

MAJOR PROJECT ASSESSMENT:
Lismore to Mullumbimby Electricity
Network Upgrade



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

August 2009

© Crown copyright 2009
Published August 2009
NSW Department of Planning
www.planning.nsw.gov.au

Disclaimer:

While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agents and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

EXECUTIVE SUMMARY

Country Energy (the Proponent) proposes to upgrade the electricity supply infrastructure between Lismore and Mullumbimby (via Ballina and Byron Bay) on the far north coast of New South Wales. The project would essentially increase transmission capacity in the region from 66 kV to 132 kV consistent with the expected growth in electricity demand projected in the NSW Government's *Far North Coast Regional Strategy*. Some new transmission lines, associated upgrades to existing substations, and the construction of new substations at Suffolk Park and Brunswick Heads are also proposed.

The Proponent seeks Concept Approval for the entire project and Project Approval for Stage 1 of the project, which would involve all aspects of the network other than the new Brunswick Heads substation and an associated feeder loop. The Brunswick Heads substation and feeder loop would form Stage 2 of the project and be subject to further Project Approval.

During the exhibition of the project, the Department received 20 submissions. These submissions raised concerns regarding the impact of the project on flora and fauna, Indigenous and non-Indigenous heritage items, noise and visual amenity. The Proponent submitted a Preferred Project Report which proposed minor amendments to the project design in response to these submissions.

The Department's assessment of the project identifies five key issues: the impact of the project infrastructure on flora and fauna; the impact of this infrastructure on Indigenous and non-Indigenous heritage; the potential for noise impacts from substations and transmission lines; the impact on visual amenity associated with landscape-wide installations; and the potential impact from electric and magnetic fields.

The project covers an area of approximately 10,293 square kilometres. Most of this project area would only be affected by the installation of transmission lines along a single pole supporting 132 kV cables. Furthermore, the majority of these lines would be replacing existing transmission lines along easements where the vegetation and soil is already highly disturbed. Across the vast majority of the project area, impacts on ecology, soils, traffic, heritage, noise and visual amenity would be minimal. The Proponent instead focussed its environmental assessment on so-called 'hot spots', where high ecological, visual or heritage values had been identified and project infrastructure was likely to directly impact upon these values. The Department believes this level of assessment is appropriate.

Several vulnerable of threatened flora and fauna species were identified as potentially occurring within the transmission easement. However, the Proponent's detailed assessment of these species indicated that the construction of the project would not directly impact on any of these species. The use of existing easements would mean that little or no existing vegetation would be removed and the line design is sufficiently flexible to allow individual specimens to be avoided. In new easements and substation sites, no threatened species were identified within the direct construction zones. The recommended conditions of approval also require the proponent to minimise the clearing of native vegetation, rehabilitate disturbed areas, manage threatened fauna movements within the project site, and avoid all wetlands identified in *State Environmental Planning Policy No. 14 – Coastal Wetlands*.

'Hot spots' or Indigenous and non-Indigenous heritage items were similarly identified in the Environmental Assessment. Again, the Proponent concluded that all such known items would be avoided by project infrastructure. Nevertheless, given the lack of certainty regarding potential heritage discoveries along the transmission lines and new substation sites, the recommended conditions of approval require the Proponent to closely monitor and manage construction to ensure that any new discoveries are appropriately managed. Management procedures for the historic Mullumbimby and Lismore Substations are also recommended in the conditions of approval.

Noise associated with the transmission lines is unlikely to be significantly greater than background levels. The Proponent also demonstrated that all substations other than the Ballina substation can meet the project specific noise goals developed through the relevant State guidelines. The proponent proposes to suitably attenuate the Ballina substation to ensure that the noise limits specified in the recommended conditions of approval are met.

The project infrastructure has the potential to adversely affect visual amenity. Transmission lines across the landscape and the substation sites near residential areas are both visually prominent. The Proponent has demonstrated a commitment to reducing visual impact by utilising single poles for the 132 kV cabling, painting these poles green in sensitive areas, and proposing landscaping for the substations. The Department believes that the transmission lines are unlikely to have any more significant visual impact than the poles they are proposed to replace. The recommended conditions of approval require the Proponent to prepare more detailed landscaping plans to ensure that the substations are all appropriately screened.

Finally, the Department's assessment of the electric and magnetic fields associated with the project found that these fields are consistent with existing scientific knowledge and national safety guidelines. All other impacts associated with the project have been adequately addressed in the Proponent's Environmental Assessment and Preferred Project Report, as amended and supplemented by the recommended conditions of approval.

All statutory requirements under the *Environmental Planning and Assessment Act 1979* have been met and the Minister may determine the concept and project applications. The Department recommends that the project be approved subject to the recommended conditions of approval. The conditions will ensure that any residual impacts associated with the project are appropriately monitored and managed.

CONTENTS

1.	BACKGROUND	1
1.1	Introduction.....	1
1.2	Project Location.....	2
1.3	Surrounding Land Use	2
2.	PROPOSED DEVELOPMENT	3
2.1	Project Description	3
2.1.1	Upgrade of Transmission Lines.....	3
2.1.2	New Transmission Lines	8
2.1.3	New Substations	10
2.1.4	Upgrade of Existing Substations	11
2.2	Project Need.....	12
3.	STATUTORY CONTEXT.....	13
3.1	Part 3A of the <i>Environmental Planning and Assessment Act 1979</i>	13
3.2	Director-General's Requirements and Adequacy of Environmental Assessment.....	13
3.3	Environmental Planning Instruments.....	13
3.4	Exhibition and Notification	14
3.5	Commonwealth Legislation	14
3.6	Minister's Approval Power.....	15
3.7	Nature of the Recommended Approval	15
4.	CONSULTATION AND ISSUES RAISED.....	17
4.1	Nature of Submissions	17
4.2	Submissions from Public Authorities	17
4.3	Submissions from the Public	18
4.4	Submissions Report	19
5.	ASSESSMENT OF ENVIRONMENTAL IMPACTS.....	23
5.1	Ecological Impacts	23
5.2	Noise and Vibration	29
5.3	Aboriginal Cultural Heritage.....	35
5.4	Non-Indigenous Heritage	37
5.5	Visual Amenity.....	38
5.6	Land Use Impacts	41
5.7	Electric and Magnetic Fields.....	42
5.8	Traffic and Access.....	43
5.9	Other Issues.....	45
6.	CONCLUSIONS AND RECOMMENDATIONS.....	49
	APPENDIX A – ENVIRONMENTAL ASSESSMENT	50
	APPENDIX B – RECOMMENDED CONDITIONS OF APPROVAL.....	51
	APPENDIX C – RESPONSE TO SUBMISSIONS.....	52
	APPENDIX D – STATEMENT OF COMMITMENTS.....	53

