Part A
The Proposal

Part A contains three chapters, one provides an introduction to the development including the Project site selection process and stakeholder consultation, the second a description of the Project Area and the third presents a detailed description of the proposal

1 INTRODUCTION

1.1 GENERAL

Country Energy is seeking approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for its $70 million upgrade of its electricity network between Lismore and Mullumbimby (via Ballina).

Country Energy is seeking Concept Approval for the project under Part 3A of the EP&A Act and Project Approval for the majority of the project, referred to in this application as Phase 1. In summary the Project for which Concept Approval is being sought includes the installation and operation and upgrade of 66,000 volt (66kV) and 132,000 volt (132kV) electricity transmission lines, construction of two new substations and upgrading of five existing substations between Lismore and Mullumbimby, via Ballina, on the NSW Far North Coast.

Where the alignment of power lines and/or site selection of substations is finalised, Project Approval is sought concurrent to the Concept Approval.

1.2 REGIONAL SETTING AND PROJECT LOCATION

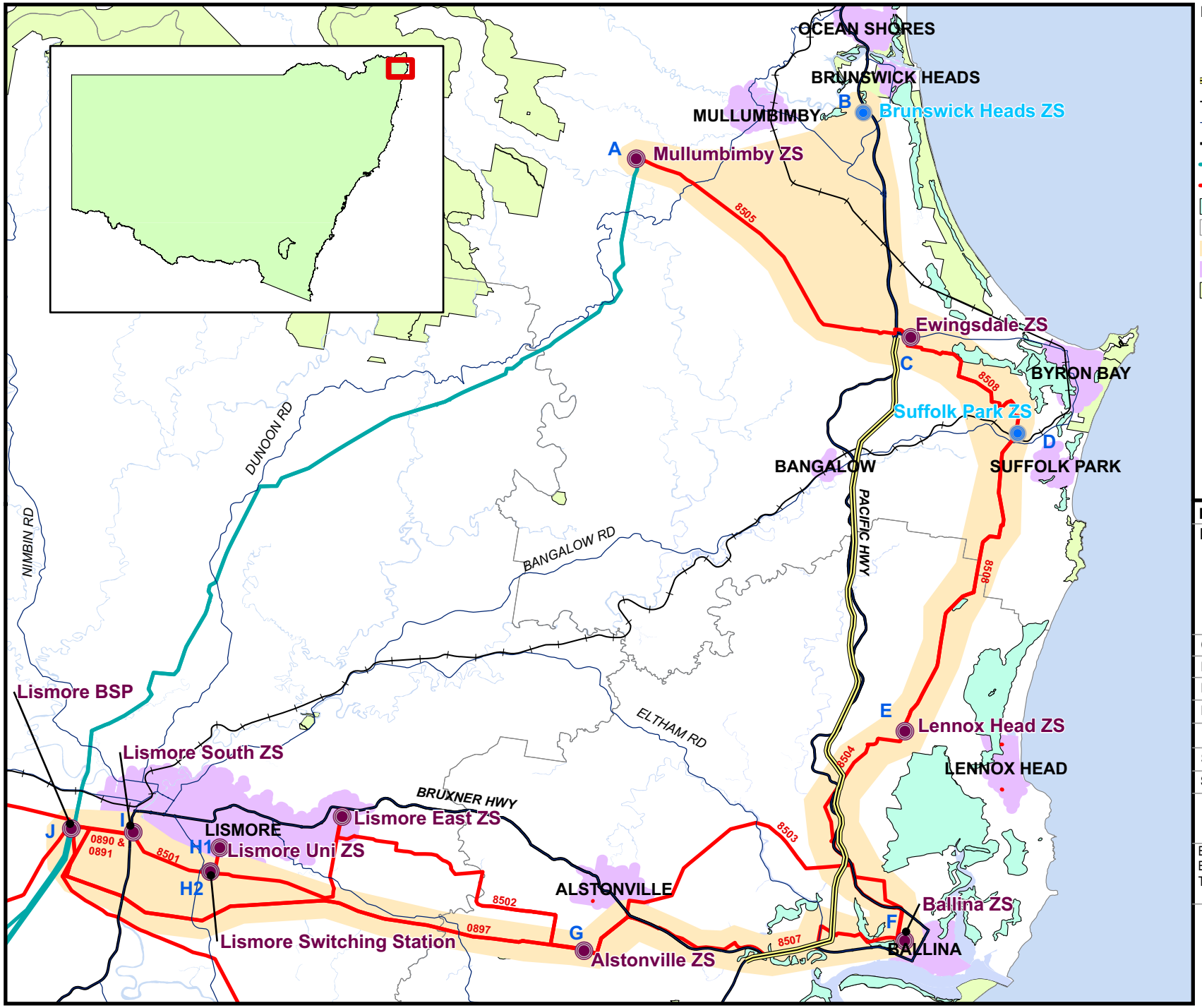
The Project Area is located on the Far North Coast of NSW approximately 800 kilometres north of Sydney. It is situated within the local government areas of Ballina, Byron and Lismore and specifically the localities of Mullumbimby, Brunswick Heads, Ewingsdale, Suffolk Park, Lennox Head, Ballina, Alstonville and Lismore.

The Project Area is a combination of defined transmission line corridors, existing and potential new substation locations, and broader yet to be defined transmission line corridors (i.e. feeders to the proposed Brunswick Heads zone substation - refer *Figure 1.1*). All of the electricity network upgrade will be contained within this Project Area and existing transmission line corridors will be used where possible.

1.3 COMPANY PROFILE

Country Energy is a leading Australian energy services corporation owned by the New South Wales Government, with around 3,925 employees serving more than 870,000 customers.

Country Energy manages Australia's largest power supply network across 95 per cent of New South Wales' land mass and offers retail electricity in five states and territories. The Country Energy regions are shown on *Figure 1.2.* The Project Area is located within Country Energy's Far North Coast region.



Legend

- Existing Substation
- Proposed Substation
- Pacific Highway Upgrade
- Casino-Murwillumbah Railway
- Main Roads
- Highway
- Existing 132kV
- Existing 66kV
- SEPP14 Areas
- LGA boundaries
- Project Area
- Built-up Areas
- National Parks

Figure 1.1
Project Area

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	29/07/08	Drawing size:	A4
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ERM

Figure 1.2 ***Country Energy's Regions***

The Country Energy product range includes bottled gas, internet services and energy efficiency advice. Country Energy also provides reticulated natural gas to 24,200 customers in southern New South Wales and water and sewerage services to 10,000 customers in far west New South Wales.

1.4 PROJECT BACKGROUND

Country Energy has identified the need for augmentation of its electricity supply network in the Lismore, Ballina, Ewingsdale and Mullumbimby areas to cater for long-term demands. The Far North Coast is one of the fastest growing areas of New South Wales with the population expected to increase by 26% to 290,000 by 2031 (Transport and Population Data Centre, 2007). Due to this significant population increase, upgrade and expansion of electricity services in the region is required to ensure a safe and reliable supply in the future.

A line route selection study was initially undertaken titled Proposed Lismore to Mullumbimby Electricity Network Upgrade – Line Route Options Report (ERM, 2008a) (hereafter referred to as 'the LRS report') which is provided as *Annex A*. The LRS report included desktop and on ground investigations and examined a number of transmission line route options. It was concluded that much of the electricity network can be accommodated in existing cleared transmission line routes, therefore minimizing environmental and social impacts of the Project. The existing 66kV electricity network and preliminary study area for the LRS is provided in *Figure 1.1* of the LRS report. The LRS report does not address options for the Brunswick Heads Feeder Loop and substation (refer to *Section 1.6*), or the Suffolk Park zone substation. Site selection for Suffolk Park substation was undertaken as a separate site selection and environmental assessment process by MWH (refer *Annex Q*). Options for the

Brunswick Heads Feeder Loop and substation will be addressed in a site and line route selection and environmental assessment report at a later stage.

In November 2007 Country Energy submitted a request to the Minister for Planning for a project specific order to be made under *Section 75B* of the EP&A Act and to authorise the lodgement of a concept plan for the Project. A project specific order and authorisation for the lodgement of a concept plan was issued on 1 February 2008.

The Project involves both the construction of new transmission lines and substations, and upgrading of existing transmission lines and substations. The majority of the proposed upgrade works will be located where there is an existing cleared transmission line corridor or a disturbed substation site. In areas where new substations and transmission lines are proposed detailed environmental assessments have been undertaken.

The Project Area includes extensive areas of cleared agricultural land, residential and rural residential areas, potential future residential areas, National Parks and Nature Reserves as well as significant wetlands and waterways. Some sections of the Project Area are affected by potential flood inundation and high risk for potential acid sulphate soils. There are two heritage listed power stations located on substation sites where upgrades are proposed.

1.5 DIRECTOR GENERAL'S REQUIREMENTS

Director General's Requirements (DGRs) for the project were issued in April 2008. A copy of the DGRs is provided as *Annex B.* *Table 1.1* details the sections of this environmental assessment (EA) report that address each requirement.

