

BUSHFIRE PROTECTION ASSESSMENT

FOR THE

PROPOSED REZONING

OF LAND WITHIN THE PASMINCO COCKLE CREEK

&

INCITEC PIVOT SITE,

LOT 1 in DP 523781, LOT 1 in DP 225720,

&

LOT 201 in DP 805914,

MAIN ROAD,

BOOLAROO.



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Assessment Number	Document	Preparation Date	Issue Date	Directors Approval
B091034 - 1	Final	29.7.2009	6.8.2009	<i>G.L.Swain</i>

EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited, at the request of the *Fitzwalter Group*, has been commissioned to prepare a Bushfire Protection Assessment for the proposed rezoning of land within the Pasminco Cockle Creek & Incitec Pivot site, Lot 1 in DP 523781, Lot 1 in DP 225720 and Lot 201 in DP 805914, Main Road, Boolaroo.

The land proposed for rezoning consists of the land within the former Pasminco Smelter Site, the Incitec Pivot Fertiliser Plant and the vacant land on the lower slopes of the ridgeline to the east of the former Smelter Site and the Fertiliser Plant.

The Department of Planning [DoP] issued Director Generals Specifications for the preparation of a Local Environmental Study [LES] to proceed with the rezoning of the land. The specifications in relation to bushfire include:

“Bushfire Risk Management, Including level of hazard, the guidelines contained in ‘Planning for Bushfire Protection’ and asset protection zones and levels of construction as well as demands on existing fire fighting resources”.

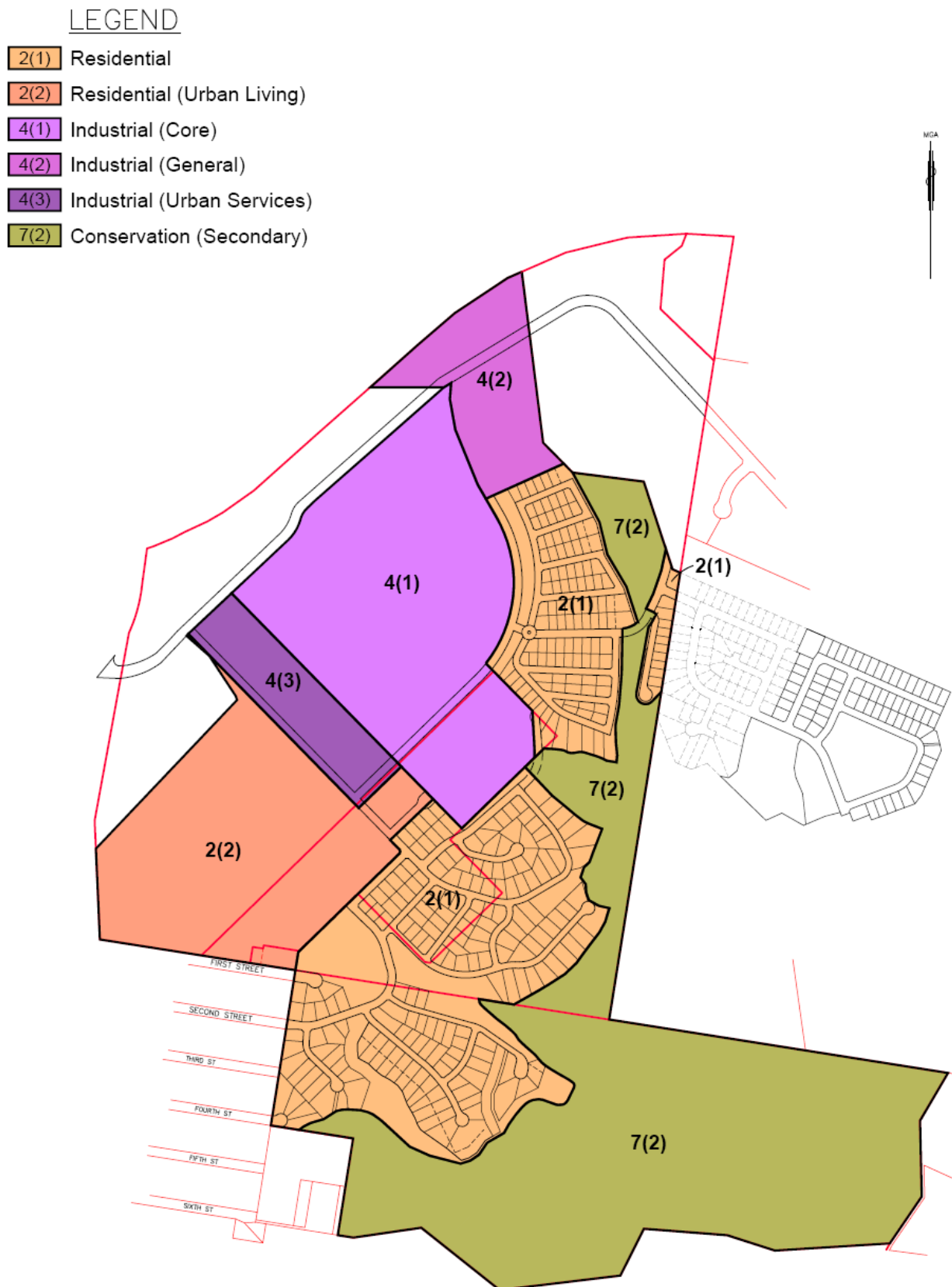
Information addressing the above specifications was submitted to Lake Macquarie City Council in the form of a Master Plan however LMCC staff have provided the following information in terms of the adequacy of the information provided:

- *“The Master Plan references bushfire risk in Section 3.8 and the Planning Report references that a Bushfire Report has been prepared. A copy of this report needs to be provided to Council and referenced in the Master Plan”.*
- *“The Master Plan shows bushfire trails, however the number of trails seems excessive and it is questioned whether all of these are required”.*
- *“The proposed residential subdivision should be designed so that any APZ is located within the land proposed to be zoned residential. The subdivision should be designed with a road boundary and/or creating larger lots to the perimeter to allow the incorporation of the APZs within the private lands”*
- *“Provide Bushfire Report to Council for review and reference this report in the Pasminco Master Plan/Local Environmental Study”.*

The rezoning proposal of the land seeks approval to rezone the land within the former Smelter and the Incitec Pivot to permit Industrial 4(1) [Core]; Industrial 4(2) [General] and Industrial 4(3) [Urban Services]. The rezoning also seeks approval to create Residential 2(1) zoned land on the foot-slopes to the east of the Industrial Zoned land and Residential 2(2) to the southwest of the Industrial Zoned Land.

The residue land within the site, to the east of the proposed Residential 2(1) zoned land is proposed to be zoned Conservation 7(2) [Secondary]. *[Refer to Figure 1 below]*

Figure 1 – Proposed Zoning Plan showing an indicative subdivision patterns on the eastern slopes.



The Lake Macquarie Bushfire Prone Land Map records that only the steeper land within the eastern portion of the site is deemed to contain vegetation which is mapped as being bushfire prone.