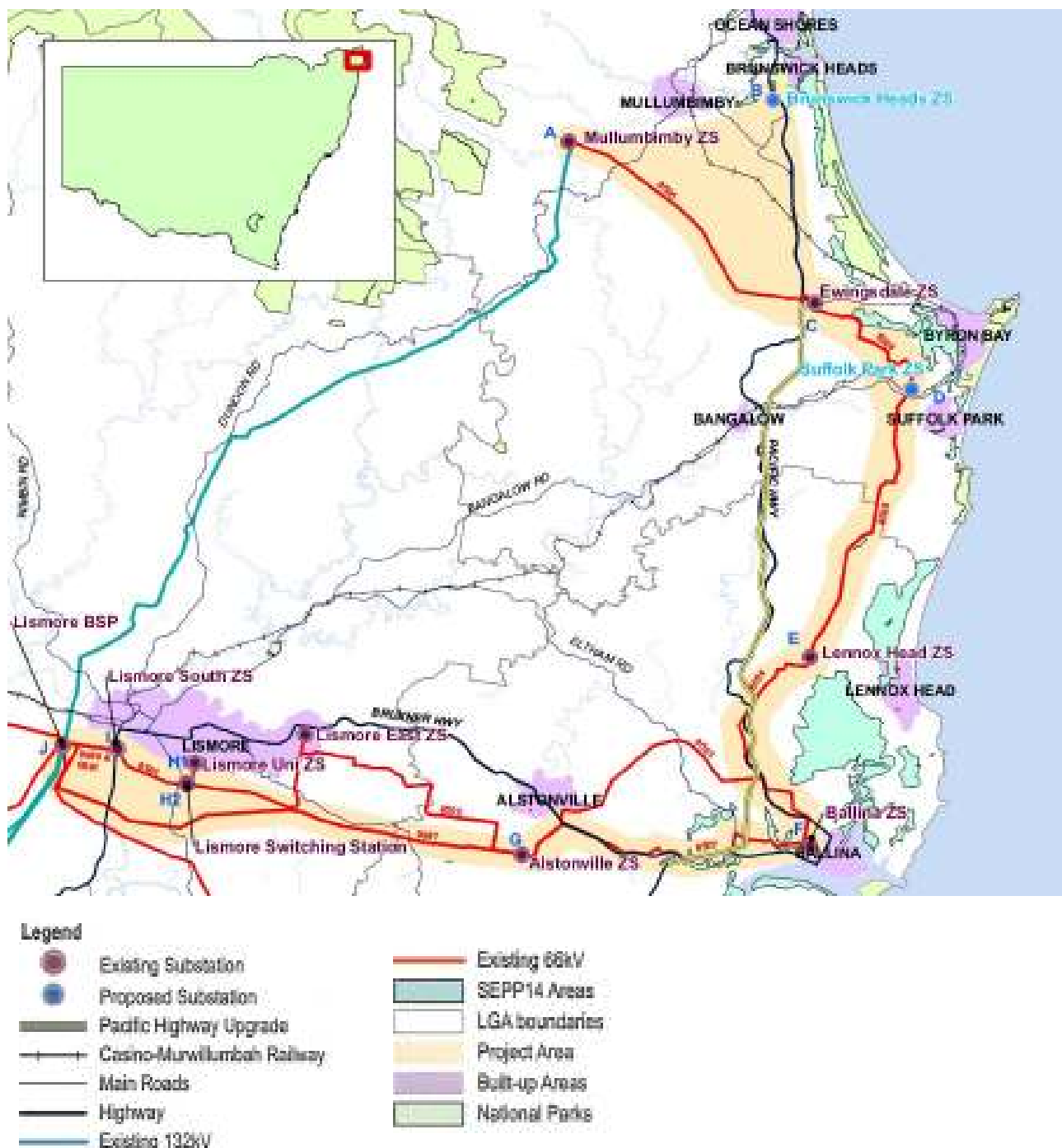
1. BACKGROUND

1.1 Introduction

To cater for long-term electricity demand from significant population increases predicted on the Far North Coast by 2031, Country Energy (the Proponent) has identified the need to augment its existing electricity supply network in the Lismore, Ballina, Ewingsdale and Mullumbimby areas.

The existing 132 kV transmission line corridor follows a generally north-south route between Lismore and Mullumbimby. A number of existing substations and 66 kV transmission lines exist between Lismore and Ballina and along the coastline between Ballina, Lennox Head, Suffolk Park and Mullumbimby as shown on Figure 1.

Figure 1: Existing Electricity Network



Source: Figure 1.1 from Proponents Environmental Assessment (ERM, 2009)

The Proponent proposes to upgrade the 132 kV transmission line network for a distance of approximately 110 kilometres between Lismore and Mullumbimby via Alstonville, Ballina, Lennox Head, Suffolk Park, Ewingsdale and Brunswick Heads as well as construct new transmission lines, upgrade existing substations and construct new substations with the aim of having the project completed by December 2014.

The Proponent has sought concept and project approval for the proposal as detailed in Section 2.

1.2 Project Location

The project area is located on the Far North Coast of New South Wales and covers an area of approximately 10,293 square kilometres within the local government areas of Lismore, Ballina and Byron Bay as shown in Figure 1. The project area identifies a broad transmission corridor and the Proponent has indicated that all of the electricity network upgrade would occur within this corridor and that existing transmission line corridors would be used wherever possible.

1.3 Surrounding Land Use

Much of the existing 66 kV transmission line corridor between Mullumbimby and Ballina comprises cleared rural land although the line passes through residential areas in the vicinity of Ewingsdale and a range of agricultural land uses between Ewingsdale and Ballina including macadamia nut farming along the ridges, sugar cane farming closer to the coast and on floodplains as well as beef and dairy cattle farms and crops such as mangoes and custard apples. Between Ballina and Alstonville, the existing transmission line is located adjacent to urban areas comprising residential, commercial and industrial developments, as well as wetlands classified under *State Environmental Planning Policy No. 14 – Coastal Wetlands*.

2. PROPOSED DEVELOPMENT

2.1 Project Description

The Proponent is seeking concept approval for the following components of the project:

1. Upgrade, including any necessary realignments or deviations of transmission lines:
 - (a) Mullumbimby to Ballina – upgrade of the existing 66 kV power line to 132 kV from the Mullumbimby Substation to the Ballina Substation; and
 - (b) Ballina to Alstonville – upgrade of the existing 66 kV power line to 132 kV from the Ballina Substation to join the new 132 kV Lismore/Alstonville transmission line.
2. Construction of new transmission lines:
 - (a) Brunswick Heads feeder loop – 132 kV transmission line from the Mullumbimby to Ewingsdale transmission line to the Brunswick Heads Substation;
 - (b) Lismore to Alstonville – 132 kV transmission line from the Lismore 132 kV Bulk Supply Point Substation to join the upgrade Alstonville to Ballina 132 kV transmission line near Alstonville;
 - (c) 66 kV power line from Lismore South 66/11 kV Substation to the Lismore 66 kV Switching Station; and
 - (d) two underground 66 kV power lines from Lismore Bulk Supply Point Substation to Lismore South Substation.
3. Construction of new substations:
 - (a) 132/11 kV substation at Brunswick Heads; and
 - (b) 132/11 kV substation at Suffolk Park.
4. Upgrade of substations:
 - (a) Mullumbimby 132/66 kV Substation to 132/11 kV;
 - (b) Ewingsdale 66/11 kV Substation to 132/11 kV;
 - (c) Lennox Head 66/11 kV Substation to 132/11 kV;
 - (d) Ballina 66/11 kV Substation to 132/66/11 kV;
 - (e) Lismore 132/66 kV Bulk Supply Point; and
 - (f) Lismore South 66/11 kV Substation.

The components of the project are discussed in further detail in the following sections.

The Proponent is seeking concept approval for the project and concurrently seeking project approval for Stage 1 which includes all of the components listed above other than the construction of the Brunswick Heads feeder loop and the Brunswick Heads substation. These two components would form Stage 2 of the project, which would be subject to further assessment.