Table 1.1 Consideration of Director General's Requirements

	Director General's Requirements	Applicable Section of EA Report
General Requirements	The Environmental Assessment must be prepared to a high technical and scientific standard and must include:	
	• an executive summary	Executive Summary
	• a detailed description of Phase 1 of the proposal, including construction, operation, and staging. Sufficient information must be provided to the remaining phases to enable a clear understanding of these components.	*Chapter 3*
	• an assessment of the environmental impacts of the project, with particular focus on the key assessment requirements specified below.	*Chapters 6 to 16*
	• consideration of relevant guidelines including the Department's draft *Network Electricity Systems and Facilities Guidelines* (2002).	*Chapter 4*
	• justification for undertaking the project with consideration of the benefits and impacts of the proposal.	*Chapter 4*
	• a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project.	*Chapter 19*
	• certification by the author of the Environmental Assessment that the information contained in the Assessment is neither false nor misleading.	See authorisation page at the front of this EAR.
Key Assessment Requirements	The Environmental Assessment (EA) must include assessment of the following key issues:	
	• **Strategic Planning** – the Environmental Assessment must provide:	
	◦ a strategic assessment for the project, including justification of the need, scale, scope and location of the project in relation to predicted electricity demand, predicted transmission constraints, alternative strategies, and the strategic direction of the region and the State regarding the State electricity supply and demand and electricity generation technologies;	Section 4.4
	◦ a strategic planning consideration of the project and an analysis of the suitability of the proposed transmission route with respect to potential land use conflicts with existing and future surrounding land uses including urban growth areas (e.g. Cumbalum area), agricultural uses and highway upgrades. Reference should be made to the Far North Coast Regional Strategy;	Section 4.3
	◦ an assessment of the potential impacts of the project to influence changes to future land use character in proximity to the site;	Section 4.6

Director General's Requirements	Applicable Section of EA Report
• **Flora and Fauna Impacts** – the Environmental Assessment must include an assessment of impacts of the project on flora and fauna, prepared in accordance with *Guidelines for Threatened Species Assessment* (DEC/DPI, July 2005). The Environmental Assessment must specifically consider threatened species and communities listed under both State and Commonwealth legislation that have been recorded in the vicinity of the site and surrounding land, and SEPP 14 wetlands.	*Chapter 6* and *Annex H*
• **Heritage Impacts** – the Environmental Assessment must include an assessment of impacts on Aboriginal heritage, in accordance with draft *guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005).	*Chapter 7* and *Annex I*
The Environmental Assessment must also include an assessment of the potential for the project to impact on known items of non-Aboriginal heritage significance, particularly the former Lismore and Mullumbimby Power Stations, and include a management framework for management of any additional heritage items that may be uncovered during construction of the project.	*Chapter 8* and *Annexes J and K*
• **Hazards and Risk Impacts** – the Environmental Assessment must include a screening of potential hazards on site to determine the potential for off site impacts, particularly at the substations, and any requirement for a Preliminary Hazard Analysis (PHA). The Environmental Assessment must also include an assessment of the risk to human health from Electric and Magnetic Fields associated with the project, with reference to Australian Radiation Protection and Nuclear Safety Agency standards.	*Chapter 3, Chapter 5 Chapter 11* and *Annex N and Annex O*
• **Noise Impacts** – the Environmental Assessment must include an assessment of the noise impacts of new and upgraded substations, in accordance with the *NSW Industrial Noise Policy* (EPA, 2000).	*Chapter 9* and *Annex L*
• **Visual Amenity Impacts** – the Environmental Assessment must include an assessment of the visual impacts associated with the proposal, including the impact on local and regional views by transmission lines and substations.	*Chapter 10* and *Annex M*
• **Construction Related Impacts** – the Environmental Assessment must include details of construction related impacts associated with the proposal, including noise impacts (against the criteria provided in Chapter 171 of the *Environmental Noise Control Manual* (EPA, 2004), water quality impacts and soil and erosion implications. The Environmental Assessment must also indicate how these impacts would be mitigated and managed consistent with best environmental practice.	*Chapter 13*

	Director General's Requirements	Applicable Section of EA Report
	• **General Environmental Risk Analysis** – notwithstanding the above key assessment requirements, the EA must include an Environmental Risk Analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of the proposed mitigation measures. Where additional key environmental impacts identified through this environmental risk analysis, an appropriately detailed impact assessment of this additional key environmental impact must be included in the EA.	*Chapter 17*
Consultation Requirements	You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the EA:	
	• NSW Department of Environment and Climate Change;	Section 1.8
	• NSW Department of Water and Energy;	Section 1.8
	• NSW Health;	Section 1.8
	• Ballina Shire Council;	Section 1.8
	• Byron Shire Council;	Section 1.8
	• Lismore City Council;	Section 1.8
	• each landowner and land occupier adjacent to the boundary of the proposed development sites and transmission route; and	Section 1.8 and Annex C & D
	• the local community.	Section 1.8 and Annex C & D
	The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.	

1.6 PROJECT OVERVIEW

Country Energy is specifically seeking Concept Approval for:

1. Upgrade, including any necessary realignments or deviations of transmission lines:

    a. Mullumbimby to Ballina - 66kV power line from the Mullumbimby substation to the Ballina substation, to 132 kV; and

    b. Ballina to Alstonville - 66kV power line from the Ballina substation to join to the new 132kV Lismore/Alstonville transmission line, to 132kV.

2. Construction of new transmission lines:

    a. Brunswick Heads feeder loop - 132kV transmission line from the Mullumbimby to Ewingsdale transmission line to the Brunswick Heads substation;

    b. Lismore to Alstonville - 132kV transmission line from the Lismore 132kV bulk supply point (BSP) substation to join to the upgraded Alstonville to Ballina 132kV transmission line near Alstonville;

    c. 66kV power line from Lismore South 66/11kV substation to the Lismore 66kV switching station; and

    d. two underground 66kV power lines from Lismore bulk supply point substation to Lismore South substation.

3. Construction of new substations:

    a. 132/11kV substation at Brunswick Heads (the Brunswick Heads substation); and

    b. 132/11kV substation at Suffolk Park (the Suffolk Park substation).

4. Upgrade of substations:

    a. Mullumbimby 132/66/11kV substation (Mullumbimby substation) to 132/11kV;

    b. Ewingsdale 66/11kV substation (Ewingsdale substation) to 132/11kV;

    c. Lennox Head 66/11kV substation (Lennox Head substation) to 132/11kV;

    d. Ballina 66/11kV substation (Ballina substation) to 132/66/11kV;

    e. Lismore 132/66/11kV bulk supply point (Lismore substation); and

    f. Lismore South 66/11kV substation (Lismore South substation).

Country Energy is seeking Concept Approval for the Project and concurrently seeking Project Approval for Phase 1 of the project which is likely to include the following specific tasks from those listed above:

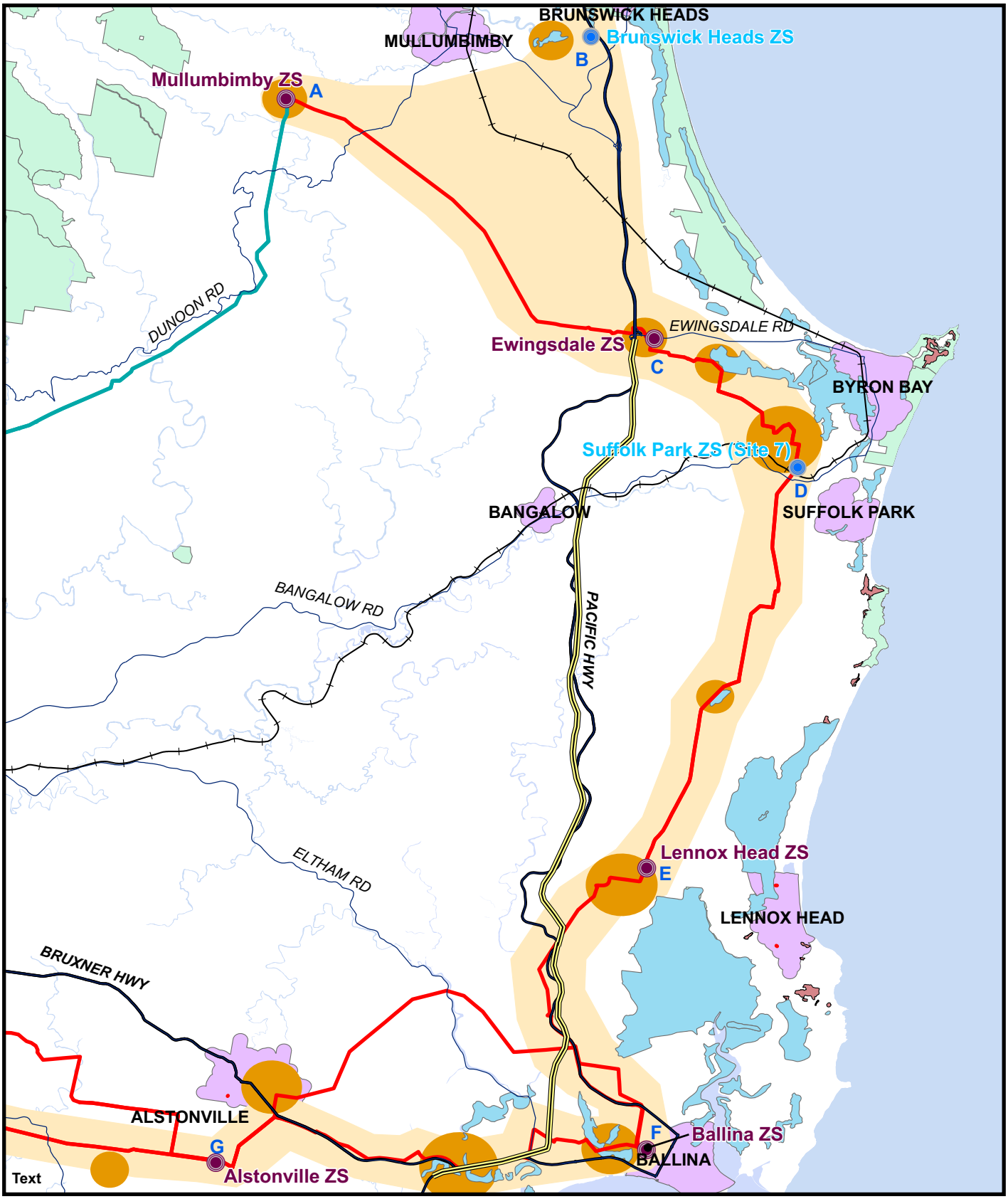
- *1. a and b;*
- *2. b, c and d;*
- *3 b; and*
- *4. a, b, c, d, e and f.*

1.7 METHODOLOGY

A LRS report was prepared to investigate the potential constraints to the upgrade of the electricity network between Lismore and Mullumbimby. The LRS report identified a number of 'hotspots' that would require more detailed investigation as part of preparation of this EAR. These 'hotspots' are:

- Mullumbimby substation – due to a heritage listed power station located at the site;
- Skinners Shoot – due to the proximity of the transmission line to residential areas, visual impacts resulting from vegetation removal and the likelihood of acid sulphate soils;
- Between Lennox Head substation and Ballina – due to potential flooding impacts and likelihood of acid sulphate soils;
- Ballina – due to the proximity of the transmission line to existing and proposed residential areas and the SEPP 14 wetland to the west of Ballina;
- Ewingsdale – due to the proximity of the transmission line to residential areas;
- Alstonville - due to the proximity of the transmission line to residential areas; and
- Lismore South substation – due to a heritage listed power station located at the site.