The proposed Industrial 4(1) [Core]; Industrial 4(2) [General] and Industrial 4(3) [Urban Services] and the Residential 2(2) precincts are not located within an area which is defined as either containing bushfire prone vegetation or being within the buffer zone to bushfire prone vegetation. Therefore, future industrial and residential development within these zones will not be required to address the provisions of Sections 79BA, 79C and Section 91 of the *Environmental Planning & Assessment Act 1979* or the provisions of Section 100B of the *Rural Fires Act 1997*.

The proposed Residential 2(1) zoned land is impacted by the Bushfire Prone Land Map and therefore future residential development within this precinct will be required to address the provisions of Sections 79BA, 79C and Section 91 of the *Environmental Planning & Assessment Act 1979* or the provisions of Section 100B of the *Rural Fires Act 1997*. Furthermore, the revegetation of the proposed Conservation 7(2) [Secondary] land will, in time, increase the extent of the bushfire prone vegetation adjoining the eastern edge of the residential precinct.

Access to the proposed residential lots within the proposed 2(1) zoned land will extend off existing First Avenue, Fourth Avenue, from the proposed extension of Munibung Road, via the road network within the Macquarie Hills residential estate, to the east and from other internal streets.

This report undertakes an assessment of the bushfire protection measures required to address the bushfire risk to the future residential development on the 2(1) zoned land, consistent with the Residential Development specifications of *Planning for Bushfire Protection 2006*, and the requirements of Section 44 of the Rural Fires Regulation 2008, and confirms that the layout for the development provided by the proposed subdivision plan prepared by Monteath & Powys Pty Ltd, addresses the performance standards for the provision of Asset Protection Zones.

The assessment also examines the proposal regarding the provision of access and water supply for fire-fighting operations, fuel management protocols and other matters considered necessary to mitigate the potential bushfire threat to persons, property and the environment from the danger that may arise from a bushfire within the retained vegetation within the proposed 7(2) Conservation zoned land.

The characteristics of the site, as discussed in this report, together with the fire protection measures recommended, provide that the proposed development is suitable in terms of its intended land use.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
TABLE OF CONTENTS	6
SECTION 1	8
INTRODUCTION.....	8
1.1 Development Proposal.	8
1.2 Aim of this Assessment.	8
1.3 Planning for Bushfire Protection – 2006. (NSW Rural Fire Service).....	9
1.4 Documentation reviewed in the preparation this Report.....	9
1.5 Site Inspection.	9
SECTION 2	10
PROPERTY DESCRIPTION	10
2.1 Location.	10
2.2 Existing Land Use.....	13
2.3 Surrounding Land Use.....	13
2.4 Topography.	13
2.5 Vegetation within the Site.	17
2.6 Vegetation within 140 metres of the Residential 2(1) Rezoning Precinct.....	18
2.8 Significant Environmental Features within the proposed Residential 2(1) Rezoning Precinct.	18
2.9 Known Threatened Species, Populations, Endangered Ecological Communities or Critical Habitat.	18
2.10 Details of Aboriginal/European Heritage within the Residential 2(1) Rezoning Precinct.	19
SECTION 3	20
FIRE MANAGEMENT RESPONSIBILITIES	20
3.1 Lake Macquarie City Council.	20
3.2 New South Wales Rural Fire Service.	20
3.3 New South Wales Fire Brigade.	20
3.4 Lake Macquarie Bush Fire Management Committee.	20
3.5 Public Authorities & owners/occupiers of land.....	21
3.6 Fuel Management within the Conservation 7(2) Precinct.	22
SECTION 4	23
BUSHFIRE HAZARD ASSESSMENT	23
4.1 Definitions.....	23
4.2 Precinct Level Assessment of Bushfire Prone Vegetation.....	23
4.3 Bushfire Hazard Assessment.	24
4.3.1 Assessment to Determine the Bushfire Hazard to the future residential development in the Residential 2(1) precinct.	24

SECTION 5	25
BUSH FIRE PROTECTION ASSESSMENT	25
5.1 Introduction.....	25
5.2 Determination of Asset Protection Zones	25
5.3 Bushfire Hazard Management.....	26
5.3.1 <i>Fuel Management</i>	26
5.3.2 <i>Management Responsibilities</i>	27
5.4 Assessment of Bushfire Attack (Construction Standards).....	27
5.5 Access for Fire-fighting Operations.	28
5.6 Water Supplies for Firefighting Operations.....	28
5.7 Fire Fighting Resources.	28
 SECTION 6	 30
RECOMMENDATIONS	30
 SECTION 7	 32
CONCLUSION	32
 REFERENCES:.....	 33
 SECTION 8 – Indicative Plan of Asset Protection Zones.....	 34

SECTION 1

INTRODUCTION

1.1 Development Proposal.

Australian Bushfire Protection Planners Pty Limited, at the request of the *Fitzwalter Group*, has been commissioned to prepare a Bushfire Protection Assessment for the proposed rezoning of land within the Pasminco Cockle Creek & Incitec Pivot site, Lot 1 in DP 523781, Lot 1 in DP 225720 and Lot 201 in DP 805914, Main Road, Boolaroo.

The land proposed for rezoning consists of the land within the former Pasminco Smelter Site, the Incitec Pivot Fertiliser Plant and the vacant land on the lower slopes of the ridgeline to the east of the former Smelter Site and the Fertiliser Plant.

The rezoning proposal of the land seeks approval to rezone the land within the former Smelter and the Incitec Pivot to permit Industrial 4(1) [Core]; Industrial 4(2) [General] and Industrial 4(3) [Urban Services]. The rezoning also seeks approval to create Residential 2(1) zoned land on the foot-slopes to the east of the Industrial Zoned land and Residential 2(2) to the southwest of the Industrial Zoned Land.

The residue land within the site, to the east of the proposed Residential 2(1) zoned land is proposed to be zoned Conservation 7(2) [Secondary].

The proposed Industrial 4(1) [Core]; Industrial 4(2) [General] and Industrial 4(3) [Urban Services] and the Residential 2(2) precincts are not located within an area which is defined as either containing bushfire prone vegetation or being within the buffer zone to bushfire prone vegetation. Therefore, future industrial and residential development within these zones will not be required to address the provisions of Section 79BA, 79C and Section 91 of the *Environmental Planning & Assessment Act 1979* or the provisions of Section 100B of the *Rural Fires Act 1997* and these precincts are not included in this report.

1.2 Aim of this Assessment.

The aim of this Bushfire Protection Assessment is to address the Director General's Specifications for the preparation of the Local Environmental Study [LES] which include:

“Bushfire Risk Management, Including level of hazard, the guidelines contained in ‘Planning for Bushfire Protection’ and asset protection zones and levels of construction as well as demands on existing fire fighting resources”.

1.3 Planning for Bushfire Protection – 2006. (NSW Rural Fire Service)

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for residential subdivision, Special Fire Protection and Industrial Developments in bushfire prone areas and forms the basis for the issue of a Bushfire Safety Authority by the Commissioner of the NSW Rural Fire Service under the provisions of Section 100B of the *Rural Fires Act 1997*.

The Commissioner may determine, under Section 100B of the *Rural Fires Act*, additional measures that are considered necessary to protect the development against the impact of bushfire.