2.1.1 Upgrade of Transmission Lines

Mullumbimby to Ballina

The existing 66 kV single circuit power line is proposed to be upgraded to a single circuit 132 kV transmission line by upgrading the existing infrastructure within the existing alignment. The Environmental Assessment indicates that this work would be constructed in four sections:

- Line 8505 from Mullumbimby substation to Ewingsdale Substation;
- Line 8504(1) from Ewingsdale substation to the proposed Suffolk Park Substation;
- Line 8504(2) from the proposed Suffolk Park substation to the Lennox Head Substation; and
- Line 8504(3) from Lennox Head Substation to the Ballina Substation.

The existing alignment would be followed as part of the upgrade although the Proponent has identified a number of areas where it is proposed to deviate from the existing power line alignment to minimise impacts on land uses. This would occur for Line 8505 in the vicinity of the Country Energy's Ewingsdale Field Service Centre and for Line 8504(1) through the Ewingsdale residential area and in the vicinity of Yagers Lane near the Suffolk Park Substation as shown on Figure 2 and Figure 3. The line would be deviated underground in both of these locations.

Figure 2: Proposed Ewingsdale Alignment

Source: Figure 3.1 from Proponents Environmental Assessment (ERM, 2009)

Figure 3: Proposed Alignment at Suffolk Park Substation

Source: Figure 3.2 from Proponents Environmental Assessment (ERM, 2009)

The existing 66 kV transmission line is also being relocated by the RTA as part of the Ballina Bypass project and has been approved separately. The proponent proposes to upgrade the new alignment from 66 kV to 132 kV. An overhead deviation is also proposed in the area of Ferngrove east of Ballina as part of an approved residential subdivision where the relocation of the existing 66 kV line has already been assessed by Ballina Shire Council. The route deviation is shown on Figure 4.

Figure 4: Proposed Alignment at Ferngrove



Source: Figure 3.3 from Proponents Environmental Assessment (ERM, 2009)

Ballina to Alstonville

The majority of the existing transmission line (line 8507) from Ballina to Alstonville is a single circuit 66 kV line but the section of the line between the Alstonville substation to the Alstonville township is a dual circuit 66kV power line (shared with line 8503). The Proponent proposes to upgrade line 8507 to 132 kV and leave line 8503 as 66 kV. The Environmental Assessment states that the existing alignment would be followed for the majority of the route but in sensitive locations, deviations are proposed as follows:

- along Barlows Road, the transmission line will be located further away from dwellings as shown in Figure 5;
- relocation of the transmission line along the Bruxner Highway to the south to avoid existing residences as shown in Figure 6;
- temporary relocation of the dual circuit section of the line from the Bruxner Highway to Alstonville within the existing power line easement to allow the upgraded dual circuit section to be undertaken without removing the lines from the service as shown in Figure 7;
- minor deviation around the Alstonville substation to rationalise lines in the area as shown in Figure 8.

Figure 5: Proposed Barlows Road Realignment

Source: Figure 3.4 from Proponents Environmental Assessment (ERM, 2009)

Figure 6: Proposed Realignment near Gap Road

Source: Figure 3.5 from Proponents Environmental Assessment (ERM, 2009)

Figure 7: Proposed Realignment near Alstonville

Source: Figure 3.6 from Proponents Environmental Assessment (ERM, 2009)

Figure 8: Proposed Route around the Alstonville Substation

Source: Figure 3.7 from Proponents Environmental Assessment (ERM, 2009)

2.1.2 New Transmission Lines

Brunswick Heads Feeder Loop

A new 132 kV feeder loop supplying the proposed Brunswick Heads substation would be constructed from Line 8505. The location of the line has not been finalised, with the Environmental Assessment stating that known constraints within the corridor include significant vegetation, fauna movements corridors, acid sulfate soils, known Aboriginal sites/relics and 1 in 100 year flooding inundation. The Environmental Assessment indicated that detailed environmental assessment will be undertaken to determine the appropriate transmission line route within the identified corridor. The Proponent is therefore seeking concept approval for this part of the project and not project approval at this stage.

Lismore to Alstonville

A 66 kV sub-transmission line exists between the Lismore bulk supply point substation and a junction in the line near Alstonville. The Proponent proposes to include a new 132 kV transmission line with existing line 0897 to create a 132/66 kV dual circuit by replacing the poles along the existing alignment with a type that allows for the installation of both 132 kV and 66 kV lines as shown in Figure 9. Any portion of the existing 66 kV line rendered redundant by the upgrade would be removed.

Figure 9: Proposed Dual Circuit Transmission Line from Alstonville to Lismore



Source: Figure 3.8 from Proponents Environmental Assessment (ERM, 2009)

Lismore South Substation to Lismore Switching Station

The Lismore substation will be linked directly to the Lismore switching station. The switching station is currently fed from a 66 kV line than originates from the Lismore South substation and then continues to Lismore East substation. The existing overhead 66 kV line (0891) from Lismore substation to Lismore South substation is proposed to be disconnected from Lismore South substation and line 8501 will also be disconnected from Lismore South substation. Line 0891 and line 8501 will be connected to each other to form a direct link from the Lismore substation to the Lismore switching station. Additionally the existing overhead 66 kV line 0890 from

Lismore substation to Lismore South substation will be disconnected and connected to a new 66 kV line to be constructed from near Lismore South substation to the Lismore switching station.

The route for the new 66 kV line 8516 from Lismore South substation to Lismore switching station is shown in Figure 10. The Proponent has stated that easements with property owners have been negotiated for the new line.

Figure 10: Lismore South to Lismore Switching Station Alignment



Source: Figure 3.9 from Proponents Environmental Assessment (ERM, 2009)

Lismore Bulk Supply Point to Lismore South Substation

To improve the security of supply between Lismore Bulk Supply Substation and the Lismore South substation, the Proponent would install two additional 66 kV underground lines in a trench within the Three Chain Road reserve to connect into the Lismore South substation as shown in Figure 11. Additional conduits will be installed within this trench to accommodate future potential 11 kV and 66 kV lines as required. The existing overhead lines in this area would be retained.

Part of the proposal in this area includes a deviation from the alignment of the existing line to minimise the impact on visual amenity to existing residents. The existing portion of line 0897 from the Bruxner Highway to Lismore Bulk Supply Point would be removed (refer Figure 11).

Figure 11: Underground Line on Three Chain Road and Dual Circuit from Lismore

Source: Figure 3.10 from Proponents Environmental Assessment (ERM, 2009)

In general where upgrade of the line is proposed, the Proponent could utilise existing pole infrastructure, however, the Environmental Assessment states that some timber poles may be replaced with new concrete poles, if required. New transmission poles will be of concrete construction with horizontal line post insulators. Steel poles may be used in areas of difficult terrain. Poles will typically be placed between 150 metres and 300 metres apart. Poles will be 2-23 metres on length. Once embedded three metres into the ground their height will be 17-20 metres above natural surface level. Final details of pole numbers, spacing and location to occur during the detailed project design phase.

2.1.3 New Substations

Brunswick Heads Substation

A new 132/11 kV zone substation is required in the Brunswick Heads locality to cater for future electricity loads. The Proponent has commenced negotiations with the landowner to purchase land for the construction and operation of the new substation. Detailed environmental assessment has yet to be completed and at this stage a concept approval is being sought.