In addition, the substation sites (existing and proposed) are located in potentially sensitive areas. This EAR focuses assessment on these hotspots and potentially sensitive areas. These areas are illustrated on *Figure 1.3* and *Figure 1.4*.



Legend

- Existing Substation
- Proposed Substation
- Casino-Murwillumbah Railway
- Pacific Highway Upgrade
- Main Roads
- Highway
- Existing 132kV
- Existing 66kV
- SEPP14 Wetlands
- SEPP26 Littoral Rainforest
- Potential Environmental Constraints
- Study Area
- Built-up Areas
- National Parks

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	05/08/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
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Figure 1.3

Potentially Sensitive Areas (Mullumbimby to Ballina)

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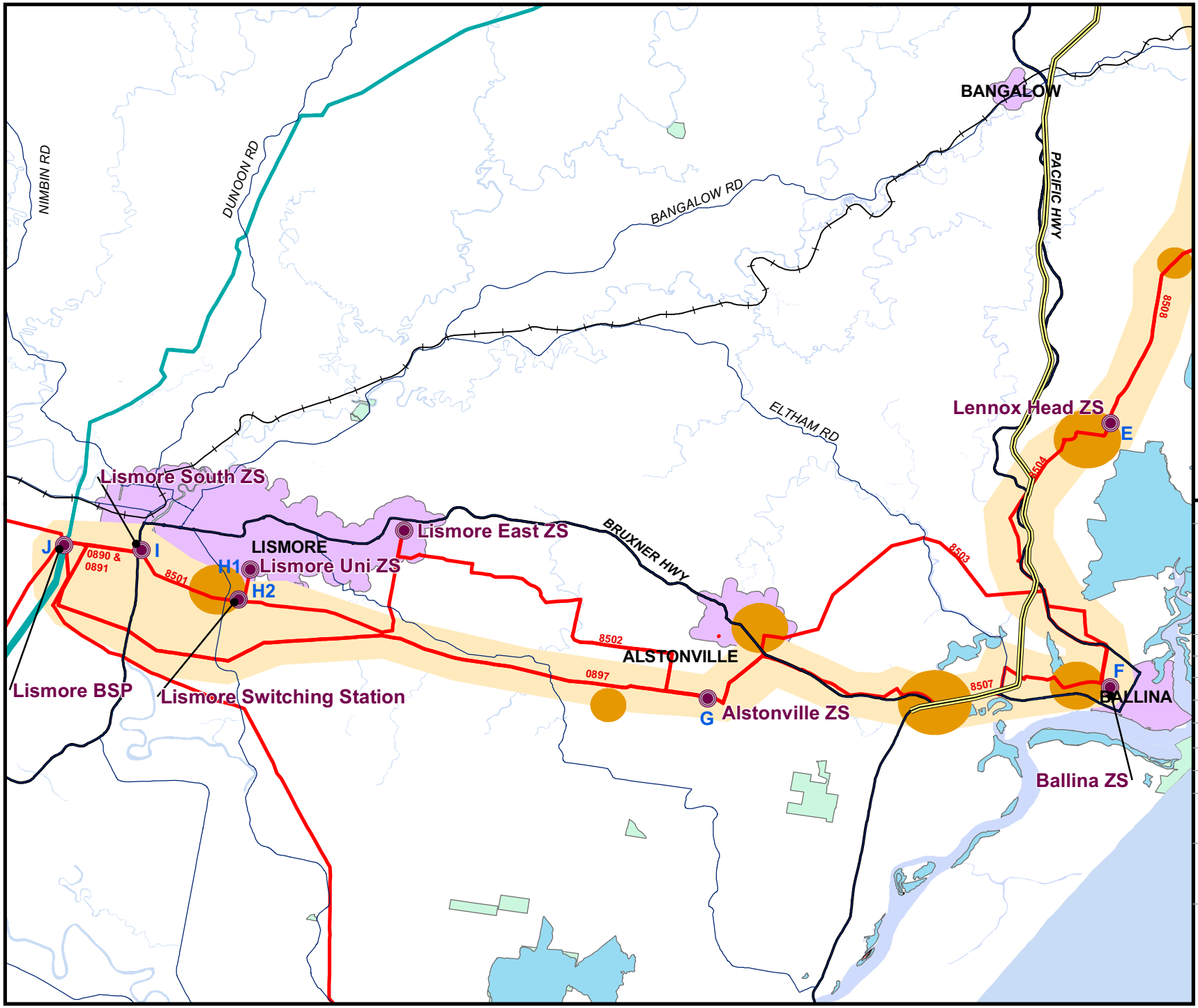

Legend

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- Existing 66kV
- Potential Environmental Constraints
- SEPP26 Littoral Rainforest
- Study Area
- Built-up Areas
- National Parks
- SEPP14 Wetlands

Figure 1.4

Potentially Sensitve Areas (Ballina to Lismore)

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	29/07/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands		
Scale:	Refer Scale Bar		

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An environmental envelope approach has been undertaken for the assessment to allow for maximum flexibility for the proposed Project within acceptable environmental parameters. The EA report has been prepared using conservative scenarios for assessments where necessary to develop a range of acceptable environmental and social parameters within which the proposal can operate. The Project can therefore remain flexible within the constraints of the identified environmental envelope.

1.7.1 Environmental Assessment Report Structure

This EAR contains three volumes. The main text is within Volume 1, *Annexes A* to *P* and specialist technical studies in Volume 2 and *Annex Q* in Volume 3.

Volume 1 – Environmental Assessment Report

Volume 1 is divided into a number of Parts including:

Executive Summary

The executive summary provides a brief overview of the project, key environmental issues and assessment results, and an outline of environmental management procedures.

Part A – The Proposal

Part A contains three chapters, one provides an introduction to the development including the Project site selection process and stakeholder consultation, the second a description of the Project Area and the third presents a detailed description of the proposal.

Part B – Project Justification, Planning Framework

Part B contains two chapters; the first provides justification for the proposal while the second provides a description of the legislative considerations and approval requirements for the proposed development.

Part C – Environmental Interactions

Part C contains 11 chapters; it describes the interactions between the Project and the biophysical environment. It provides an assessment of the potential environmental impacts associated with the Project and describes the mitigation measures, which form a part of the Project.

Part D – Environmental Management and Draft Statement of Commitments

Part D provides an outline of the environmental management procedures and summarises the environmental mitigation measures to be adopted as a part of the proposal. A draft statement of commitments is also included.

Volume 2 – Annexes A to P -Technical Investigations

Volume 2 comprises of a series of supporting technical reports that investigate the environmental implications of the project and mitigation and management measures. The reports are:

- *Proposed Lismore to Mullumbimby Electricity Network Upgrade* – ***Line Route Options Report***, March 2008 prepared by Environmental Resources Management Australia (ERM). Refer to *Annex A*;

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Ecological Assessment***, July 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex H*;

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Aboriginal Heritage Assessment Report***, July 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex I*;

- *Mullumbimby Power Station* - ***Heritage Impact Assessment***, August 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex J*.

- *Lismore Power Station* - ***Heritage Assessment****,* August 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex K;*

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Noise Impact Assessment***, July 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex L*;

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Visual Assessment Report***, July 2008, prepared by Environmental Resources Management Australia (ERM). Refer to *Annex M*;

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Generic Assessment of Transmission Line Electric and Magnetic Fields***, 9 September 2008, prepared by Connell Wagner. Refer to *Annex N*; and

- *Lismore to Mullumbimby Electricity Network Upgrade* – ***Generic EMF Assessment of Upgrade of a Zone Substation from 66kV to 132kV***, 18 September 2008, prepared by Connell Wagner. Refer to *Annex O*.

Volume 3 – Annex Q – Suffolk Park Substation and Line Route Selection - Technical Investigation

Volume 3 comprises a report investigating environmental implications of the construction of the Suffolk Park zone substation and the installation of transmission lines around the substation. The report is titled:

- *Suffolk Park Substation* – ***Suffolk Park Substation and Line Route Selection REF,*** 8 December 2008, prepared by MWH. Refer to Annex Q

1.8 CONSULTATION

1.8.1 Community Consultation

Country Energy acknowledges the importance of engaging all relevant stakeholders throughout the life of the Project, and in particular during the environmental approvals stage.

The objectives for consultation are to ensure stakeholders:

- have access to up-to-date, relevant information regarding the Project;
- are provided with the opportunity to raise their concerns and have these concerns responded to by Country Energy; and
- are provided with an opportunity to raise suggestions to improve the Project.

A community consultation strategy was prepared and enacted for the Project including to-date:

- newsletter updates (2 project newsletters and a number of area specific attachments have been distributed to community members that live near or within the Project Area);
- press releases;
- a question and answer leaflet;
- a technical leaflet;
- a 1800 free call number; and
- meetings with directly affected landholders and follow up correspondence to same.

Examples of the above consultation materials are provided in *Annex C*.