1.4 Documentation reviewed in the preparation this Report.

The following documents were reviewed in the preparation of this report:

- Zoning Plan prepared by Monteath Powys – Sheet 1/1 dated 14/7/2009;
- Lake Macquarie Certified Bushfire Prone Land Map;
- 1:25000 Topographic Map;
- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service/Planning N.S.W.
- Australian Standard AS3959 *Construction of Buildings in Bushfire Prone Areas*;
- *Rural Fires Regulation 2002*;
- *Fire Management Plan* for the Pasminco site, prepared by Australian Bushfire Protection Planners Pty Ltd – dated 5/3/2007.

1.5 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the development property in February 2007, prior to the preparation of the Fire Management Plan for the site.

Further inspections were undertaken on the 15.11.2007 & 27.11.2008.

SECTION 2

PROPERTY DESCRIPTION

2.1 Location.

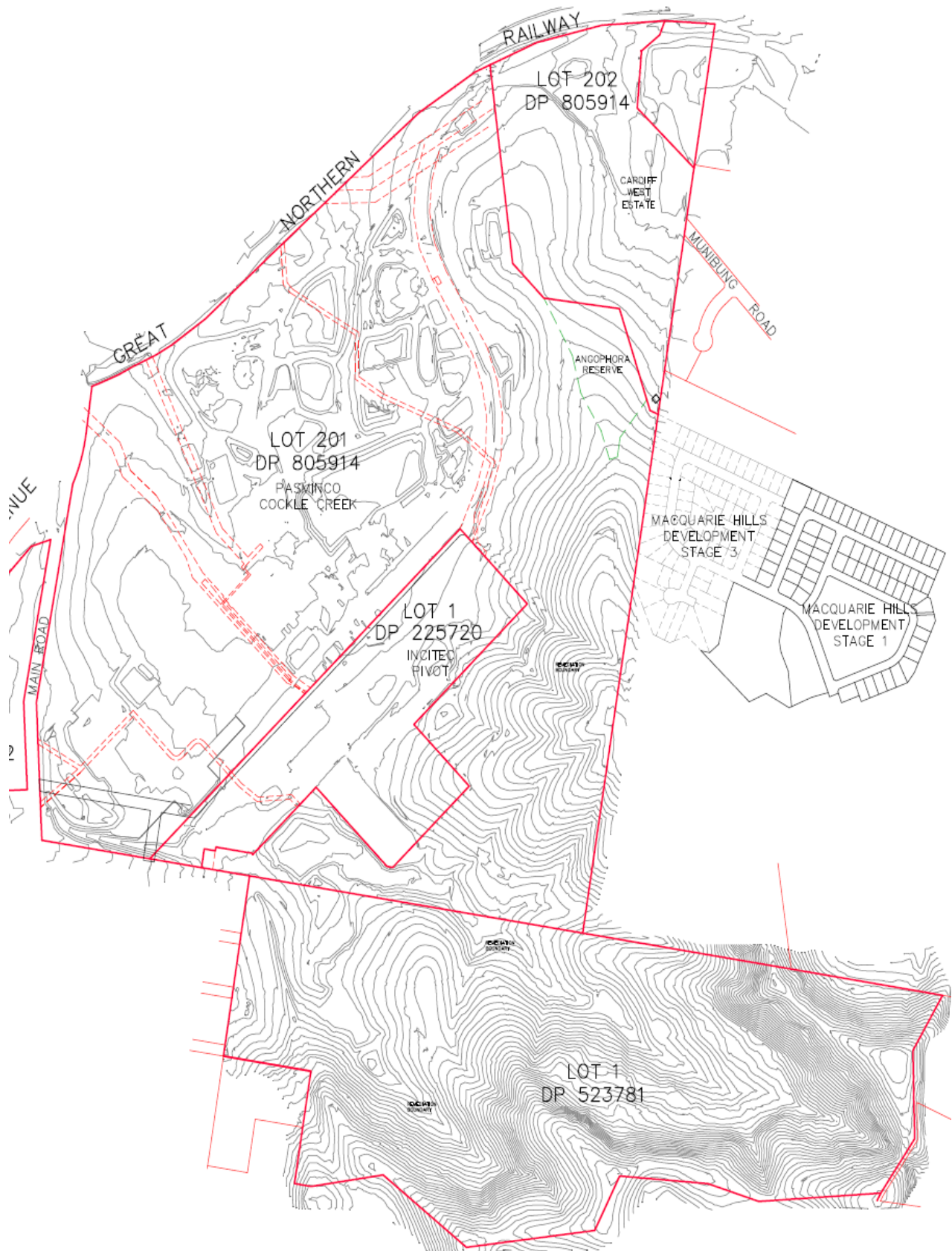
The land which is the subject of the rezoning proposal covers the area of land within the Pasminco Cockle Creek Smelter Site, known as Lot 201 in DP 805914 and Lot 1 in DP 523781 Main Road, Boolaroo and includes the Incitec Pivot development within Lot 1 in DP 225720.

Lot 1 in DP 523781 is located within the southern portion of the site and occupies land that extends to the east of the terminus of First, Second and Third Streets.

Lot 201 in DP 805914 forms the land within Smelter site and is located to the east of Main Road, extending to the east to the residential precinct of the Macquarie Hills Estate and the existing Industrial Development on the western end of Munibung Road. The southern boundary is adjoined by the existing residential development on First Street and the vacant land within Lot 1 in DP 523781 with the north-western and northern boundary formed by the perway of the Northern Rail Line.

The Smelter and associated buildings, except for the Office building, Gate House and associated sheds, have been demolished, leaving the concrete floor slabs and external pavement slabs in place. Stock-piles of smelter waste cover a large portion of the site to the northeast of the Office Building.

Figure 2 – Plan showing Lot 201 in DP 805914; Lot 1 in DP 225720 and Lot 1 in DP 523781, within Rezoning Precinct



Source – Monteath & Powys

Figure 3 – Aerial Photograph of Rezoning Precinct



Source – Monteath & Powys

2.2 Existing Land Use.

The western portion of Lot 201 in DP 805914 contains the remnants of the Pasminco Cockle Creek Smelter. The Smelter and associated buildings, except for the Office building, Gate House and associated sheds, have been demolished, leaving the concrete floor slabs and external pavement slabs in place. Stock-piles of smelter waste cover a large portion of the site to the northeast of the Office Building.

The eastern portion of this lot is vacant land which is undergoing remediation to remove contaminants in the top layer of soil.

Lot 1 in DP 225720 contains the Incitec Pivot Fertiliser Plant. Lot 1 in DP 523781 consists of vacant land which rises to Munibung Hill in the east.

2.3 Surrounding Land Use.

This report examines the bushfire protection measures required for the future residential development on the proposed Residential 2(1) zoned land within the eastern portion of Lot 201 in DP 805914 and the western portion of Lot 1 in DP 523781.

The landuse to the west and northwest of the future residential development in the 2(1) Residential precinct will be Industrial 4(1) [Core] or Industrial 4(2) [General] with existing residential development on First, Second, Third & Fourth Streets.

