. (3) A thorough site analysis and description of the existing environment. (4) Justification of the project, taking into consideration the environmental impacts of the proposal, the suitability of the site and whether or not the project is in the public interest. (5) A consideration of all relevant statutory and non-statutory provisions and identification of any non-compliance with such provisions, especially the <i>SEPP (Major Development) 2005</i>, <i>SEPP 44</i>, <i>SEPP 55</i>, <i>SEPP (Infrastructure) 2007</i>, <i>SEPP (Mining, Petroleum Production & Extractive Industries) 2007</i>, <i>Newcastle LEP 2003</i>, <i>Lake Macquarie LEP 2004</i>, <i>Hunter Regional Environmental Plan 1989 (Heritage)</i>, <i>Lower Hunter Regional Strategy</i>, <i>Lower Hunter Regional Conservation Plan</i>, <i>Western Corridor Planning Strategy (2010)</i>, and <i>Planning for Bushfire Protection 2006</i>. (6) A draft Statement of Commitments outlining specific commitments to public benefits, environmental management, mitigation and monitoring measures to be established on site and clear identification of the timing and responsibility for these measures. (7) A signed statement from the author of the EA certifying that the information contained in the report is neither false nor misleading. (8) The likely scope of developer contributions between: <ol style="list-style-type: none"> (a) the proponent and Newcastle City Council and Lake Macquarie City Council; (b) the proponent and State Government agencies for provision of State infrastructure in accordance with <i>Planning Circular PS 07-018 (Infrastructure Contributions)</i>; and (c) if relevant, any public benefits to be provided with the development. (9) A report from a quantity surveyor identifying the capital investment value of the Concept Plan including the estimated cost of future development.

Key Assessment Requirements**Urban Design, development controls and land uses**

- (1) Propose suitable land uses and development controls for the site based on a comprehensive analysis of the site constraints and opportunities, and consideration of development controls outlined in councils' existing and draft local environmental plans and development control plans.
- (2) Demonstrate how the proposed land uses and development controls will complement surrounding existing land uses and the proposed conservation lands.
- (3) Identify opportunities to integrate and link the proposal with surrounding urban areas, both existing and planned, including through appropriate pedestrian and cycle access connections.
- (4) Identify proposed treatment and landscaping of all public domain areas.
- (5) Outline strategies for retention of trees both within individual lots and the public domain.
- (6) Address the principles of Crime Prevention Through Environmental Design.

Staging of Development

- (1) Provide details of and justification for the proposed staging and indicative time frames for the development including a staging plan that sets out the sequencing of land release. Include relevant maps.
- (2) Identify the staging process for infrastructure provision commensurate with proposed staging of development, through consultation with relevant agencies.

Commercial / retail development

- (1) Identify and justify the configuration, extent and likely floor space yield of any commercial / retail uses, and consider its impact on nearby existing and proposed retail / commercial centres.

Topography and site preparation

- (1) Provide a detailed contour plan and slope analysis. Demonstrate the suitability of the site for the proposed development, and associated infrastructure, having particular regard to areas with steep topography. Identify the extent of cut and fill required to achieve the proposed development, and outline strategies to minimise excavation works, both for site preparation works and individual dwellings.
- (2) Provide an assessment of the impacts of site preparation works required to accommodate the proposed development and associated infrastructure.
- (3) Demonstrate that development controls and public domain controls respond to the topographical constraints of the site.

Conservation lands

- (1) Identify the extent, locations, and timing of dedication of proposed conservation lands.
- (2) Discuss any edge effects between the development area, and the conservational and surrounding lands. Outline commitments to ongoing management of edge effects and consider the need for a buffer zone.

Biodiversity

- (1) Assess the impacts of the proposal on existing native flora and fauna. The assessment must be conducted in accordance with the *draft Guidelines for Threatened Species Assessment* (DEC July 2005) and include a field study.
- (2) Demonstrate that biodiversity impacts can be appropriately offset in accordance with the NSW Government's policy for 'improvement or maintenance' of biodiversity values.
- (3) Describe the actions that would be taken to avoid or mitigate impacts on biodiversity, threatened species and their habitat. This should include identification of opportunities to maintain local biodiversity corridors, through consultation with DECCW, to ensure to ongoing viability of threatened species.
- (4) Assess the impact of the proposal on existing reserves in the locality including Blue Gum Hills Regional Park, Pambalong Nature Reserve, and Hunter Wetlands National Park. Identify options to mitigate and manage impacts on reserves, in particular edge effects on Blue Gum Hills Regional Park. Identify access arrangements between the proposed development and the Blue Gums Hills Regional Park in consultation with DECCW. This assessment should be

carried out in accordance with *Guidelines for Developments Adjoining Land and Water Managed by DECCW* (DECCW 2010).