Comments received via email, post and the 1800 number were logged and considered during the EA. As a result of feedback received during the initial consultation process Country Energy attended a number of meetings with specific community stakeholder groups in areas along the proposed transmission line route including Alstonville, Suffolk Park, Ewingsdale and Laverty's Gap (Mullumbimby). The aim of these meetings was to table and discuss potential options for the siting of the proposed new power transmission infrastructure, and listen to the concerns of the community stakeholders. This informed a number of specific decision made with regard to proposed Project design.

In the process of evaluating the preferred Project transmission line corridors and substation sites Country Energy have also made contact with directly affected landholders. This work has been undertaken with the assistance of Right of Way Services (ROW) who are easement, service corridor and right of way specialist. A summary of the consultation activities for a specific section of the proposed transmission line route undertaken by ROW is provided as *Annex D*. The typical comments and concerns encountered include:

- concern with regard to visual impact (refer to *Chapter 10*);

- requests for under-grounding of power lines (refer to *Chapter 3*);
- property access issues (refer to *Section 3.6.2 & 13.2.1*);
- disruption caused by the construction process (refer to *Chapter 13*);
- traffic hazards (refer to *Chapter 13*);
- concerned with appearance of larger poles or towers (refer to *Chapter 10)*;
- vegetation impacts (refer to *Chapter 6)*;
- height of power lines (refer to *Chapter 10)*;
- location of new lines (refer to *Chapter 3)*;
- electromagnetic fields (EMF) (refer to *Chapter 11)*; and
- line buzz (refer to *Section 9.10.2)*.

Further consultation is proposed post approval including meetings with directly affected landholders and a possible third newsletter if this is considered necessary.

1.8.2 Consultation with Government Agencies

Consultation with key government departments, councils and service agencies was undertaken in the preparation of the technical reports and the EAR. A Planning Focus Meeting (PFM), including a site inspection was held on 4 December 2007 to discuss the project and to enable the relevant stakeholders to provide informed comments to the DoP regarding the DGRs. The following stakeholders were invited to the meeting and were sent a project briefing including details of the project and the preferred route/substation locations:

- Lismore City Council;
- Ballina Shire Council;
- Byron Shire Council;
- Department of Environment and Climate Change (DECC);
- Department of Water and Energy (DWE);
- Department of Planning
- NSW Health; and
- Roads and Traffic Authority (RTA).

Unfortunately only representatives from Lismore City Council, Ballina Shire Council and the Department of Planning were able to attend the PFM. No formal comments were received from the government agencies with the exception of NSW Health who indicated they did not have any issues relating to the Project provided that proper buffer distances are maintained between residences and lines in accordance with the Australian Radiation Protection and Nuclear Safety Agency and DECC policies and

guidelines. Electric and magnetic fields (EMF) are discussed in detail in *Chapter 11* and *Annex M*.

In addition, the abovementioned agencies were consulted by the Department of Planning in the preparation of the DGR's for the Project. A copy of the DGR's is provided as *Annex B* and *Table 1.1* outlines where each requirement is addressed within this report.

1.8.3 Aboriginal Heritage Consultation

A detailed Aboriginal Heritage Assessment was undertaken for the Project. The results of this report are summarised in *Chapter 7* with the complete report provided as *Annex I*.

The involvement and input of the Aboriginal community is an essential component of any Aboriginal cultural heritage assessment. Consultation with the local Aboriginal community was ongoing throughout this project as required in the DECC publication entitled "*Interim Community Consultation Requirements for Applicants"* 2004.

Due to the significant size and complexity of this project, the Aboriginal heritage assessment was undertaken in a staged process. The three stages undertaken were:

- Stage 1: Initial start-up meeting;
- Stage 2: Survey; and
- Stage 3: Post survey discussion meeting.

These are addressed in *Chapter 7* and *Annex I.*

1.8.4 Non-Aboriginal Heritage Consultation

Mullumbimby Power Station

A formal consultation meeting was held on 16 April 2008 regarding the Mullumbimby Power Station. Attendees at the meeting were:

- representatives of the Brunswick Heads Historical Society;
- representatives of the National Heritage of Australia NSW Industrial Heritage Committee;
- Ray Musgrave – a former employee at the power station; and
- Graham Maggs and Threa Gilroy – concerned community members.

Lismore Power Station

Informal consultation has been undertaken regarding the Lismore Power Station. On the 25 June 2008 ERM and Country Energy employees held meetings with Bernie Childs (President of the Richmond River Historical Society), Rod Mallum (Lismore City Council Heritage Officer) and Ken Young (Heritage Consultant).

2 PROJECT AREA AND LAND USE DESCRIPTION

The Project Area is located within the Far North Coast of NSW which covers an area of 10,293 square kilometres. The proposed main 132kV transmission line corridor covers a distance of approximately 110 kilometres from Lismore to Mullumbimby via the localities of Alstonville, Ballina, Lennox Head, Suffolk Park, Ewingsdale and Brunswick Heads (refer *Figure 1.1*) and occurs within the Local Government Areas (LGAs) of Lismore City Council, Ballina Shire Council and Byron Shire Council.

Existing substation sites are owned by Country Energy. However, Country Energy holds few easements over the existing transmission line corridors. The existing corridors are used and managed in accordance with the Electricity Supply Act 1995. Country energy will negotiate easements for new significant deviations from the existing alignment and for any new transmission line routes over privately owned land.

Acquisition of new substations sites will involve submission of plans of acquisition for registration with Land and Property Information (LPI).

2.1 EXISTING TRANSMISSION LINE CORRIDORS

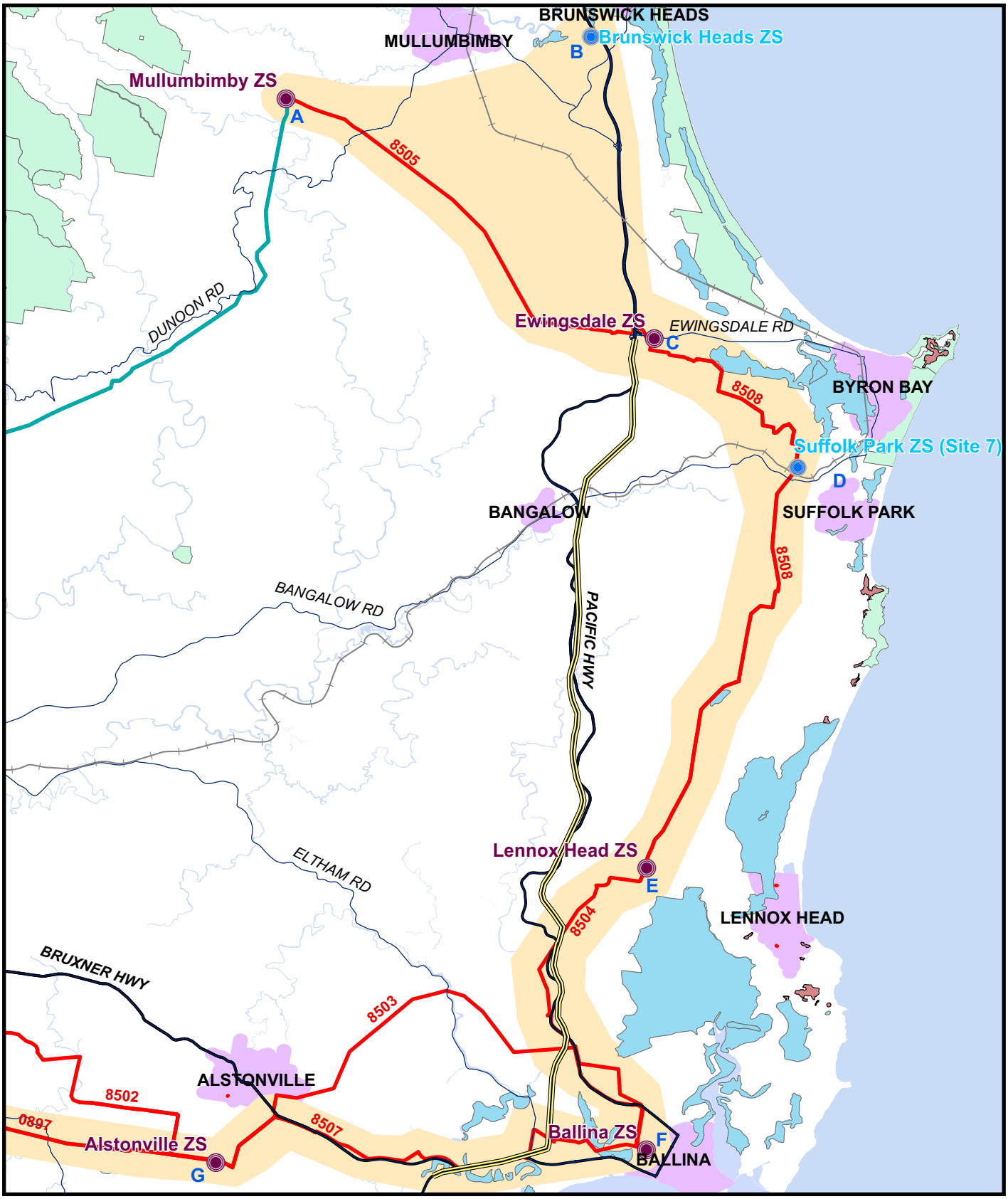
2.1.1 Mullumbimby to Ballina

There is an existing transmission line between Mullumbimby and Ballina which passes via the Ewingsdale, Suffolk Park (proposed) and Lennox Heads substations. This transmission line route is illustrated on *Figure 2.1*.