The majority of the landuse to the east of the proposed Residential 2(1) zoned land within the eastern portion of Lot 201 in DP 805914 and Lot 1 in DP 523781 will be Conservation within the proposed 7(2) zoned land. A small section of the future residential estate abuts the approved residential development within Macquarie Hills Estate, to the east of Lot 201 in DP 805914.

2.4 Topography.

Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100m from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour on the site.

2.4.1 Within Rezoning Precinct.

The topography of the site is dominated by the steep sided ridgeline that rises to an apex of 162m AHD along the eastern boundary of Lot 1 in DP 523781 [Munibung Hill]. The ridgeline turns to the west along the southern boundary of Lot 1 and runs to the northwest across the corner of Lot 1 into the adjoining land [Lot 515 in DP 845404] before re-entering the Smelter Site.

The ridgeline runs along the eastern boundary of Lot 201, turning to the northwest to descend to a low knoll at 52m AHD between the existing railway spur line and the eastern boundary of the site.

The landform within the site falls to the west in a series of deep valleys that fall to the west with water courses/creek lines collecting in a number of dams to the east of the Incitec Pivot Complex.

The landform over the demolished smelter site has been modified to provide level building pads of varying heights and stormwater drainage lines that flow into dams located to the northwest of the Main Office Building.

The land to the west of the demolished smelter slopes gently to the alignment of the Main Road with the land within Lot 21 in DP 251322, to the west of the Main Road, sloping to the west to TC Frith Avenue.

The topography of the land beyond the eastern and southern boundaries of Lot 1 in DP 523781 falls steeply from the ridgeline into valleys and ridgelines on the adjoining land, to the east. The topography of the land to the east of Lot 201 rises to the ridgeline within the adjoining Lot 515 [Macquarie Hills Estate] and falls to the east from the ridgeline that forms the central portion of the eastern boundary. The topography of the land within the adjoining Industrial Estate falls gently to the northeast from the eastern boundary.

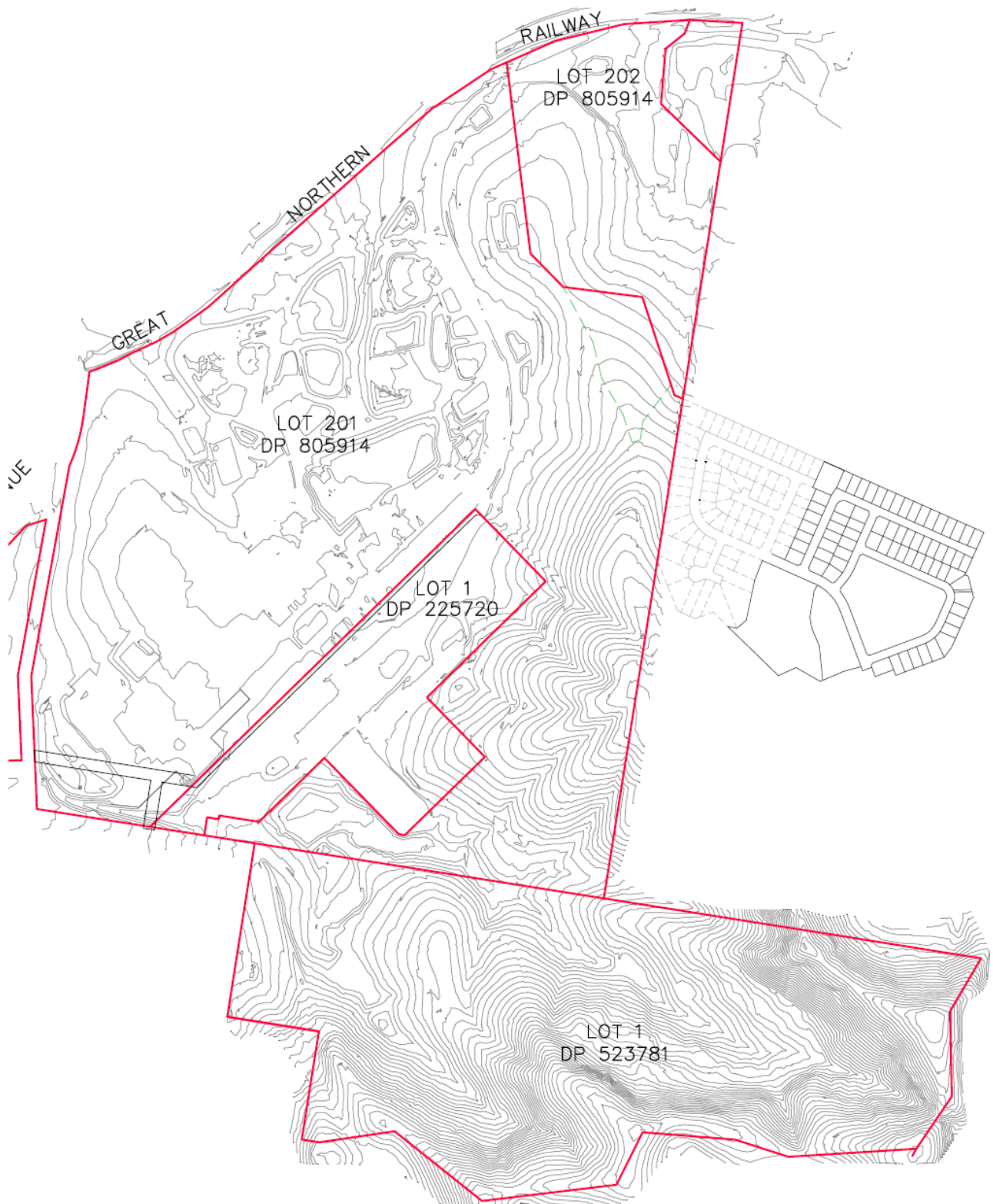
The land to the northwest of the Great Northern Railway, which forms the north-western boundary of Lot 201, falls gently [< 5 degrees] to Lake Road.

[Refer to Figure 4 – Contour Plan of the site on the following page]

The topography of the land within the proposed Residential 2(1) precinct consists of the lower slopes and gully lines of the Munibung Hill which rises to the east. The effective slope of the land, in reference to the exposure of the future residential developments' exposure to bushfire events, is upslope to the east, with gradients that range from 12 – 25% [7 – 14 degrees], increasing to more than 14 degrees to the east of the southern portion of the Residential 2(1) precinct.