- (5) Provide an assessment of the cumulative impacts on biodiversity of the proposed development, and other development proposed in the area.

Geotechnical and mining activities

- (1) Assess the capability of the land for the proposed development including with respect to erosion potential, slope stability, salinity and the presence of potential and actual acid sulphate soils if any.
- (2) Provide a risk analysis examining the risk factors associated with the former mining use of the site and what effects it may have on future development, including mine subsidence and hazards associated with subterranean gases.
- (3) Identify measures that would be implemented to avoid or remediate potential subsidence issues encountered on the site.
- (4) Identify the impacts of the development of the proposal and conservation offsets on the future recovery of resources of coal and coal-seam methane below the site.
- (5) Outline actions, management and mitigation measures required and address contamination issues associated with the project (if any) in accordance with *SEPP 55* and other relevant legislation and guidelines.

Transport and accessibility

- (1) Provide a traffic study in accordance with the *RTA Guide to Traffic Generating Developments*, which includes:
- (a) all relevant vehicular traffic routes and intersections for access to/from the area;
 - (b) current traffic counts for all the above traffic routes and intersections;
 - (c) the additional vehicular traffic generated from the proposed development and associated trip distribution on the road network;
 - (d) consideration of the traffic impacts on existing and proposed intersections and the capacity of the local and classified road network to safely and efficiently cater for additional vehicular traffic generated by the proposed development. The assessment should also include the cumulative traffic impact of other proposed development in the area;
 - (e) consideration of the impact of the planned Hunter Expressway;
 - (f) details of necessary road network infrastructure upgrades required to maintain existing levels of service both on the local and classified road network;
 - (g) intersection analysis, as well as a micro simulation model to determine the need for intersection and mid block capacity upgrades, as well as to ensure traffic signal co-ordination;
 - (h) details on the efficiency of emergency vehicle access/egress;
 - (i) measures to introduce and promote public transport usage and mode share, including identification of bus routes;
 - (j) proposed pedestrian and cycle access within and to the site that connects to all relevant transport services, existing and proposed adjoining suburbs and other key off-site locations (for example schools, shops, parks recreation and community facilities) having regard to the *NSW Planning Guidelines for Walking and Cycling* (2004), and the *NSW Bike Plan* (2010);
 - (k) timing of delivery of proposed transport infrastructure including road and intersection upgrades, pedestrian and cycle paths, and public transport infrastructure; and
 - (l) consideration of impact on existing property access.
- (2) Identify road design that is responsive to the proposed land use and associated urban form including proposed transport linkages between the subject land and surrounding key destination points such as existing centres, recreational areas and employment/industrial centres. Road design should be in accordance with any requirements of the relevant agency that will have responsibility for its ongoing ownership and management.
- (3) Assess the proposal against the objectives of the Integrating Land Use and Transport policy package.

- (4) Assess the impact of the proposal on future access arrangements to the Summerhill Waste Management Centre.

Noise

- (1) Assess the impact of increased traffic generated by the proposal on existing and future residents, in accordance with the *Environmental Criteria for Road Traffic Noise* (EPA, 1999 and *Development Near Rail Corridors and Busy Roads – Interim Guideline* (Department of Planning).
- (2) Identify the extent of any necessary noise attenuation works, including noise barriers and/or treatment and design of dwellings within individual lots.

Air Quality

- (3) Assess the odour and air quality impacts of the nearby existing development and any proposed development and in light of potential coal mining and coal-bed methane extraction on the subject land. The assessment must be consistent with the *Technical Framework Assessment and management of odour from stationary sources in NSW* (DECC November 2006) and the *Technical Notes Assessment and management of odour from stationary sources in NSW* (DECC November 2006).

Heritage

- (1) Provide an archaeological assessment and heritage impact statement in accordance with the NSW Heritage Office Guidelines. The statement should assess the impacts of the application on the area and any significant elements of the site including indigenous heritage.
- (2) Provide detail of how the development will incorporate and not negatively impact on site setting, landscapes, landmark elements, heritage items, views and vistas.
- (3) Assess the impact of potential development on the historic setting and visual catchment of Minmi and demonstrate how proposed development is to be integrated with the existing development in Minmi.
- (4) Provide an assessment in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, July 2005).