Much of this section of the transmission line corridor is cleared rural land with scattered trees. Around Mullumbimby the corridor traverses quite hilly country before crossing a ridgeline at Coolomon Scenic Drive where it then follows an undulating valley to Ewingsdale. The transmission line passes through residential areas in Ewingsdale, across low lying swamp land to the south east of Ewingsdale before spanning an existing quarry and reaching Skinners Shoot. The Skinners Shoot section of the corridor is a small vegetated ridgeline located within a residential area. South of Skinners Shoot the corridor crosses lower lying agricultural land before going over a steep rise and crossing the main North Coast Railway Line. The corridor then passes through generally cleared hilly rural land and then south to low lying flood plains before running parallel to the Pacific Highway into Ballina and to the Ballina substation. Main rural land uses in this area include macadamia nut farming in the higher sections as well as sugarcane farming closer to the coast and on floodplains. Other common agricultural activities include beef and dairy cattle farms and horticultural crops such as mangoes and custard apples.

2.1.2 Ballina to Alstonville

In Ballina the transmission line corridor is located adjacent to residential, open space, industrial and wetlands areas and is illustrated on *Figure 2.2*. Just west of Ballina the corridor spans a SEPP 14 wetland. The corridor runs generally parallel to the Pacific Highway on the western side of Ballina adjacent to rural land used mainly for sugarcane cropping. The corridor then heads north west parallel to the Bruxner Highway and climbs the steep hills towards Alstonville. Land use along this section is mainly rural with some vegetation in sections. Just east of Alstonville the transmission line corridor diverts south west towards the Alstonville substation (located off Wardell Road).



Legend

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- Existing 66kV
- SEPP14 Wetlands
- SEPP26 Littoral Rainforest
- Study Area
- Built-up Areas
- National Parks

Figure 2.1

Existing Transmission Line Corridor (Mullumbimby to Ballina)

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/08	Drawing size:	A4
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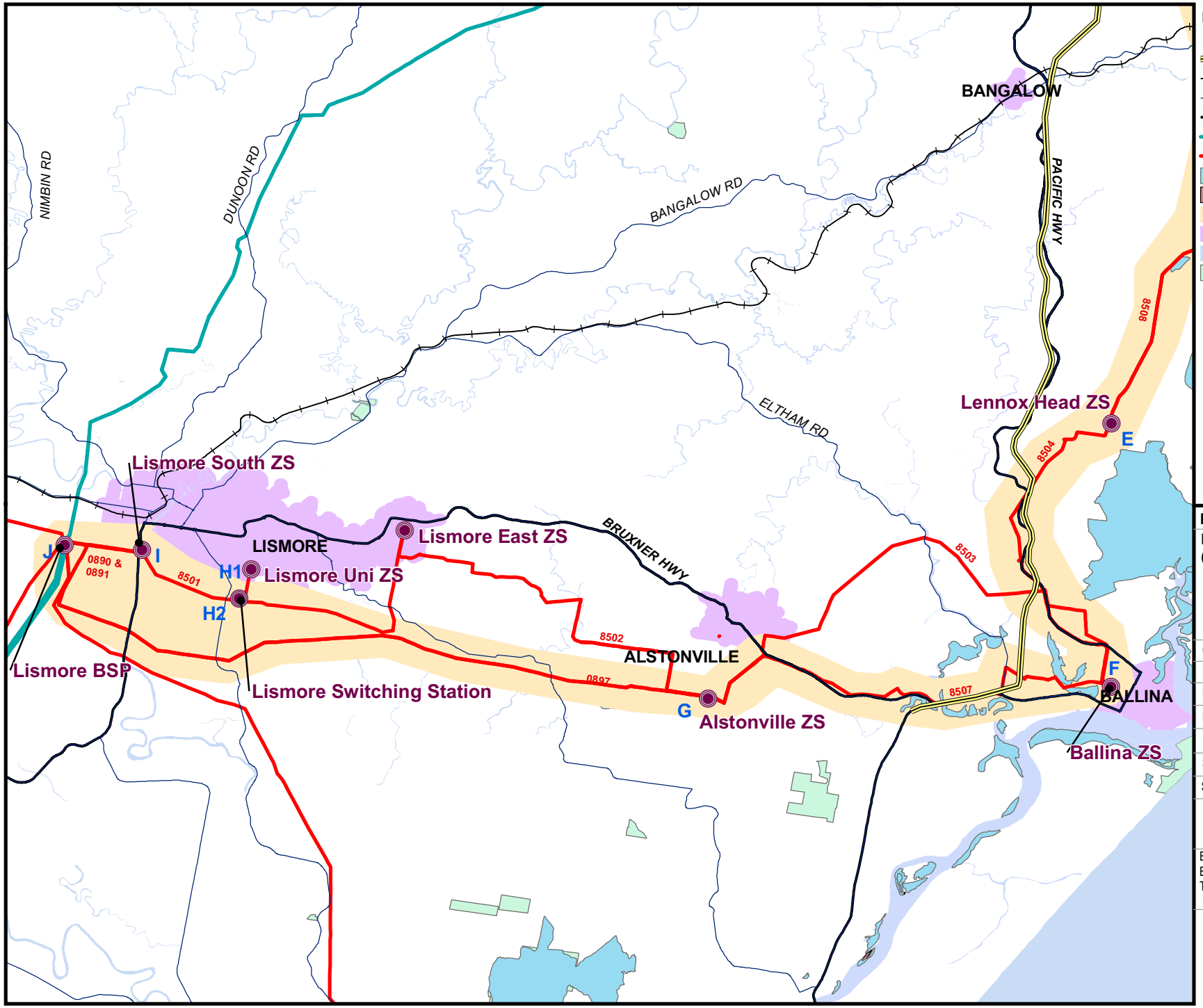

Legend

- Existing Substation
- Pacific Highway Upgrade
- Casino-Murwillumbah Railway
- Main Roads
- Highway
- Existing 132kV
- Existing 66kV
- SEPP14 Wetlands
- SEPP26 Littoral Rainforest
- Study Area
- Built-up Areas
- Water Features
- National Parks

Figure 2.2

Existing Transmission Line Corridor (Ballina to Lismore)

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 1 2 4 6 8 km

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2.2 NEW TRANSMISSION LINE CORRIDORS

2.2.1 Brunswick Heads Feeder Loop Corridor

The route for the Brunswick Heads Feeder Loop is yet to be finalised. The corridor within the Project Area is illustrated on *Figure 2.3*. This investigation area forms a triangle between the Mullumbimby to Ewingsdale corridor and Brunswick Heads.

The corridor is west of the Pacific Highway and includes the undulating floodplains of Pipeclay Creek and Kings Creek and steeper land surrounding Macauley's Lane and The Saddle Road. Much of the land use along this corridor is rural and rural residential. There are significant stands of vegetation as well as cleared areas used for agricultural activities within the corridor.

2.2.2 Lismore to Alstonville

The transmission line corridor between Lismore and Alstonville heads generally east/west. The corridor comprises predominantly cleared undulating to hilly country south of Lismore used primarily for agricultural purposes. The line traverses a number of waterways including Marom Creek, Tucki Tucki Creek and the Wilsons River. Common land uses within this corridor include horticultural farms (such as macadamias) and dairy and beef cattle farming. This corridor is illustrated on *Figure 2.4*.

2.2.3 Lismore South Substation to Lismore Switching Station Transmission Line Corridor

The transmission line corridor between Lismore South substation and Lismore switching station (refer *Figure 2.4*) traverses the Wilsons River to the east of Lismore South substation and curves around the base of 'Mount Wilson' in low lying flood affected land. The corridor then passes through rural land, a residential area in south Lismore and between Lismore Council's waste treatment depot and the Lismore Botanic Gardens before crossing more rural land and culminating at the Lismore switching station.

2.2.4 Lismore Bulk Supply Point Substation to Lismore South Substation

The transmission line corridor between Lismore South substation and Lismore bulk supply point substation along Three Chain Road as illustrated on *Figure 2.4*. The corridor is adjacent to industrial businesses on the western side of Lismore and goes past the Lismore airport and low lying rural land before reaching the Lismore bulk supply point substation.