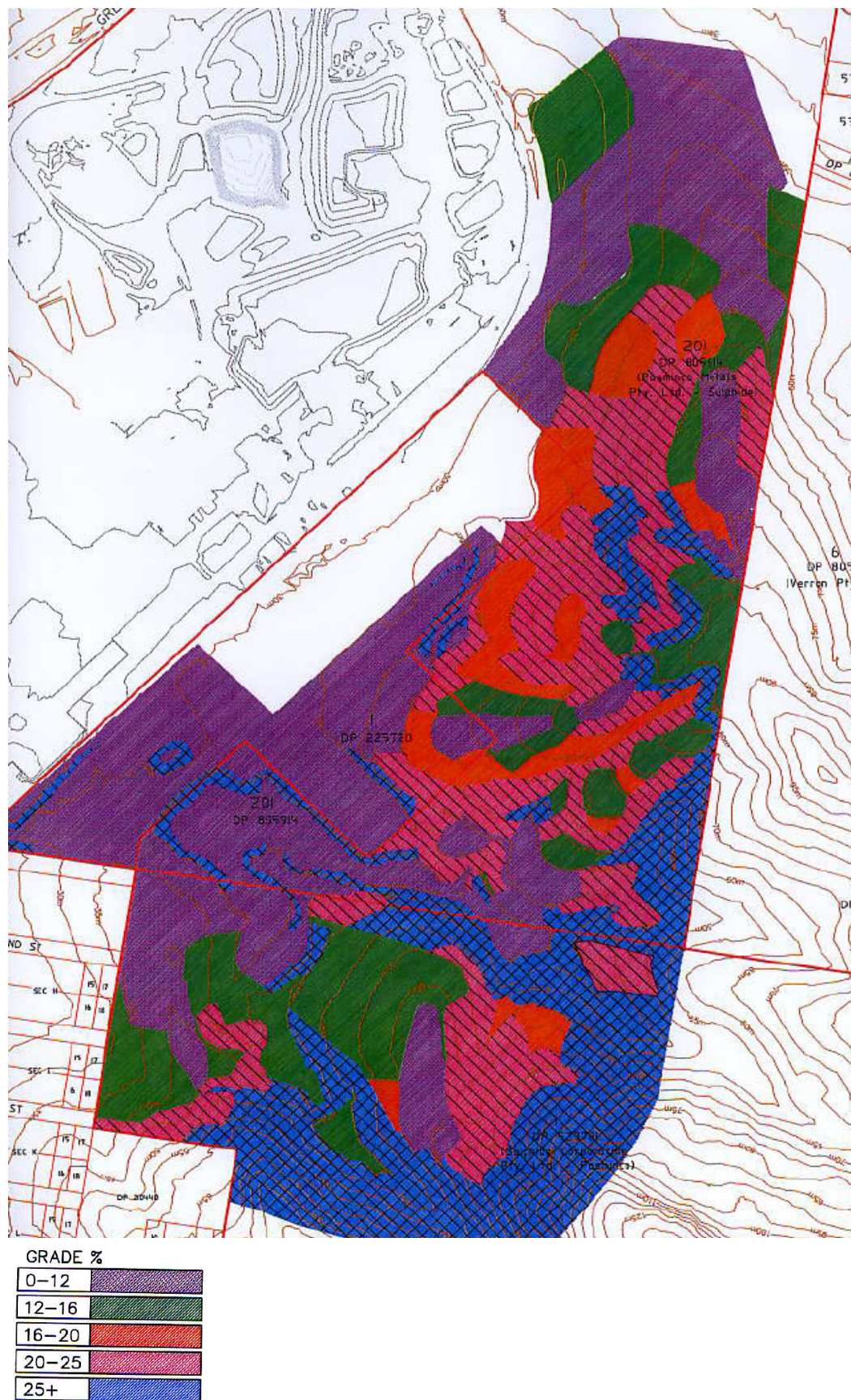
[Refer to Figure 5 – Slope Analysis Plan prepared by Monteath & Powys on Page 15].

Figure 4 – Contour Plan



Source – Monteath & Powys

Figure 5 – Slope Analysis Plan



2.5 Vegetation within the Site.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site.

Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006*, which classifies vegetation types into the following groups:

- (a) *Forests [wet & dry sclerophyll forests];*
- (b) *Woodlands;*
- (c) *Plantations – being pine plantations not native plantations;*
- (d) *Forested Wetlands;*
- (e) *Tall Heaths;*
- (f) *Freshwater Heaths;*
- (g) *Short Heaths;*
- (h) *Alpine Complex;*
- (i) *Semi – arid Woodlands;*
- (j) *Arid Woodlands; and*
- (k) *Rainforests.*

The land within the eastern portion of Lot 201 has been previously cleared of native forest communities however an area of *Angophora inopina – floribunda* has been recorded in the northern portion of Lot 201. This area has been set aside for retention of this species and is located in the area noted as 'Angophora Reserve'.

A small pocket of Coastal Foothills Spotted Gum-ironbark Forest and Coastal Plains Smooth-barked Apple Woodland is located within an area in the south-eastern corner of Lot 201 with a patch of Eucalyptus plantings occupying land in the northern portion of the lot. The remainder of the eastern portion of Lot 201 contains grassland with scattered trees.

Lot 1 in DP 523781 contains areas of regenerating eucalyptus species planted on the ridgelines and in the western section of the valley floor.

The Umwelt Report [2004] states:

"Field survey identified one distinct vegetation assemblage, Disturbed Open Woodland which has resulted from significant rehabilitation works undertaken by Pasminco Pty Limited. The vegetation communities within the eastern portion of Lot 1 are comprised of a mixture of Coastal Plains Smooth-barked Apple Woodland, Coastal Sheltered Apple-Peppermint Forest, Coastal Foothills Spotted Gum-Ironbark Forest and Coast Narrabeen Moist Forest.

Understorey and sub-canopy species are dominated by Acacias and the ground layer is dominated by weeds with the commonly recorded species, Lantana and Formosan Lily occurring widely across the site. Grasses include Blady Grass and Kangaroo Grass”.

Drainage lines and dams within the study area are dominated by Cumbungi.

2.6 Vegetation within 140 metres of the Residential 2(1) Rezoning Precinct.

The land to the east of the Residential 2(1) precinct is proposed to be zoned 7(2) Conservation. Rehabilitation of this land will re-introduce a mixture of Coastal Plains Smooth-barked Apple Woodland, Coastal Sheltered Apple-Peppermint Forest and Coastal Foothills Spotted Gum-Ironbark Forest.

The Angophora Reserve to the northeast of the Residential 2(1) precinct contains *Angophora inopina – floribunda* which is a low height tree/shrub with multi stems growing to 8.0 metres.

2.7 Fauna within the Rezoning Precinct.

The Umwelt “*Preliminary Analysis and Issues Paper: Flora & Fauna Pasminco Cockle Creek Smelter Site*” - 2004 recorded a Grey-headed Flying Fox on the site. The site also contains potential habitat for the following species:

- Large-eared Pied Bat;
- Little Bent – wing Bat;
- Large Bent – wing Bat;
- Eastern Freetail Bat;
- Large – footed Myotis;
- Yellow – bellied Sheath-tail Bat;
- Greater Broad – nosed Bat.

2.8 Significant Environmental Features within the proposed Residential 2(1) Rezoning Precinct.

The Residential 2(1) precinct does not contain significant environmental features such as SEPP 44 Koala Habitat, SEPP 14 Wetlands; SEPP 26 Littoral Rainforests; Areas of Geological interest; Steep Lands [>18 degrees] or National Parks Estate. The Residential 2(1) rezoning precinct contains a series of riparian corridors and land slip areas.

2.9 Known Threatened Species, Populations, Endangered Ecological Communities or Critical Habitat.

The Angophora Reserve to the northeast of the Residential 2(1) precinct contains *Angophora inopina – floribunda* which is listed as a Threatened Species.

2.10 Details of Aboriginal/European Heritage within the Residential 2(1) Rezoning Precinct.

The Residential 2(1) rezoning precinct occupies the land bounded by the extent of the site rehabilitation. This rehabilitation has removed the top 300mm of top soil therefore it is not likely that Aboriginal Heritage items remain in the rezoning precinct.