Water quality, groundwater and riparian corridors

- (1) Assess any potential impact of proposed development on hydrology and hydrogeology of the site and adjacent areas in terms of impact on water quality, including groundwater, in keeping with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2000).
- (2) Identify drainage and stormwater management infrastructure, including: on site detention of stormwater; water sensitive urban design (WSUD); and drainage infrastructure. Demonstrate that stormwater infrastructure is appropriate in the context of the site topography. Identify future management arrangements for stormwater infrastructure, in consultation with the relevant council.
- (3) Identify riparian corridors and associated buffers and assess against the *Guidelines for Controlled Activities – Riparian Corridors* (Department of Water and Energy 2008). Infrastructure including roads, pathways, drainage and stormwater structures, and asset protection zones, should be located outside the identified riparian corridors and buffers. This should be demonstrated through provision of plans and cross sections.
- (4) Provide details in relation to the short and long term management of water quality and ecosystem health during construction and the life of the development, including the formation of buffer zones.

Flooding

- (1) Develop suitable Flood Planning Levels for the development and demonstrate consistency with the *NSW Floodplain Development Manual: the management of flood liable land* (2005), and the *DECCW Floodplain Risk Management Guideline – Practical Consideration of Climate Change*.

Visual impact

- (7) Assess the visual impact of the proposal, when viewed from the surrounding areas (including surrounding roads, the Blue Gum Hills Regional Park, proposed conservation lands, the existing Minmi village, and other nearby suburbs).

	<p>Bushfire Risk Assessment</p> <p>(1) Provide an assessment against the current version of <i>Planning for Bush Fire Protection 2006</i>.</p> <p>(2) Identify the ongoing management arrangements of proposed Asset Protection Zones (APZs), including through negotiation with relevant agencies where APZs are proposed on land to be transferred to public ownership.</p> <p>Future public land</p> <p>(1) Provide details of the proposed ownership, intended future use and management arrangements for publicly accessible land including roads, parks, and riparian areas, through negotiation with State and local government agencies where relevant.</p> <p>Utilities</p> <p>(1) Prepare a utility and infrastructure servicing report and plan for the site – This must:</p> <p>(a) identify existing utilities and infrastructure such as the supply of water, sewerage, stormwater, gas, electricity and telephone services;</p> <p>(b) assess the capacity of utility infrastructure to service the proposed development in conjunction with existing uses, proposed uses and potential future uses (including fire suppression);</p> <p>(c) demonstrate compliance with the requirements of any public authorities in regard to the connection to, relocation and/or adjustment of services affected by the development proposal; and</p> <p>(d) Detail technologies which may reduce the demand or need for servicing or provide for the supply of sustainable services (such as water sensitive urban design measures and sediment control measures).</p> <p>Ecologically Sustainable Development (ESD)</p> <p>(1) The EA should demonstrate that all aspects of the concept plan satisfy the principles of ESD including compliance with BASIX.</p> <p>(2) The EA should outline commitments to sustainability including water reuse, waste minimisation, the minimisation of energy use and car dependency etc.</p> <p>Social Impact and social infrastructure</p> <p>(1) Assess the social impact of the proposal on surrounding communities.</p> <p>(2) Identify additional demand created by the proposal for services and infrastructure including public transport, open space, recreation facilities, retail facilities and social and community facilities, based on an analysis of the existing and projected demographic profile of the locality. Demonstrate that an appropriate level of social infrastructure is provided to meet the needs of the future population arising from the development, including through identification of appropriate services and facilities. Where relevant this should be through negotiation with State or local government agencies and should inform the scope of infrastructure contributions.</p> <p>(3) Identify opportunities to meet demand for a range of housing types including seniors and affordable housing.</p> <p>Subdivision</p> <p>(1) Provide a subdivision plan to identify all covenants, easements and notations proposed for each title, for the proposed subdivision to facilitate transfer of lands to Government agencies.</p>
<p>Consultation Requirements</p>	<p>An appropriate and justified level of consultation should be undertaken. Where consultation has already been undertaken this should be documented.</p> <p>Consultation must be undertaken with the following relevant agencies and mineral resource titleholders:</p> <ul style="list-style-type: none"> • Newcastle City Council • Lake Macquarie City Council • Department of Environment, Climate Change and Water • NSW Office of Water

	<ul style="list-style-type: none"> • Roads and Traffic Authority • NSW Transport • Department of Industry and Investment • Mine Subsidence Board • NSW Heritage Council • Department of Health • Department of Education and Training • Hunter-Central Rivers Catchment Management Authority • Hunter Water • Local Aboriginal Land Councils • Utility and infrastructure providers • Emergency Services, including the Ambulance Service of NSW, the State Emergency Services, Rural Fire Service and NSW Fire Brigades. • Donaldson Coal Pty Ltd • Newcastle Coal Company Pty Ltd • Oceanic Coal Australia Limited • AGL (SG) Operations Pty Ltd. • Daracon Engineering Pty Ltd.
Deemed refusal period	60 days