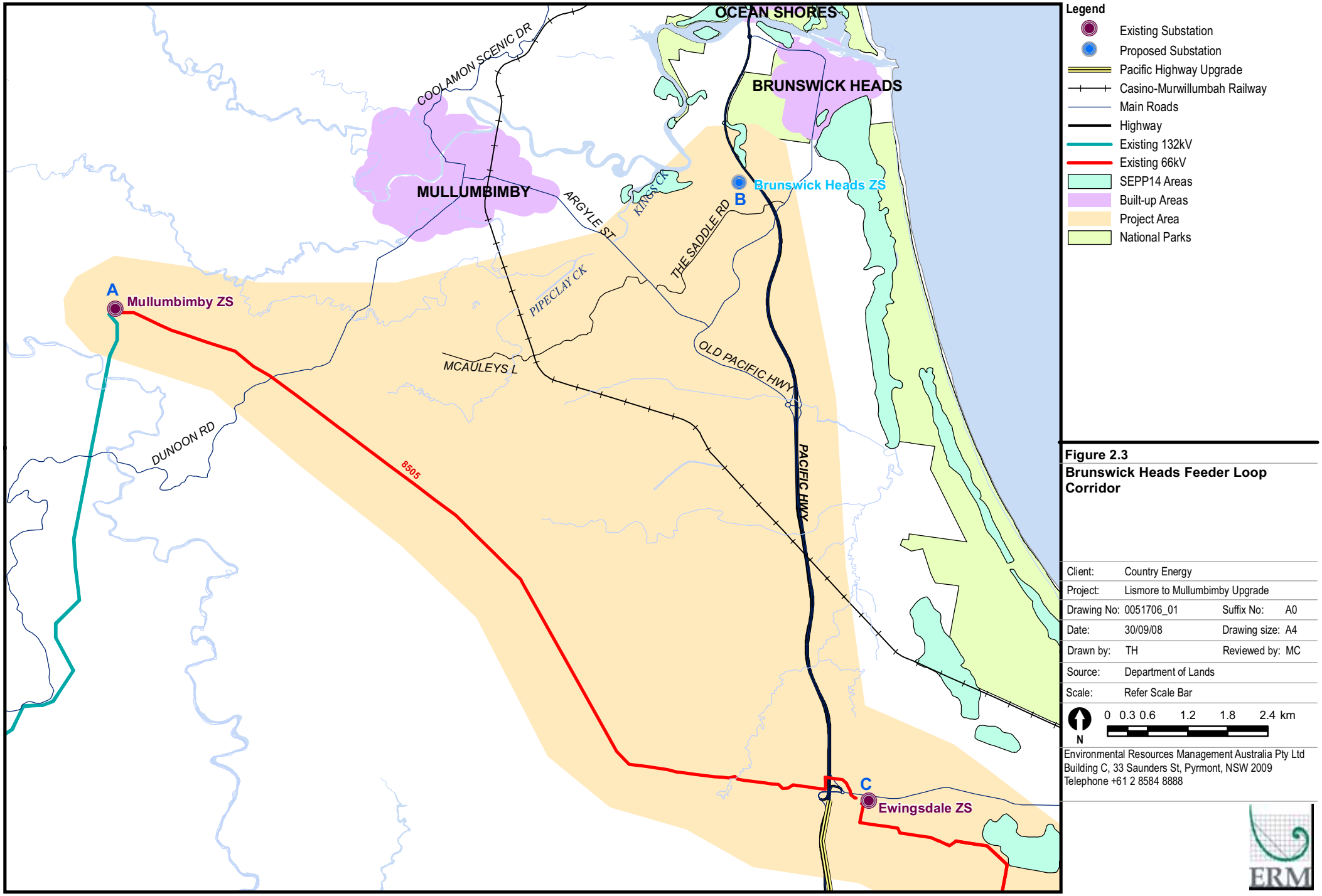

Figure 2.3
Brunswick Heads Feeder Loop Corridor

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 0.3 0.6 1.2 1.8 2.4 km

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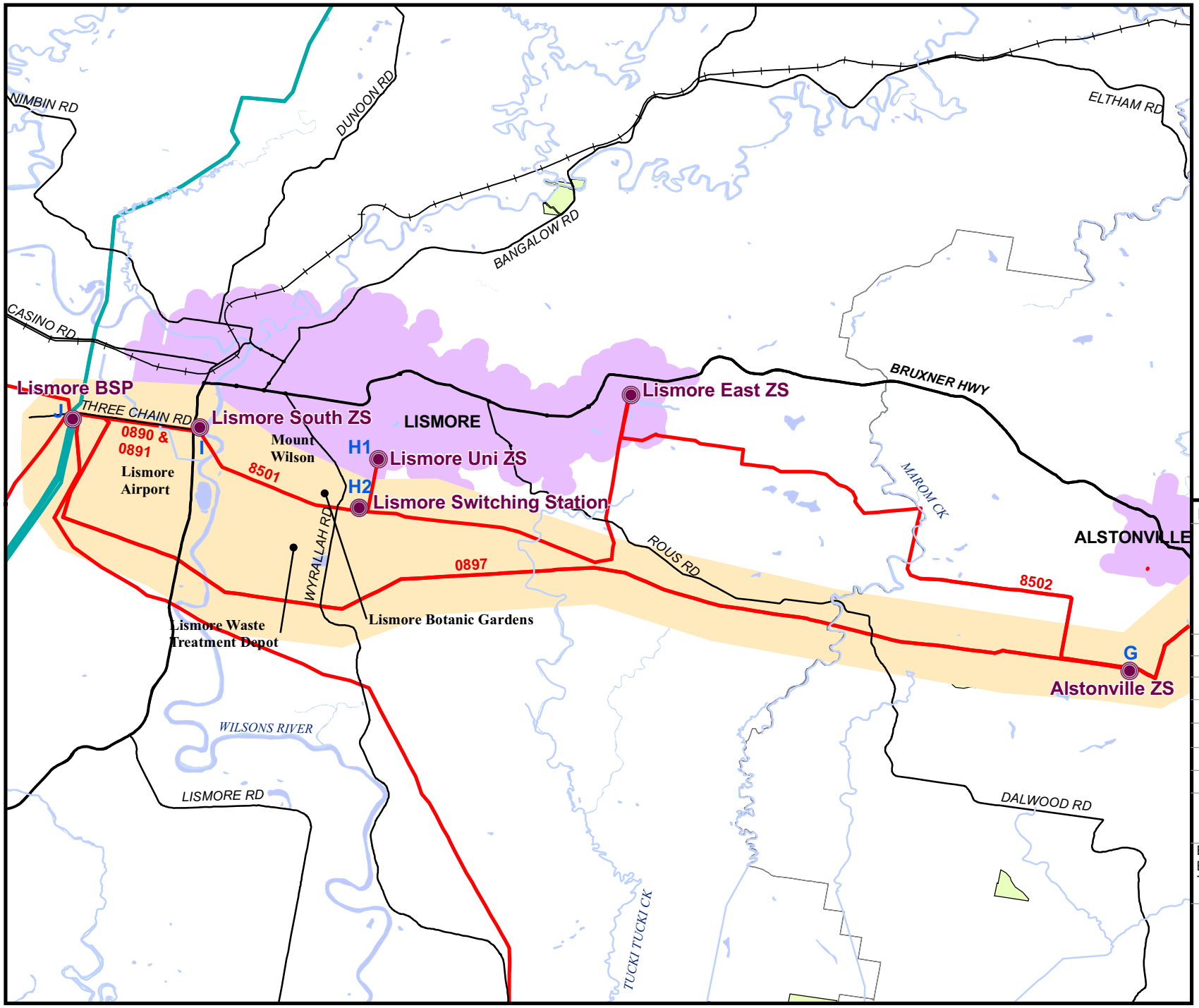

Legend

- Existing Substation
- Casino-Murwillumbah Railway
- Main Roads
- Highway
- Existing 132kV
- Existing 66kV
- LGA Boundaries
- Project Area
- Built-up Areas
- National Parks

Figure 2.4
New Transmission Line Corridors (Lismore to Alstonville)

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 0.5 1 2 3 4 km

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2.3 NEW SUBSTATIONS

2.3.1 Brunswick Heads Substation

Country Energy intends to construct a new substation within the northern portion of Lot 10 DP 844553 Bashforths Lane, Brunswick Heads which is indicated on *Figure* 2.5. Lot 10 DP 844553 Bashforths Lane, Brunswick Heads is approximately 0.89ha in area. The proposed substation site is to be located in a predominately cleared rural property. The Pacific Highway is located just north east of the site. Low lying flood affected land is to the north west and west of the site and rural land to the south. The site is currently used for agricultural activities.

2.3.2 Suffolk Park Substation

The Suffolk Park substation is to be located in the south western corner of Lot 9 DP 588885, at the end of Yagers Lane, near Suffolk Park. Lot 9 DP 588885 is approximately 2.7 hectares in area. The proposed location of the substation is illustrated within *Figure 2.6*. The substation site has previously been cleared and used for pasture/cropping activities and is currently vegetated with native pastures and used for low intensity cattle grazing.

The topography of the site is undulating and it slopes from the south at approximately 100m (AHD) to the north with the lowest lying area of the site in the north eastern corner.

(Source: Google Earth Pro 2008)

Photograph 2.1 Aerial Photograph of the Proposed Suffolk Park Substation Location (highlighted in red).

2.4 SUBSTATIONS TO BE UPGRADED

2.4.1 Mullumbimby Substation

The Mullumbimby substation is located at Lot 52 DP778243 Wilsons Creek Road, Mullumbimby. The site is approximately 2.39ha. The substation is located adjacent to Australian Pipeline Trust's DirectLink AC/DC converter station (see *Figure 2.7*).

The Mullumbimby substation site is located within a relatively remote gully adjacent to a hillside in a rural area. The site comprises an original heritage listed power station building and the electricity substation which is secured behind a high chain wire safety fence. The power station building is located to the rear (south) of the site adjacent to the hillside below the station's former water supply; the reservoir supplying the town of Mullumbimby. The site is constrained at the rear by the hillside rising up to Wilsons Creek Road.

The site is accessed directly from Wilsons Creek Road and is surrounded by predominately rural residential holdings. The substation receives 132kV from the Lismore bulk supply point substation.

Legend

- Roadway
- Highway
- National Parks
- SEPP 14 Areas
- Substation Site
- Proposed Access Way

Figure 2.5
Brunswick Heads Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	07/08/08	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 30 60 120 180 240 m