SECTION 3

FIRE MANAGEMENT RESPONSIBILITIES

Fire management within the development site is the responsibility of:

3.1 Lake Macquarie City Council.

Lake Macquarie City Council has responsibility, under Section 66 of the *Rural Fires Act 1997*, to issue a notice in writing requiring an owner/occupier of any land within the LGA to carry out bushfire hazard reduction works on that land. Section 100E of the *Rural Fires Act* requires Council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private land.

3.2 New South Wales Rural Fire Service.

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. *Section 73* of the *Rural Fires Act (1997)* enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

3.3 New South Wales Fire Brigade.

The NSW Fire Brigade has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Hazmat management within New South Wales is the responsibility of the NSW Fire Brigade.

3.4 Lake Macquarie Bush Fire Management Committee.

The Lake Macquarie Bushfire Management Committee has the responsibility for planning for coordinated fire fighting activities / hazard management activities on a local government level. It is not an operational organization, a fire fighting organization or a funding source for fire management activities.

The Bush Fire Management Committee is supported by the following provisions of the *Rural Fires Act 1997*:

- **Section 52** requires each Bush Fire Management Committee to prepare a draft bush fire management plan for their local areas which includes a plan of operations and a bush fire risk management plan.

- **Section 54** of the Act specifies that a draft bush fire risk management plan is to 'set out schemes for the reduction of bush fire hazards in the rural fire district or other part of the State'. A draft bush fire risk management plan may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies.

3.5 Public Authorities & owners/occupiers of land.

The Rural Fires Act, 1997 provides several legislative opportunities to require Public Authorities land owners and occupiers to manage hazardous fuels. These are listed below:

- **Section 63(1)** states that it is the duty of a public authority to take any practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from:
 - (a) any land vested in or under its control or management, or
 - (b) any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.
- **Section 63(2)** states that 'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'.
- **Section 66(1)** states that a local authority of an area may, by notice in writing, require the occupier or owner [not being a public authority] of any land within the area to carry out bushfire hazard reduction work specified in the notice on the land.
- **Section 66(2)** states that the local authority must serve a notice under this section if required to do so by a bushfire risk management land applicable to the land that is in force.
- **Section 87** allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding TOBAN days. Section 10 permits are not required to adhere to Part V provisions of the EPA Act 1979 in the assessment of impact, except for public authorities. An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (Section 100E of the Rural Fires Act 1997).

3.6 Fuel Management within the Conservation 7(2) Precinct.

Australian Bushfire Protection Planners Pty Limited prepared, in February 2007 a Bushfire Management Plan for the vegetation on the vacant land within the eastern portion of the Pasminco site. The rezoning proposal retains the Conservation 7(2) zone which extends east from the proposed Residential 2(1) zone.

The Fire Management Plan established a management protocol for the upgrade and maintenance of the existing fire trail network and fuel management of the vegetation so as to minimise the chance of fire ignition and the spread of fire.

The continuation of the fuel management of the vegetation within the Conservation 7(2) zoned land will be an important factor in mitigating the potential for fires to occur in the re-vegetated Woodland/Forest communities. It is therefore recommended that the rezoning of the land to Conservation 7(2) shall include the preparation of an updated Fire Management Plan which establishes the protocols for the reduction of combustible fuels and the maintenance of the access/fire trails.

SECTION 4

BUSHFIRE HAZARD ASSESSMENT

4.1 Definitions.

Planning for Bushfire Protection 1991 defines *Bushfire Hazard* as the “availability of fuel”. The document also defines threat as being a “measure of the scale of impact or significance in terms of hazard and risk”.

Planning for Bushfire Protection 2006 defines bushfire risk as “the chance of a bushfire igniting, spreading and causing damage to assets of value to the community. Risk may be rated as extreme, major, moderate, minor or insignificant and is related to the vulnerability of the asset”.

4.2 Precinct Level Assessment of Bushfire Prone Vegetation.

Planning for Bushfire Protection 2006 provides the following procedure for assessing a development at a defined precinct level in order to determine whether the development is bushfire prone and if so, the need to provide appropriate setbacks [Asset Protection Zones]:

(a) *Determine vegetation distance, type and class as follows:*

Identify all vegetation in each direction from the site for a distance of 140 metres, and then consult Table A2.1 to determine the vegetation formation which predominates.

(b) *Determine the average slope of the land between the predominant vegetation class and the development.*

Table 1 summarises the information provided in Section 2 of this report, to undertake a precinct level assessment to determine those aspects of the future dwellings within the Residential 2(1) precinct which is or will become subject to bushfire threat.

Table 1. Precinct Level Assessment – Residential 2(1) Precinct

Aspect	Land Use	Vegetation within 140 m of Development	Predominant formation class from Table A2.1, PBP 2006	Average Slope of land to distance of 100m.	Comments
Northwest	Industrial Development	Nil	Nil	> 5 degrees downslope	This aspect is not bushfire prone
Northeast	'Angophora Reserve' + Industrial development	<i>Angophora inopina</i> – <i>floribunda</i>	Tall Heath – Low Open Forest	< 5 degrees upslope	The <i>Angophora inopina</i> – <i>floribunda</i> vegetation within the 'Angophora Reserve' will present a bushfire hazard to the future residential development
East	Proposed Conservation 7(2) land	Re-vegetated Woodland / Forest	Low Open Forest	> 5 degrees upslope	The vegetation within the proposed Conservation Zone will become bushfire prone
Southeast	Proposed Conservation 7(2) land	Re-vegetated Woodland / Forest	Low Open Forest	> 5 degrees upslope	The vegetation within the proposed Conservation Zone will become bushfire prone
West	Industrial & residential development	Managed curtilage	Nil	< 5 degrees downslope to the west	This aspect is not bushfire prone

4.3 Bushfire Hazard Assessment.

Planning for Bushfire Protection 2006 does not provide a methodology for determining bushfire hazard – it defers instead to Bushfire Prone Land determined in accordance with the "*Bushfire Prone Land Mapping Guideline*", issued by the Rural Fire Service on the 7th April 2004.

To be able to undertake a bushfire hazard assessment the *Department of Planning* document *Circular C10 (1983)* provides a suitable methodology. This methodology rates the vegetation and slope and provides an index value to each. The overall Bushfire Hazard Score is determined by multiplying the Vegetation Index by the Slope Index.

4.3.1 Assessment to Determine the Bushfire Hazard to the future residential development in the Residential 2(1) precinct.

The revegetated Conservation Zone will contain Low Open Forest which has a Vegetation Index of 2.8. The gradient of the land to the east of the Residential 2(1) precinct is upslope > 5 degrees therefore the Slope Index is 1. Bushfire Hazard is $2.8 \times 1 = 2.8$ which equates to a medium bushfire hazard rating.

SECTION 5

BUSH FIRE PROTECTION ASSESSMENT

5.1 Introduction.

Planning for Bushfire Protection 2006 provides a methodology to determine the Asset Protection Zones and Bushfire Attack / Construction Standards required for habitable buildings in development for residential purposes that are designated as bushfire prone. Sections 5.2 and 5.3 of this report use the methodology provided by *Planning for Bushfire Protection 2006* to determine the Asset Protection Zones and construction standards required for the construction of the residential development on the site.