Suffolk Park Substation

A new 132/11 kV zone substation is also required in the Suffolk Park/Byron Bay area to cater for future electricity loads. The Proponent proposes to construct the substation at the end of Yagers Lane in Suffolk Park. The Environmental Assessment indicates that the new substation would be similar to the substation recently constructed at Lennox Heads, as shown in Figure 12.

Figure 12: Example of Substation Similar to that Proposed for Suffolk Park

Source: Figure 3.11 from Proponents Environmental Assessment (ERM, 2009)

2.1.4 Upgrade of Existing Substations

Mullumbimby Substation

The following upgrade within the substation is proposed:

- installation of new 132 kV line bay for the proposed 132 kV feeder to Ewingsdale via Brunswick Heads;
- replacement of the 132/66/11 kV power transformer with a 132/11 kV transformer and removal of the 132/66/11 kV 40 MVA transformer; and
- installation of new 132 kV feeder bay along with a short section of pole line infrastructure.

Ewingsdale Substation

The Ewingsdale substation is currently under construction in accordance with a consent issued by Byron Shire Council. The following upgrade is proposed:

- replacement of the two existing 66/11 kV power transformers with two 132/11 kV power transformers to allow energisation to 132 kV;
- replacement of the two existing 66 kV voltage transformers with two 132 kV voltage transformers; and
- replacement of the existing 66 kV surge arrestors with 132 kV surge arrestors.

Lennox Head Substation

The Lennox Head substation was constructed in 2006/07 and designed to accept 132 kV although only energised to 66 kV. The following upgrade is therefore proposed:

- replacement of the existing 66/11 kV transformers with 132/11 kV transformers to allow energisation to 132 kV;
- replacement of the two existing 66 kV voltage transformers with two 132 kV voltage transformers; and
- replacement of the existing 66 kV surge arrestors with 132 kV surge arrestors.

Ballina Substation

The Ballina substation is located in Temple Street, Ballina and is surrounded by a number of land uses including existing residential development on its northern and eastern sides. The following upgrade works are proposed:

- demolition of part of an existing building related to an adjoining field service centre;
- expansion of the substation compound area;
- installation of two new 132 kV line bays;

- installation of one new 132 kV and one new 66 kV transformer bays;
- installation of a new 132/66/11 kV 75 MVA transformer; and
- landscaping works.

Lismore Bulk Supply Point Substation

The following upgrade is proposed:

- installation of a new 132 kV line bay for the proposed new transformer line from Alstonville;
- installation of two new 66 kV line bays for the proposed 66 kV underground power lines to Lismore South substation.

The construction of the new line bays will require the demolition of redundant storage sheds.

Lismore South Substation

The Proponent proposes to redesign and reconfigure the existing layout of this substation which may involve the demolition of the existing power station building. The final redesign is contingent upon further investigations which the Proponent has committed to undertaking prior to the construction of this component.

Communication towers are proposed to be installed at the Mullumbimby zone substation and Lismore Bulk Supply Point substation and will be of concrete construction. The poles will be approximately 30 metres in height and will be supported on a mass concrete foundation 6.7 metre square by 1.2 metres deep.

2.2 Project Need

The project is a vital element in achieving the objectives and outcomes of the *Far North Coast Regional Strategy* which considers the long-term development of the region in the Ballina, Byron, Kyogle, Lismore, Richmond Valley and Tweed local government areas. It provides objectives and desired outcomes for a range of matters relating to population growth, settlement, housing, economic development, employment generation, utilisation of resources and protection of the natural environment. The strategy recognises the importance of access to energy infrastructure in supporting settlement and employment in the region.

The Proponent undertook a strategic investigation of the transmission line network from Lismore to Mullumbimby in 2005. The assessment identified constraints and future demands on the electricity transmission network. The need for network upgrade was based on energy usage patterns and projected population growth figures through to 2025. Based on the findings of that investigation, the Proponent assessed the options of “do nothing”, augment the existing 66 kV network and upgrading to 132 kV. The Proponent also considered non-network alternatives to achieve load reduction, however, this would only postpone the need for upgrading the network and would not eliminate the need entirely.

3. STATUTORY CONTEXT

3.1 Part 3A of the *Environmental Planning and Assessment Act 1979*

The proposal is a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) applies by virtue of an Order made by the Minister for Planning under section 75B of the EP&A Act on 23 January 2008. Therefore, the project will be assessed and determined by the Minister for Planning under Part 3A of the Act in accordance with section 75D(1).

On 23 January 2008, the Minister for Planning authorised the submission of a concept plan for the proposal.

3.2 Director-General's Requirements and Adequacy of Environmental Assessment

The Director-General's requirements for the preparation of an Environmental Assessment were issued on 4 April 2008. For the purpose of section 75H of the *Environmental Planning and Assessment Act 1979*, the Environmental Assessment complied with the Director-General's requirements and the Proponent was notified of this compliance on 14 November 2008.

3.3 Environmental Planning Instruments

The relevant regional environmental planning instrument is the *North Coast Regional Environmental Plan 1988* and the proposed development is consistent with the objectives of this instrument.

The project falls within the boundaries of the Ballina, Byron and Lismore Local Government Areas. The relevant land use zones that would be impacted from the project are outlined below.

Ballina Local Environmental Plan (LEP) 1987

Under the Ballina LEP the transmission line corridor traverses the following zones:

- 1(a1) Rural (Plateau Lands Agriculture);
- 1(b) Rural (Secondary Agricultural Land),
- 1(e) Rural (Extractive and Mineral Resources);
- 2(a) Residential (Living Area);
- 4 Industrial;
- 7(a) Environment Protection (Wetlands);
- 7(c) Environment Protection (Water Catchment); and
- 7(d) Environment Protection (Scenic Escarpment).

The project is permissible with consent as a "utility installation" in all of the abovementioned zones.

Byron LEP 1988

Under the Byron LEP the transmission line route traverses the following zones:

- 1(a) General Rural Zone;
- 1(b1) Agricultural Protection Zone;
- 1(c2) Small Holdings Zone;
- 1(d) Investigation Zone; and
- 7(b) Coastal Habitat Zone.

Pursuant to the LEP, the savings provisions state that nothing in the LEP restricts or prohibits or enables the consent authority to restrict or prohibit the carrying out by persons carrying on public utility undertakings (being water, sewerage, drainage, electricity or gas undertakings) involving development of any description at or below the surface of the ground if it is required for the purpose of their undertakings. Therefore, the proposal is permissible without consent.

Lismore LEP 2000

The proposal would traverse the following land use zones:

- 1(a) General Rural Zone;

- 1(b) Agricultural;
- 1(r) Riverlands;
- 3(b) Neighbourhood Business;
- 4(a) Industrial; and
- 5 Special Uses.

The proposal is considered to be a “public utility undertaking” and is permissible with consent in all the abovementioned zones.

Section 75(O) of the EP&A Act provides the requirements for the giving of approval for a concept plan. Section 75(O)(3) states that the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of section 75R of the EP&A Act) apply to the project if approved. Therefore the Minister is not required to take into consideration the provisions of the Ballina, Byron or Lismore LEPs in relation to the concept plan.

However, clause 80 of the *Environmental Planning and Assessment Regulation 2000* states that approval for the carrying out of a project may not be given under Part 3A of the EP&A Act for any project or part of a project that is prohibited by an environmental planning instrument. The project is not prohibited under the Byron, Ballina or Lismore LEPs.