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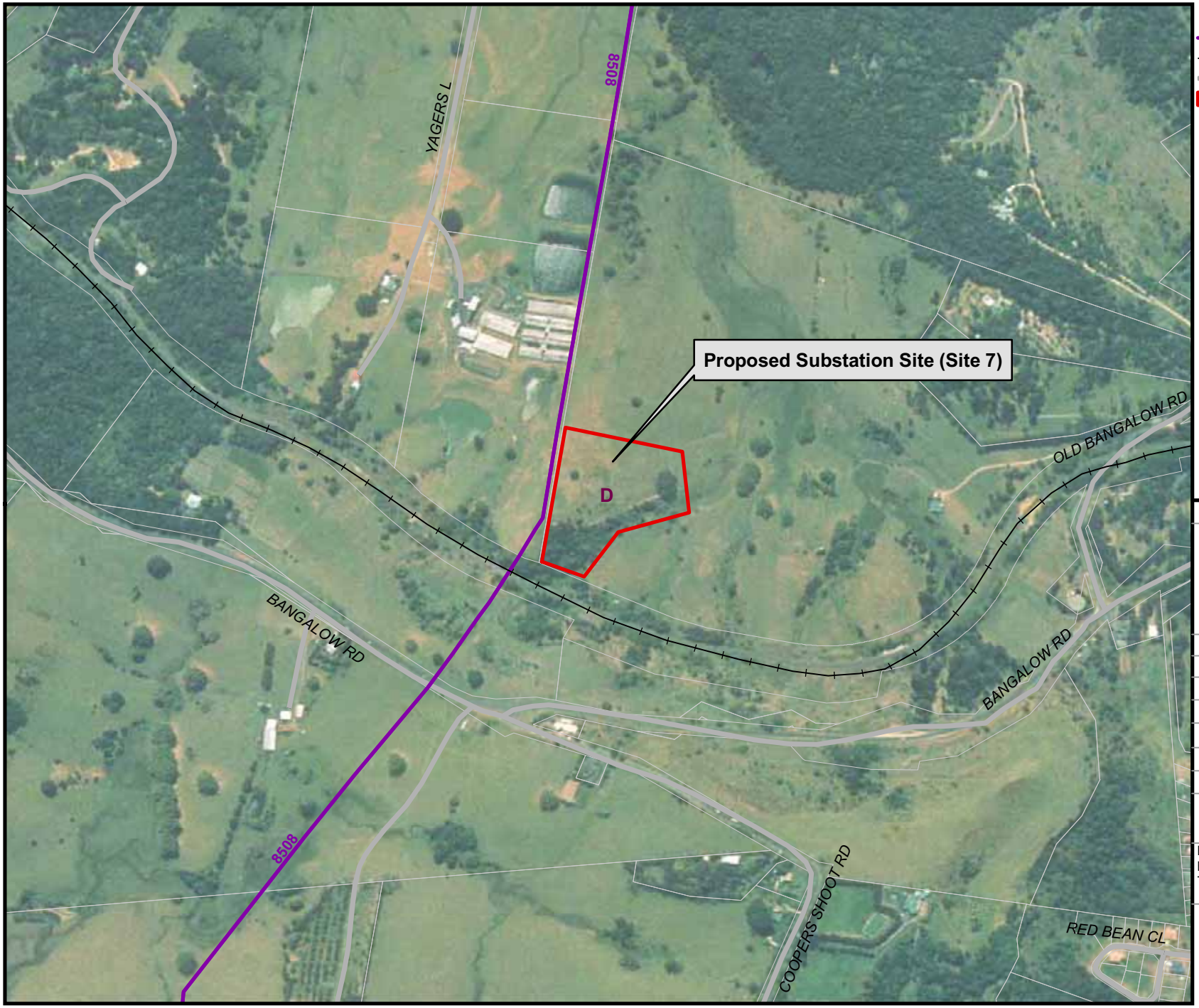

Legend

- Existing 66kV
- Casino-Murwillumbah Railway
- Roadway
- Substation Site

Figure 2.6

Suffolk Park Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	06/08/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 37.5 75 150 225 300 m

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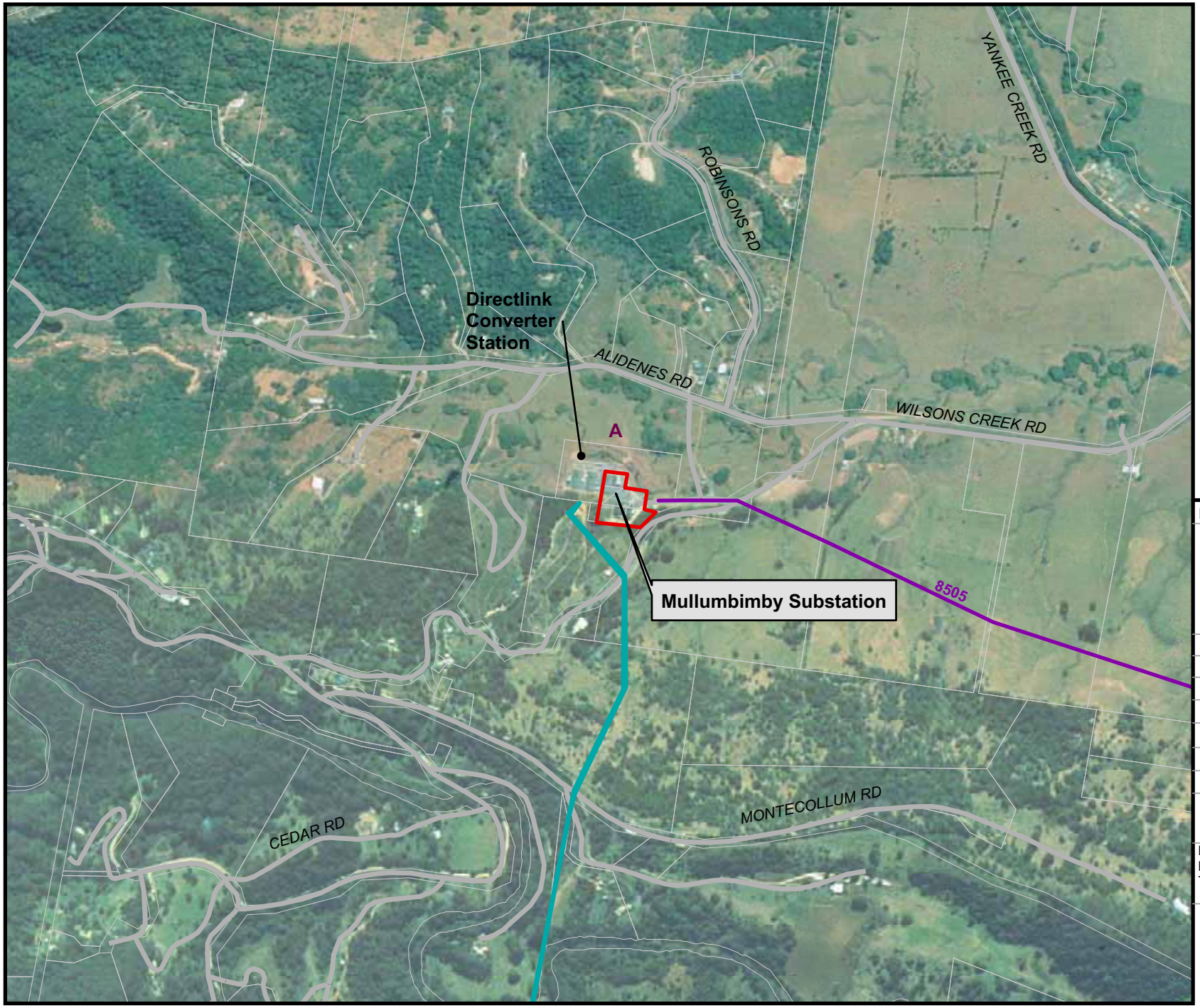

Legend

- Existing 66kV
- Existing 132kV
- Roadway
- Substation Site

Figure 2.7

Mullumbimby Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands 2008		
Scale:	Refer Scale Bar		

N

0 55 110 220 330 440 m

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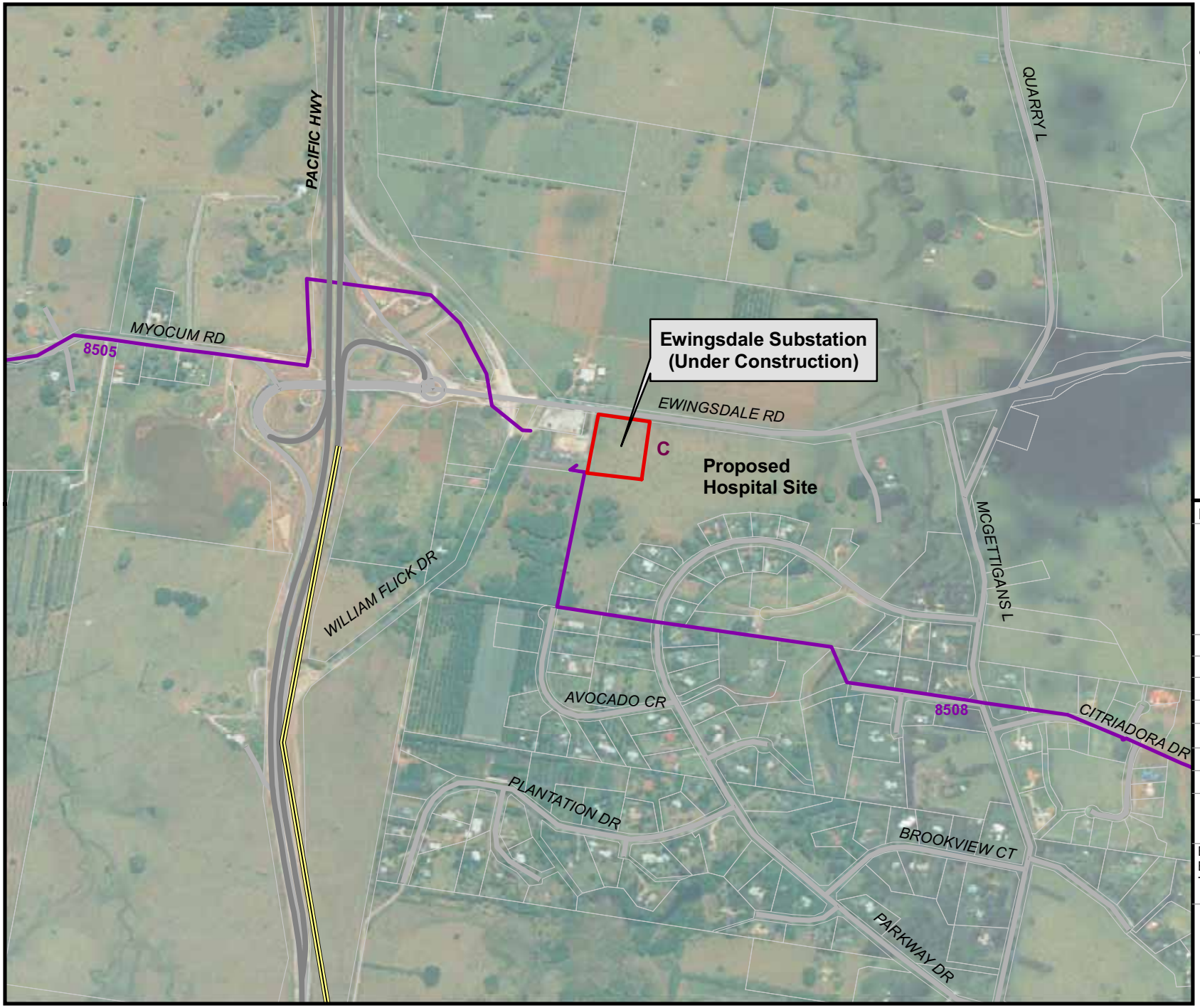
Photograph 2.2 Aerial Photograph of the Mullumbimby Substation and DirectLink AC/DC Converter Station. The Heritage listed Mullumbimby Power Station can be seen on the left side of the photograph.