5.2 Determination of Asset Protection Zones.

Appendix 2 of *Planning for Bushfire Protection 2006* provides the following procedure for determining setback distances (Asset Protection Zones):

- (a) *Determine vegetation formations as follows:*
 - Identify all vegetation in all directions from the site for a distance of 140 metres;
 - Consult Table A2.1 to determine the predominant vegetation type; and
 - Select the predominant vegetation formation as described in Table A2.1.
- (b) *Determine the effective slope of the land under the predominant vegetation Class.*
- (c) *Determine the appropriate fire [weather] area in Table A2.2.*
- (d) *Consult Table A2.4 and determine the appropriate setback [Asset Protection Zone] for the assessed land use, vegetation formation and slope range.*

Table 2 provides a summary of this assessment and determines the requisite widths of Asset Protection Zones to the future dwellings within the Residential 2(1) zoned land within the rezoning precinct. The Fire Danger Index [FDI] for the Boolaroo district is 100.

Table 2. Determination of Asset Protection Zones to the future residential landuse in the Residential 2(1) precinct – FDI 100

Aspect	Vegetation within 140m of development	Predominant Vegetation Class Table A2.1 of PfbFP 2006)	Average Slope of Land	Recommended Width of Asset Protection Zone	Width of Asset Protection Zone Provided	Compliance with Table A2.4 or calculation.
Northeast	<i>Angophora inopina – floribunda</i>	Forest	5 degrees down slope.	25 metres.	25 metres provided by Asset Protection Zone /Perimeter Road.	YES.
East	Revegetated Low Open Forest	Forest	> 5 degrees upslope	15 metres for forest vegetation [by calculation]	> 15 metres provided by Asset Protection Zone	YES.
Southeast	Revegetated Low Open Forest	Forest	> 5 degrees upslope	15 metres for forest vegetation [by calculation]	> 15 metres provided by Asset Protection Zone	YES.
Riparian Corridors	Narrow [less than 40m] band of revegetated Low Open Forest	Rainforest classification due to low hazard	Level to < 5 degrees upslope to creek.	10 metre wide APZ to riparian corridor	> 10 metres to vegetation in riparian corridor	YES.

Assessment Results:

Due to the change in gradient, from downslope to upslope and the location of the future dwellings – i.e. on the eastern edge or adjacent to the riparian corridors, the final determination of the width of Asset Protection Zones will need to be determined as subdivision stage.

However, the Residential 2(1) rezoning precinct provides the mandated width of Asset Protection Zone within the residential precinct. *[Refer to Section 9 – Plan of Indicative Asset Protection Zones]*.

5.3 Bushfire Hazard Management.

5.3.1 Fuel Management.

A diligent approach to the management of bushfire fuel levels is required to lands within the rezoning precinct. Management of the Asset Protection Zones shall comply with the recommendations of Appendix 5 of *Planning for Bushfire Protection 2006*.

Management of the Inner Protection Area of the Asset Protection Zones [curtilage to the dwellings] shall comply with the following:

- Minimal fine fuel loading at ground level (nominally 3 tonnes / hectare);
- Fuels are discontinuous to avoid transfer of fire to the development from fires burning in the adjoining vegetation;
- Trees and shrubs are acceptable provided that they are spread out and do not form a continuous canopy, are not species that retain dead material and are located away from the buildings to minimize radiant heat and direct flame attack.

5.3.2 Management Responsibilities.

Section 63(2) of the Rural Fires Act states that 'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'.

A number of options exist in relation to the long-term management of fire hazards and Asset Protection Zones for the future residential lots. These will be largely determined by the ownership and landuse patterns that will be identified in subsequent stages of the development process and must ensure that a mechanism is established for the long term fuel management of Conservation 7(2) land and the Asset Protection Zones.

An 88B covenant shall be applied to the title of the future residential lots to ensure the long term maintenance of the Asset Protection Zones within those lots so encumbered. A Fire Management Plan shall be prepared for the Conservation 7(2) zoned land.

5.4 Assessment of Bushfire Attack (Construction Standards).

Part 2.3.4 of the Building Code of Australia states that a Class 1 building that is constructed in a *designated bushfire prone area* must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

Part GF5.1 states that a Class 2 or 3 building constructed in a *designated bushfire prone area* is to provide a resistance to bushfires in order to reduce the danger to life and minimize the risk of the loss of the building.

Australian Standard A.S. 3959 is the enabling standard that addresses the performance requirements of both Parts 2.3.4 and Part GF5.1 of the Building Code of Australia.

Therefore, the future residential buildings within the Residential 2(1) rezoning precinct shall be constructed to comply with the specifications of this Standard.

Note: The minimum construction standard to the habitable buildings within 100 metres of the vegetation within the Conservation 7(2) lands shall be 12.5kW/m² as required by *Planning for Bushfire Protection 2006*.

5.5 Access for Fire-fighting Operations.

Chapter 4, Section 4.1.3 “Access” of *Planning for Bushfire Protection 2006* provides specifications on the access provisions for firefighting operations within residential subdivisions.

The public roads within the future residential subdivision shall be designed to comply with the deemed-to-satisfy provisions of Section 4.1.3(1) of *Planning for Bushfire Protection 2006* with the minimum road width being 6.5 metres with ‘No Parking’ to one side of the carriageway. Perimeter roads shall have a width of 8.0 metres, measured clear of the kerbs.

Fire trails shall be designed to comply with the deemed-to-satisfy provisions of Section 4.1.3(3) of *Planning for Bushfire Protection 2006* with the minimum formed width being 4.0 metres, within a carriageway of 6.0 metres.

The network of existing fire/access trails within the Conservation 7(2) zoned land shall be retained and maintained with connection provided to the road network within the future residential subdivision. Locked gates shall be provided at these connections.

5.6 Water Supplies for Firefighting Operations.

The new dwellings in the future subdivision created by the rezoning of the land will be connected to the Hunter Water mains water supply. Hydrants shall comply with the specifications of Australian Standard A.S 2419.2 and have a flow rate of 10 litres / second.

Fire hydrants shall be accessible and located such that a fire appliance can park within a maximum distance of 20 metres from a hydrant and the habitable building must be located such that a fire at the furthest extremity can be attacked by fire-fighters using two 30 metre hose lines and a 10 metre water jet. A clear unobstructed path between the hydrant and the most distant point of the building cannot exceed 90 metres.

Hydrant locations shall be delineated by blue markers placed on the hydrant side of the centreline of the road pavement.

5.7 Fire Fighting Resources.

The site is located within the Newcastle N3 NSW Fire Brigade Fire District with the closest station being Boolaroo [32 Fourth Street, Boolaroo]. This is a retained station.

Five additional stations are located within the NSW Fire Brigade standard operating procedures response time. These are:

- Cardiff – 18 Taylor Street Cardiff – Permanent & Retained;
- Teralba – 54 William Street, Teralba – Retained;
- Wallsend – 27 Devon Street, Wallsend – Retained;
- West Wallsend – 2 Withers Street, West Wallsend – Retained;
- Minmi – Woodford Street, Minmi – Retained.