There are no State Environmental Planning Policies that apply to the proposal that substantially govern the carrying out of the development.

The proposed transmission line spans wetland number 93 and the very northern most edge of wetland 95 which are designated under *State Environmental Planning Policy 14 – Coastal Wetlands* (SEPP 14). The existing 66 kV transmission line poles are located outside the wetland areas and hence, works required to upgrade the line to a capacity of 132 kV are considered likely to be achievable with no impacts to SEPP 14 wetlands during construction. Wires could be strung by manually feeding light training lines between poles and then using mechanical equipment to pull the connected conductors. Similarly, proposed road upgrade works within wetland number 79 would occur within the existing road easement.

3.4 Exhibition and Notification

The application and Environmental Assessment were placed on public exhibition from Wednesday 4 February 2009 to Friday 6 March 2009 and submissions invited in accordance with Section 75H of the EP&A Act. Exhibition locations were as follows:

- Department of Planning's head office;
- Nature Conservation Council;
- Lismore City Council;
- Ballina Shire Council;
- Byron Shire Council; and
- Byron Bay Library.

The Environmental Assessment was also provided for viewing and/or download from the Department's website.

Notification of the exhibition period was made through two advertisements in the Lismore Northern Star newspaper on Wednesday 4 February 2009 and again on Wednesday 18 February 2009.

3.5 Commonwealth Legislation

The Proponent determined that the project would be unlikely to have a significant impact on any matters of national environmental significance. Therefore, a referral to the Commonwealth Department of the Environment, Water, Heritage and the Arts under the *Environment Protection and Biodiversity Conservation Act 1999* was not made.

3.6 Minister's Approval Power

The Department has met all of its legal obligations so that the Minister can make a determination regarding the project.

3.7 Nature of the Recommended Approval

The application lodged by the Proponent on 5 March 2008 sought concept approval for the entire Lismore to Mullumbimby Electricity Network Upgrade, and concurrent project approval for all parts of the project other than the Brunswick Heads feeder loop and the Brunswick Heads substation. The Director-General's Requirements, and the exhibited Environmental Assessment reflect this arrangement. However, in the Preferred Project Report the Proponent requested that the Minister exercise her powers under section 75P of the EP&A Act and determine that the remaining stage of the project (the Brunswick Heads feeder loop and substation) be subject to assessment under Part 5 of the EP&A Act.

Such a determination would mean that the remaining stage of the project would no longer be development to which Part 3A of the EP&A Act applies. To make such a determination, therefore, the Minister would need to be satisfied that the remaining stage of the project is not of a significance equivalent to a Part 3A project. The Department does not believe that sufficient information and assessment of the impacts associated with the Brunswick Heads feeder loop and substation have been provided to allow the Minister to refer these components to assessment under Part 5 of the EP&A Act. The potential for the feeder loop and substation to result in visual amenity impacts, flora and fauna impacts, heritage impacts and traffic impacts has not been sufficiently assessed in the Environmental Assessment and Preferred Project Report. Therefore, the recommended conditions of approval require that the remaining stage of the project be subject to further assessment under Part 3A of the EP&A Act and provide further environmental assessment requirements for the remaining stage.

Notwithstanding, the Department believes that sufficient information and assessment of the impacts associated with all other project components have been provided in the Environmental Assessment and Preferred Project Report for this project. The Department therefore recommends that the Minister grants concept approval to the entire project and project approval to Stage 1 through the recommended conditions of approval, consistent with sections 75O and 75P of the EP&A Act.

4. CONSULTATION AND ISSUES RAISED

The Department actively undertakes public participation and stakeholder consultation as these are central to the objectives of the EP&A Act. Key stakeholders for the proposed Lismore to Mullumbimby upgrade project were identified as government agencies, Byron, Lismore and Ballina Councils, elected representatives, the local community and special interest groups such as the Skinners Shoot Residents Group. The Proponent acknowledged the importance of engaging all relevant stakeholders about the project within the Environmental Assessment and the Department understands that a number of community consultation activities were undertaken during the preparation of the document including meetings with directly affected landholders.

4.1 Nature of Submissions

The Environmental Assessment was publicly exhibited between Wednesday 4 February 2009 and Friday 6 March 2009. Following the close of the exhibition period all submissions were collected and collated and the issues raised in the submissions reviewed by the Department. A total of 20 submissions were received during the exhibition period including a petition which contained 33 signatures, on behalf of the Skinners Shoot Residents Group.

Submissions were received from three state agencies and Byron Shire Council. No submissions were received from either Lismore City Council or Ballina Shire Council. A number of submissions were received from the Skinners Shoot Residents Group and one submission was received from Friends of the Koala Inc. The remaining submissions received during the public exhibition period comprised submissions from members of the local community not affiliated with any particular group or organisation.

4.2 Submissions from Public Authorities

Submissions were received from three State government agencies, as listed below as well as Byron Shire Council:

- **NSW Department of Environment and Climate Change (DECC)** – indicated that it could support the project provided that amendments were made to the Proponent's Statement of Commitments with respect to biodiversity conservation, Aboriginal cultural heritage, noise, soil and water management. In terms of impacts on Aboriginal sites, DECC's position is that it prefers to see avoidance rather than mitigation of impacts. The DECC also included requirements for a noise impact assessment to be undertaken for the Brunswick Heads Substation. The DECC also stated that the revegetation or regeneration of areas with compensatory plantings was supported, however, this measure was not considered to be an adequate offset for the loss of vegetation from the project. DECC stated that a true offset should be based on the principle of "like for like" or a better conservation outcome. In terms of noise, DECC has recommended that the Proponent implement mitigation measures that reduce predicted noise levels to below the project specific noise criteria to achieve 38 dB(A).
- **NSW Department of Water and Energy (DWE)** – did not state a position regarding the project but has outlined a number of comments in relation to the potential impact to watercourses, acid sulphate soils and SEPP 14 wetlands and aquatic habitats. In particular, DWE has outlined that where the proposal crosses rivers or creeks, works should be undertaken in accordance with DWE's Controlled Activities Guidelines. DWE indicated that there was little mention in the documentation of the risk of intercepting groundwater during construction and that any substantial works involving dewatering for construction should be notified to the Department as licensing issues may arise. DWE considered that the issue of acid sulphate soils was not covered in any detail although the transmission line is proposed to traverse medium to high acid sulfate soil risk areas, particularly between Brunswick Heads and Ballina. It is the view of DWE that the Proponent ensures that wetlands and aquatic habitats are protected in the vicinity of SEPP 14 wetland areas.
- **NSW Roads and Traffic Authority (RTA)** – did not state a position on the project but indicated that detailed information would be required to be submitted to Council and the RTA where the proposed power line crosses a classified road in accordance with section 138 of the *Roads Act 1993*. The RTA states that it will only consider a proposal to cross or locate a line within a freeway corridor whether there is no alternative location for an otherwise essential service. Where these are allowed an agreement needs to be entered into with the RTA and an annual fee paid.