2.4.2 Ewingsdale Substation

The 66kV Ewingsdale substation is currently under construction within Lot 171 DP 1121005, Ewingsdale Road, Ewingsdale. The site has an area of approximately 1.378ha and is bounded by Ewingsdale Road to the north, cleared pasture/grazing land to the east and south, with Country Energy's field services depot (Lot 2 DP 600681) and a concrete batching facility directly to the west (see *Figure 2.8*).

The nearest dwellings are located on the northern side of Ewingsdale Road and on Parkway Road within the village of Ewingsdale approximately 180m to the south east.



Legend

- Existing 66kV
- Highway
- Roadway
- Pacific Highway Upgrade
- Substation Site

Figure 2.8
Ewingsdale Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 50 100 200 300 400 m

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Photograph 2.3 Aerial Photograph of the Ewingsdale Substation (currently under construction).

2.4.3 Lennox Head Substation

The Lennox Head substation is located on Lot 20 DP 1117294, Newrybar Swamp Road, Newrybar. The site is situated approximately 0.75 kilometres north of the intersection of Newrybar Swamp Road and Ross Lane, Newrybar (see *Figure* 2.9).

Lot 20 DP 1117294 has an area of approximately 2.966ha. The substation site contains typical substation infrastructure such as control and switch rooms, busbars, capacitor banks and transformers. The Lennox Head substation is surrounded by a 2.4m high chain wire mesh fence.

The surrounding land use is primarily rural including an adjoining sugar cane field to the east. Newrybar Swamp Road provides the western boundary of the site. An existing sand quarry is also located on the western side of Newrybar Swamp Road. The nearest residences are located 230m to 255m to the south and south west within the adjacent properties. The Lennox Head Aquatic Club is located approximately 650m to the north of the site with the nearest residence associated with the centre 580m to the north.

The site is located on the edge of the floodplain of Deadman's Creek, which flows south to North Creek and then to the Richmond River.

Legend

- Existing 66kV
- Highway
- Roadway
- National Parks
- Substation Site

Figure 2.9
Lennox Head Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 55 110 220 330 440 m

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Photograph 2.4 Aerial Photograph of the Lennox Head Substation.

2.4.4 Ballina Substation

The existing Ballina substation is located on Lot 2 DP 222592, Temple Street Ballina (refer to *Figure 2.10*). The site is approximately 3.48ha in area. The substation site includes the Ballina Field Service Centre with the substation itself located in the south east corner of the site. The substation contains typical substation infrastructure such as control and switch rooms, busbars, capacitor banks and transformers. The Ballina substation is surrounded by a 2.4m high chain wire mesh fence. Landscaping with small shrubs has been undertaken along the northern compound fence to assist in screening the substation from nearby residences.

Country Energy has recently acquired the adjoining property to the east (Lot 1 DP 222592), which fronts Temple Street. Land use surrounding the substation includes residential approximately 40m to the north (the rear boundary of properties on Vera Street) and 75m to the east on the eastern side of Temple Street. To the south of the site is open space used for sporting facilities and to the south west is the Ballina Bowling Club. To the west of the site is Canal Road and North Creek Canal.

Legend

- Existing 66kV
- Highway
- Roadway
- SEPP 14 Areas
- Substation Site

Figure 2.10
Ballina Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	06/08/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	WW
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 20 40 80 120 160 m

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Photograph 2.5 Aerial Photograph of the Ballina Substation.

2.4.5 Lismore Bulk Supply Point Substation

The existing Lismore substation is located on Lot 1 DP 530633 Three Chain Road, Lismore (refer to *Figure 2.11*). The site is approximately 2.8ha in area. Surrounding land use includes cleared farming land to the north (on the opposite side of Three Chain Road) and west. Immediately to the east of the substation is sparsely vegetated rural land and a dam. To the north east is the Lismore Sewerage Treatment Works.

The nearest residences are located on rural properties approximately 400m to the west and 500m to the south east.

The site contains typical substation infrastructure such as control and switch rooms, busbars, capacitor banks and transformers. It is surrounded by a 2.4m high chain mesh security fence.

Legend

- Substation Site
- Existing 132kV
- Existing 66kV
- Roadway

Figure 2.11

Lismore Bulk Supply Point Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands 2008		
Scale:	Refer Scale Bar		

N

0 90 180 360 540 720 m

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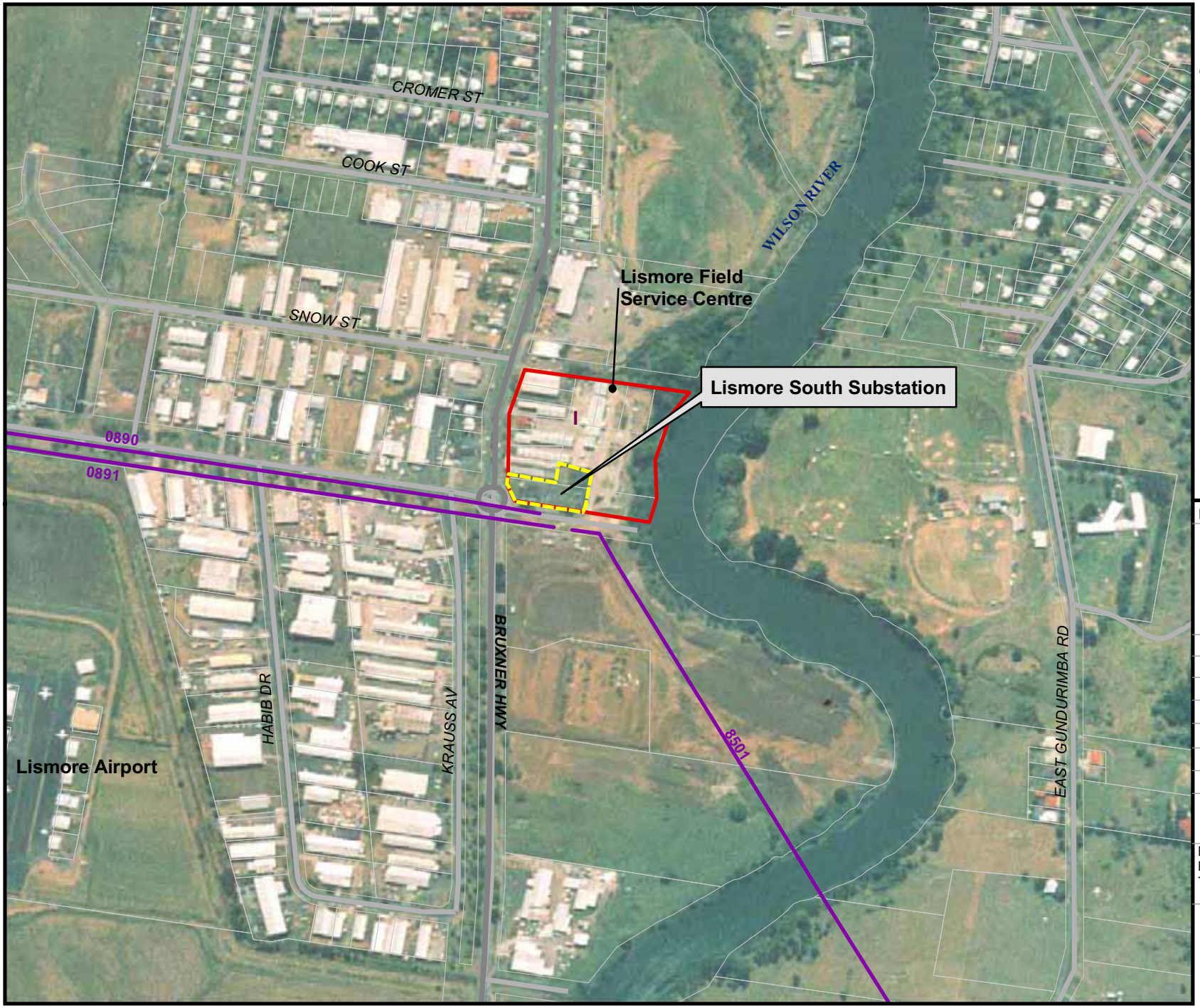
Photograph 2.6 Aerial Photograph of the Lismore Bulk Supply Point Substation.

2.4.6 Lismore South Substation

The Lismore South substation is located in the southern portion of Country Energy's Lismore Field Service Centre on Lot 1 DP 857456 on the corner of Union Street and Three Chain Road, South Lismore (refer to *Figure 2.12*). Lot 1 DP 857456 is approximately 2.71ha in area. The Lismore South substation is located on the outskirts of Lismore within an area dominated by light industry. The site comprises a heritage listed power station, a field services centre and substation infrastructure secured behind a 2.4m high chain wire safety fence. Workshops, storage areas and administrative buildings are located across the north and east of the site.

Photograph 2.7 below shows an aerial view of the Lismore South substation site. The yellow arrow indicates the Lismore Power Station.



Legend

- Existing 66kV
- Roadway
- Highway
- Substation Site

Figure 2.12
Lismore South Substation Site

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	06/08/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 30 60 120 180 240 Meters

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Photograph 2.7 Aerial photograph of the Lismore South Substation Site (Lismore Power Station indicated by Yellow Arrow).