These stations provided fire service response to the former Pasminco Cockle Creek Smelter before its closure and demolition and remain the primary structural, hazardous materials incident response to Incitec and primary response for bushfires on the site with assistance provided, under a Memorandum of Understanding [MOU] with the NSW Rural Fire Service.

The proposed rezoning of the land for industrial and residential development will not increase the demands on the existing fire-fighting service.

SECTION 6

RECOMMENDATIONS

Recommendation 1:

Asset Protection Zones:

Asset Protection Zones to the future dwellings in the subdivision of the Residential 2(1) zoned land shall be provided and maintained to the widths as defined by Table A2.4 of *Planning for Bushfire Protection 2006*, or as calculated. [Refer to Section 8 - Indicative Plan of Asset Protection Zones].

Table 4. Indicative Asset Protection Zones to the future residential lots within the Residential 2(1) precinct

Aspect	Vegetation within 140m of development	Predominant Vegetation Class	Average Slope of Land	Recommended Width of Asset Protection Zone	Width of Asset Protection Zone to be provided
Northeast	<i>Angophora inopina</i> – <i>floribunda</i>	Forest	5 degrees down slope.	25 metres.	25 metres provided by Asset Protection Zone /Perimeter Road.
East	Revegetated Low Open Forest	Forest	> 5 degrees upslope	15 metres for forest vegetation [by calculation]	> 15 metres provided by Asset Protection Zone
Southeast	Revegetated Low Open Forest	Forest	> 5 degrees upslope	15 metres for forest vegetation [by calculation]	> 15 metres provided by Asset Protection Zone
Riparian Corridors	Narrow [less than 40m] band of revegetated Low Open Forest	Rainforest classification due to low hazard	Level to < 5 degrees upslope to creek.	10 metre wide APZ to riparian corridor	> 10 metres to vegetation in riparian corridor

Recommendation 2:

Management of Asset Protection Zones:

The Asset Protection Zones shall be maintained as an Inner Protection Area in accordance with Appendix 5 *Planning for Bushfire Protection 2006* and the NSW Rural Fire Service's 'Specifications for Asset Protection Zones'.

Recommendation 3:

Covenant for the management of the Asset Protection Zones:

An 88b covenant shall be created on the title of the future lots to ensure the ongoing management of the Asset Protection Zone.

Recommendation 4:

Fire Management Plan for the Conservation 7(2) zoned land:

There shall be a Fire Management Plan prepared for the Conservation 7(2) zoned land. The Fire Management Plan shall provide the protocols for the management of the bushfire fuels and the maintenance of the fire trail network.

Recommendation 5:**Construction Standards to future dwellings:**

The application of the construction standards, in accordance with Australian Standard AS3959 shall apply to the dwellings in the future subdivision of the Residential 2(1) zoned land. The dwellings located within 100 metres of the bushfire hazard interface shall be constructed to comply with a radiant heat loading of 12.5 kW/m².

Recommendation 6:**Public Roads:**

Public access roads within the future subdivision shall be designed and constructed to comply with the specifications of Section 4.1.3 of *Planning for Bushfire Protection 2006*. The minimum formed pavement width shall be 6.5 metres with 'No Standing' to one side. Perimeter roads that adjoin the bushfire hazard shall have a minimum paved width of 8.0

Recommendation 7:**Fire Trails:**

Fire trails shall be designed to comply with the deemed-to-satisfy provisions of Section 4.1.3(3) of *Planning for Bushfire Protection 2006* with the minimum formed width being 4.0 metres, within a carriageway of 6.0 metres. The network of existing fire/access trails within the Conservation 7(2) zoned land shall be retained and maintained with connection provided to the road network within the future residential subdivision. Locked gates shall be provided at these connections.

Recommendation 8:**Water Supply for fire-fighting operations:**

Hydrants shall comply with the specifications of Australian Standard A.S 2419.2 and have a flow rate of 10 litres / second.

Fire hydrants shall be accessible and located such that a fire appliance can park within a maximum distance of 20 metres from a hydrant and the habitable building must be located such that a fire at the furthest extremity can be attacked by fire-fighters using two 30 metre hose lines and a 10 metre water jet. A clear unobstructed path between the hydrant and the most distant point of the building cannot exceed 90 metres.

Hydrant locations shall be delineated by blue markers placed on the hydrant side of the centreline of the road pavement.

SECTION 7

CONCLUSION

The rezoning proposal seeks approval to rezone the land within the former Pasminco Cockle Creek Smelter and the Incitec Pivot Fertiliser Plant on Lot 201 in DP 805914, Lot 1 in DP 523781 and Lot 1 in DP 22572 to permit Industrial 4(1) [Core]; Industrial 4(2) [General] and Industrial 4(3) [Urban Services]. The rezoning also seeks approval to create Residential 2(1) zoned land on the foot-slopes to the east of the Industrial Zoned land and Residential 2(2) to the southwest of the Industrial Zoned Land.

The residue land within the site, to the east of the proposed Residential 2(1) zoned land is proposed to be zoned Conservation 7(2) [Secondary].

The Department of Planning [DoP] issued Director Generals Specifications for the preparation of a Local Environmental Study [LES] to proceed with the rezoning of the land. The specifications in relation to bushfire included:

“Bushfire Risk Management, Including level of hazard, the guidelines contained in ‘Planning for Bushfire Protection’ and asset protection zones and levels of construction as well as demands on existing fire fighting resources”.

The Master Plan for the rezoning did not fully address these requirements, resulting in Lake Macquarie City Council staff noting that a Bushfire Assessment was needed to be provided. This report examines the potential bushfire hazard to the rezoning proposal and confirms that the future industrial and Residential 2(2) zoned land will not be subject to a bushfire hazard.

The proposed Residential 2(1) zoned land occupies to land to the east of the Industrial/Residential 2(2) zoned land with the eastern edge of the zone adjoining the land proposed to be rezoned Conservation 7(2).

Rehabilitation/revegetation of the Conservation Zone will increase the bushfire hazard to the future dwellings in the Residential 2(1) zone. This report examines the requirements for the provision of Asset Protection Zones to the future dwellings adjoining the bushfire hazard interface; the requirements for access and water supplies for fire-fighting operations and the construction standards to the future dwellings and confirms that the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*, in relation to these measures, can be achieved.

In addition, the proposed rezoning will not increase demands on the existing fire-fighting resources.

REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection* 2006;
- *Environmental Planning & Assessment Act* – 1979;
- *Rural Fires Act* – 1997;
- *Rural Fires and Environmental Assessment Legislation Amendment Act* 2002;
- *Rural Fires Regulation* 2008;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping* 2002;
- *Threatened Species Conservation Act* 1995;
- *Native Vegetation Act*;
- *Bushfire Environmental Assessment Code* 2003;
- Building Code of Australia;
- Australian Standard A.S 3959-1999 “*Construction of Buildings in Bushfire Prone Areas*”.
- *Lake Macquarie Bushfire Prone Land Map*

SECTION 8 – Indicative Plan of Asset Protection Zones