The Byron Shire Council did not state a position on the project but provided a number of comments, which have been summarised as follows:

- any impacts to SEPP 14 wetlands to ensure adequate investigation of ecological impacts;
- the recommendations of Aboriginal and European Heritage Assessment should be incorporated into any approval issued. In relation to heritage, Council adopted a Community-based Heritage Study for the Shire in July 2008 - a number of items are located in the vicinity of the project and have not been taken into consideration in the heritage study - while not formally listed in a planning instrument the Council considered that they should have been considered as part of the assessment process. If any impact is expected to the listed items, measures should be undertaken to investigate amelioration of adverse impacts and Council's heritage advisor consulted;
- the ecological assessment undertaken is considered deficient in the thoroughness of field investigations as the entire project was surveyed over a period of four days - the survey methods do not conform to those specified by DECC (2004) or DECC/DPI (2005) and no fauna survey was undertaken. The lack of clear communication on the spatial distribution of all vegetation types across the subject area limits the thoroughness of the threatened species and ecological impact assessment. Several substation sites have remnant vegetation including areas that are mapped as high conservation value;
- visual impacts will result from new corridors, new substations and expansion of existing substations. No information in the visual impact assessment is provided regarding the new substations - appropriate landscaping around the perimeter of a substation will assist to reduce the bulk and scale and should be undertaken. A condition should be imposed that a Landscape Plan be prepared for each new substation for Council approval to comply with the requirements of Part H - Landscaping of Byron DCP 2002. Council also noted that some poles are proposed to be located within the 7(d) scenic escarpment zone and therefore all recommendations from a visual expert review of the visual impact assessment should be incorporated into any approval. Council would support the undergrounding of power lines within the 7(d) zone and in other prominent visual locations.
- in relation to Skinners Shoot Road, Council considers that the proposal should lead to a substantial upgrade of the Skinners Shoot Road at the Proponent's expense. In this regard, a petition with 27 signatures also formed part of Council's submission requesting that the Proponent upgrade Skinners Shoot Road in accordance with AUSTROADS rural road design guidelines.
- the application should be referred to the Australian Radiation Protection and Nuclear Safety Agency for their review regarding electro magnetic field impacts;
- the occurrence of ASS is widespread in Byron Shire with coastal areas having relatively high water tables. Any excavation in ASS areas must be investigated and managed in accordance with ASSMAC 1998;
- on-site sewage management systems must comply with the requirements of the relevant guidelines and standards (AS/NZS 1547:2000, EHP 1998 etc) - the Proponent will be required to submit a section 68 application for each on-site sewage management system proposed at the substations;
- no noise modelling or mitigation measures for the Suffolk Park or Brunswick Heads substations are provided. The recommendations of the specialist studies are to be incorporated as conditions of approval; and
- the new Suffolk Park substation has the most significant impact on Council's road assets. Council has requested that the Proponent be required to submit detailed plans to Council to assess and approve the works proposed along Skinners Shoot Road and Yagers Lane. The proposed upgrade of Skinners Shoot Road in the Environmental Assessment falls short of required standards. Traffic management plans should be assessed by Council and transportation of oversize loads/vehicles also assessed. A bond will be required to be lodged with Council against the potential damage to roads and drainage infrastructure during construction of the project.

4.3 Submissions from the Public

The majority of submissions received from the local community were concerned with visual amenity impacts, property impacts and noise issues from the operation of the proposed substations.

Specific concerns were raised by the local community through a number of submissions regarding the rerouting of the line. This included submissions with respect to the rerouting of the line around the Alstonville substation and in the Skinners Shoot area. A number of submissions also requested the Proponent to consider re-routing the line underground along Raywards Lane instead of Yagers Lane to reduce visual amenity impacts, property

impacts and to protect property values. The Department also received a petition with 33 signatures to place the power line underground between the Suffolk Park substation through the Skinners Shoot area to the Ewingsdale substation to protect visual amenity. The submission received from Byron Shire Council also included a petition with 27 signatures from the Skinners Shoot area to ensure that section 94 contributions amount to a proper upgrade of Skinners Shoot Road, to the recommended road width being for two lanes of three metres each in accordance with AUSTROADS rural road design with a bikeway incorporated into the design.

4.4 Submissions Report

The Proponent responded to the issues raised in the submissions and prepared a Preferred Project Report which it submitted to the Department on 28 May 2009. The Preferred Project Report was made available on the Department's website and agencies were notified of its submission.

In the Preferred Project Report, the Proponent responded to each of the submissions received and as a result made modifications to the project and provided additional commitments within its Statement of Commitments.

The modification includes the relocation of line 8501 and construction of the new line 8516 along the northern boundary of Lot 2 DP 587430 to reduce the potential impacts of the project on a proposed new dwelling site on the property. The original alignment and the modified alignment are shown in Figure 13 and Figure 14.

Figure 13: Original Alignment between Lismore South to Lismore Switching Station



Source: Figure 3.9 from Proponents Environmental Assessment (ERM, 2009)

Figure 14: Proposed Modified Alignment**Legend**

- Substation
- Confirmed 8501 Realignment
- Confirmed Underground
- Confirmed Overhead
- 8501 Section to be Removed
- Existing 66 kV
- Roadway
- Cadastral Boundaries

Source: Figure 3.1 from Proponent's Preferred Project Report (May 2009)

The Proponent undertook supplementary visual, ecological and heritage assessment on the modified alignment and concluded that the alignment would have no adverse environmental impacts.

The Proponent also revised its Statement of Commitments. In this regard, additional commitments were provided for Aboriginal heritage to ensure that excavation for new transmission poles, removal of vegetation or trenching is monitored by representatives from the local Aboriginal Land Council and outlined the procedures to be followed in the event that construction disturbs archaeological relics. In addition, new commitments were added in relation to the Suffolk Park substation, specifically with respect to the upgrade of Skinners Shoot Road and Yagers Lane. The Statement of Commitments indicates that plans for the upgrade of these roads will be provided to Byron Shire Council to comment on in accordance with section 45 of the *Electricity Supply Act 1995*. The Proponent has indicated that it will upgrade a section of Skinners Shoot Road between the intersection of Wentworth Street

and Skinners Shoot Road and the Yagers Lane/Skinners Shoot Road intersection. Yagers Lane will also be upgraded from the intersection with Skinners Shoot Road to the access driveway for the new Suffolk Park substation. The Proponent has committed to widen the current alignment of both roads in these sections from three to four metres. The Proponent has also indicated that it will repair any damage to the road surface that may occur from construction traffic as a result of the construction works associated with the substation.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessment (Appendix A), submissions received, the Preferred Project Report (Appendix C) and Statement of Commitments (Appendix D), the Department has identified the following key environmental issues associated with the proposal:

- flora and fauna (ecology);
- noise;
- indigenous and non-indigenous heritage;
- visual amenity;
- land use and property impacts;
- electric and magnetic fields; and
- traffic and access.

The Proponent has also assessed the potential impacts of the project on air quality, soils (including acid sulphate soils, and erosion and sedimentation), and hydrology and considered the impacts associated with contaminated land, hazards and risks, and the generation and management of wastes. These issues are considered to be minor and although adequately assessed, require consideration and specific conditions of approval. The Department's consideration of these issues is addressed in Section 5.9.

5.1 Ecological Impacts

Issue

Vegetation Communities

The majority of the project area comprises cleared agricultural land containing sugarcane and macadamia crops and grazing land consisting of a variety of pasture grasses and herbaceous weeds. Remnants of eucalypt woodland, forest and dry rainforest are scattered throughout the project area in a highly fragmented nature. In addition, wetlands occur in some low lying areas and mangroves can be found in the estuarine zones of coastal watercourses.

The Proponent has indicated that the majority of the network route upgrade will occur within existing easements and access will be via existing service routes. Consequently, minimal vegetation removal is required. In addition, where deviations from the existing route are proposed, there will be minimal vegetation clearing. However, until such time that the detailed design is finalised, the extent of clearing, and subsequent level of impact, cannot be accurately defined.

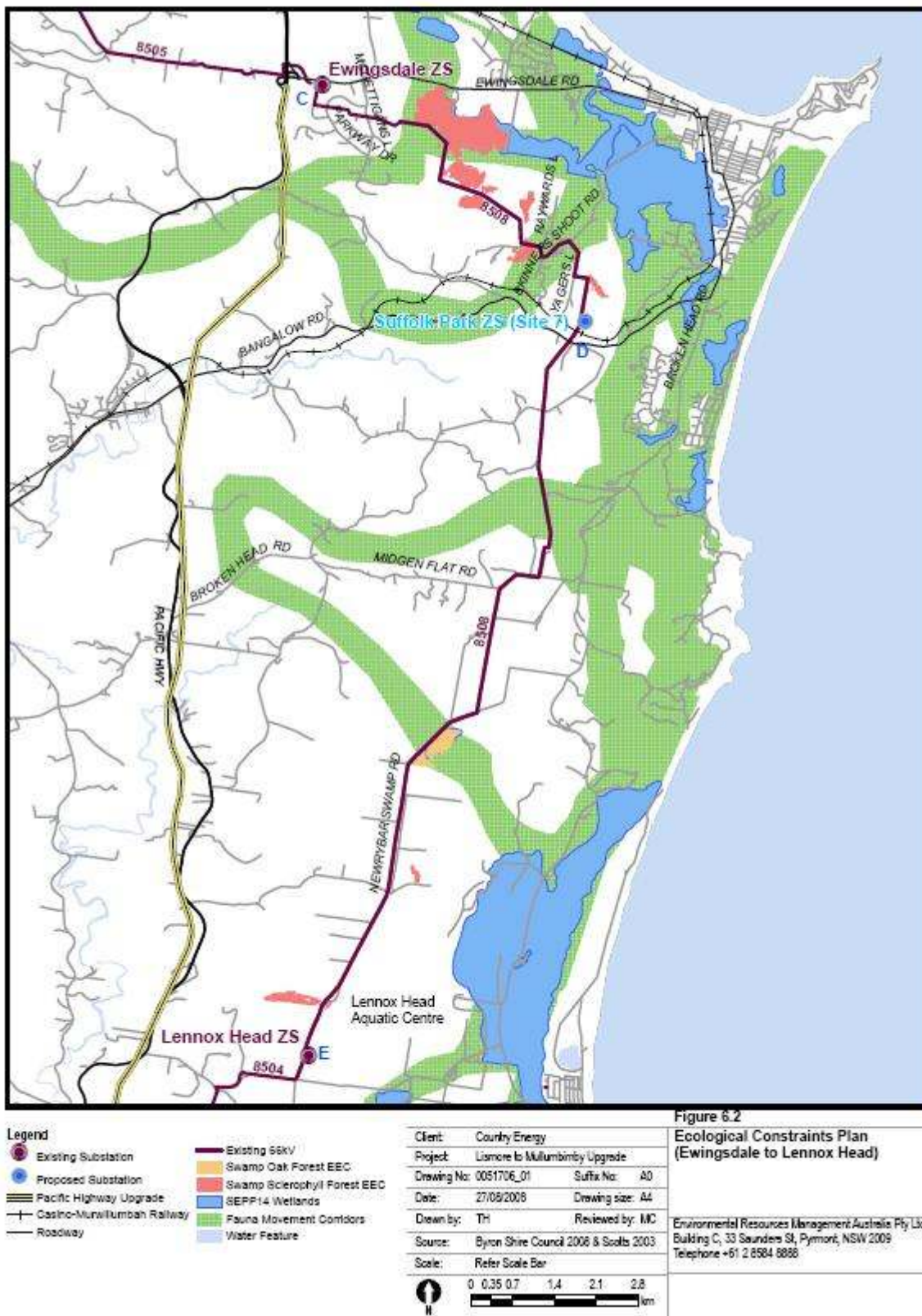
The Proponent has advised that no clearing of native vegetation should be required at the existing substation sites. The site of the proposed new Suffolk Park substation is mainly open pastureland with scattered areas of vegetation identified by Byron Shire Council as significant (i.e. mixed acacia regrowth, rainforest with minimal camphor laurel, and coastal banksia forest). The Proponent proposes to restrict clearing to the pastureland and the vegetated margins to the south of the site which mainly comprise exotic pines and Camphor Laurel.

Two endangered ecological communities, as listed under the *Threatened Species Conservation Act 1995* were identified in the project area:

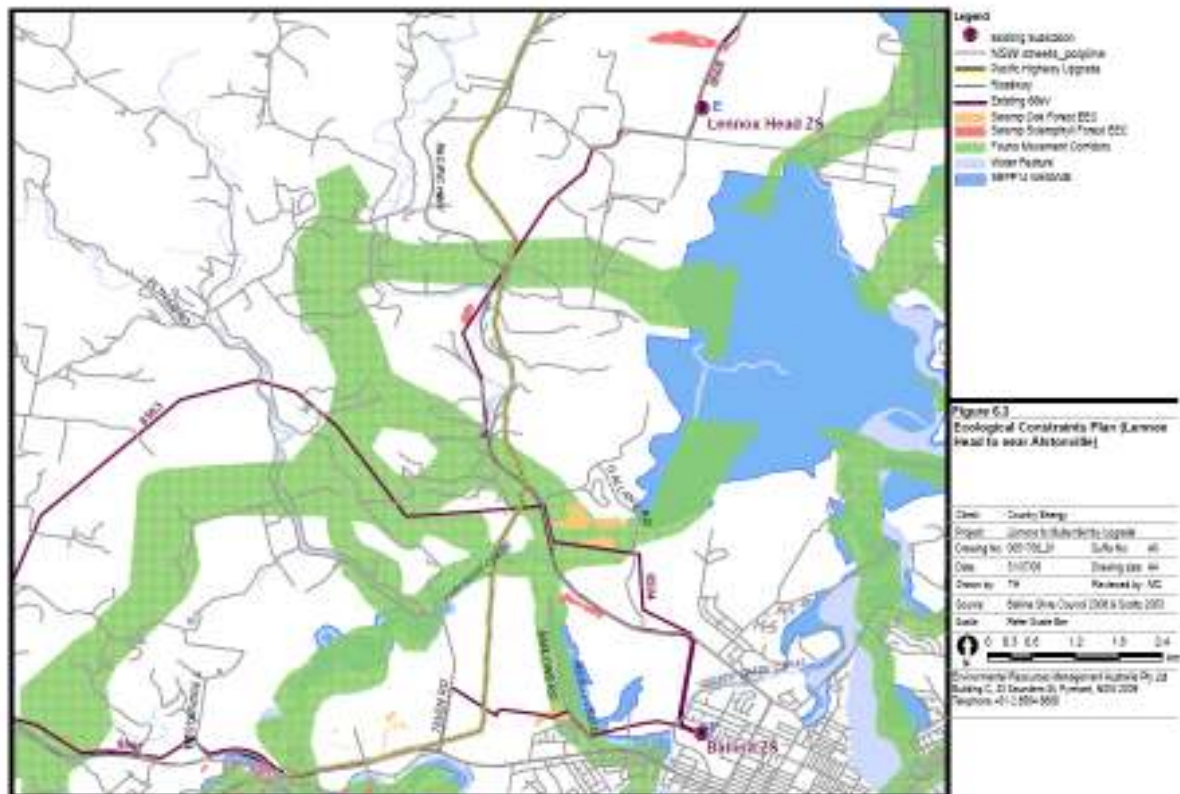
- Swamp Sclerophyll Forest on coastal floodplains of the New South Wales North Coast, Sydney Basin and South East Corner bioregions; and
- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions.

The location of the communities is illustrated on Figure 15 and Figure 16.

Figure 15 - Location of Endangered Ecological Communities and SEPP 14 Wetlands



Source: Figure 6.2 from Proponent's Environmental Assessment – Appendix H (ERM, 2009)

Figure 16 - Location of Endangered Ecological Communities and SEPP 14 Wetlands

Source: Figure 6.3 from Proponent's Environmental Assessment – Appendix H (ERM, 2009)

The Proponent contends that those parts of the transmission line route that are in close proximity to endangered ecological communities are within the existing corridor and should not require vegetation removal. Based on this contention, an assessment of the likely impacts of the project on the communities was undertaken by the Proponent, in accordance with the *Threatened Species Assessment Guidelines* (Department of Environment and Climate Change, 2007), and concluded that the project is unlikely to significantly impact on the communities.

A number of coastal wetlands listed under *State Environmental Planning Policy No. 14 – Coastal Wetlands* occur in the area and are also shown in Figures 15 and 16. The Proponent has indicated that works adjacent to the wetlands will be limited to minor trimming of overhanging vegetation, where required, therefore limiting any potential adverse impacts.

Plant Species

The Proponent identified several species listed as “vulnerable” or “threatened” under the *Threatened Species Conservation Act 1995* with a moderate to high likelihood of occurrence in the project area, including:

- Rusty Plum (*Amorhospermum whitei*);
- Green-leaved Rose Walnut (*Endiandra muelleri* subsp. *Bracteata*);
- Red Lilly Pilly (*Syzygium hodgkinsoniae*);
- Durobby (*Syzygium moorei*);
- Northern Clematis (*Clematis fawcettii*);
- Ball Nut (*Floydia praealta*);
- Sweet Myrtle (*Gossia fragrantissima*);
- Southern Ochrosia (*Ochrosia moorei*);
- Pointed Trefoil (*Rhynchosia acuminatissima*);
- Tinospora Vine (*Tinospora smilacina*);
- Arrow-head Vine (*Tinospora tinosporoides*);
- Thorny Pea (*Desmodium acanthocladum*); and
- Hairy Jointgrass (*Arthraxon hispidus*).

The Red Lilly Pilly, Durobby, Arrow-headed Vine, Northern Clematis, Hairy Jointgrass and Ball Nut are also listed as “vulnerable” under the *Environment Protection and Biodiversity Conservation Act 1999*. The Sweet Myrtle, Spiny Gardenia and Southern Ochrosia are listed as “endangered” under the *Environment Protection and Biodiversity Conservation Act 1999*. Several of these species were also physically identified on site during the Proponent's assessment.

The Proponent undertook an assessment of the impacts of the proposal on plant species and concluded that the impact of the project is likely to be minimal because the majority of the proposed work will occur within existing easements. Furthermore, work within new transmission line corridors will occur along road easements and cleared grazing land with little or no conservation value. The Proponent noted that the transmission easements are flexible enough to allow diversion around any individuals from a vulnerable or threatened species that are identified during construction. The work associated with the upgrade of substations would occur within existing cleared areas. One individual of the Green-leaved Rose Walnut and Red Lilly Pilly were recorded on the site of the proposed new Suffolk Park Substation, however the area in which they are located will not be disturbed by the project.

Fauna Habitats and Corridors

The project area supports a number of fauna movement corridors as shown in Figures 15 and 16. The Proponent also identified a number of fauna habitats within the project area including fresh/estuarine wetlands, modified grasslands, Swamp Sclerophyll Forest, Swamp Oak Floodplain Forest, Camphor Laurel Forest, mangroves, remnant eucalypt woodland, remnant moist sclerophyll forest, and regrowth/remnant dry rainforest. A few mature trees were identified that would contain hollows suitable for sheltering and breeding habitat for birds and arboreal mammals. As the project will involve minimal clearing within any of these areas, the Proponent concluded that the existing fauna habitats will not be adversely impacted.

Although koalas are known to traverse the project area and browse on isolated remnant feed trees, an assessment of the project area in accordance with *State Environmental Planning Policy No. 44 – Koala Habitat Assessment* concluded that the area is not “potential” or “core” Koala habitat.

Fauna Species

The Proponent states that as the majority of the transmission line upgrade will occur within existing easements, and there were no sightings of threatened fauna species during the flora survey, the project will have minimal impact on native fauna. The Proponent notes that standardised fauna surveys were not conducted and therefore the presence of threatened fauna along the route cannot be ruled out.

Previous studies have recorded over 100 threatened fauna species in the project area. Based on a habitat assessment, the Proponent concluded that 12 threatened fauna species (as listed under the *Threatened Species Conservation Act 1995*) had a moderate to high likelihood of utilising or inhabiting the transmission line corridor, including:

- Black-necked Stork (*Ephippiorhynchus asiaticus*);
- Black Bittern (*Ixobrychus flavicollis*);
- Osprey (*Pandion haliaetus*);
- Grass Owl (*Tyto capensis*);
- Koala (*Phascolarctos cinereus*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*);
- Eastern Long-eared Bat (*Nyctophilus bifax*);
- Little Bentwing-bat (*Miniopterus schreibersii*);
- Marbled Frogmouth (*Podargus ocellatus*);
- Rose-crowned Fruit-dove (*Ptilinopus regina*); and
- Wompoo Fruit-dove (*Ptilinopus magnificus*).

The Grey-headed Flying-fox is also listed as “vulnerable” under the *Environment Protection and Biodiversity Conservation Act 1999*.

Three threatened fauna species (as listed under the *Threatened Species Conservation Act 1995*) were identified at the proposed Suffolk Park Substation site – the Grey-headed Flying Fox (*Pteropus poliocephalus*), Little Bentwing Bat (*Miniopterus australis*) and Common Bentwing Bat (*Miniopterus schreibersii*). A further two are likely to occur – the White-eared Monarch (*Monarch leucosis*), and Common Blossom Bat (*Syconycteris australis*).

Assessments of the likely impacts of the project on threatened fauna species, and migratory bird species occurring or likely to occur within 10 kilometres of the project area, were conducted in accordance with the relevant State and Commonwealth guidelines. The assessment concluded that the impact of the project is likely to be minimal because the majority of the proposed work will occur within existing easements. Furthermore, work within new transmission line corridors will occur along road easements and cleared grazing land with little or no habitat value. The Proponent noted that the transmission easements are flexible enough to allow diversion around any individual cases of fauna habitat identified during construction. Similarly, the work associated with the upgrade of substations would occur within existing cleared areas and potential fauna habitat or threatened species have not been identified on the site of the proposed new Suffolk Park Substation.

Although the Koala was not recorded during field investigations by the Proponent, there have been a number of previous recordings in the area. As the removal of Koala feed tree species - Swamp Mahogany (*Eucalyptus robusta*), Forest Red Gum (*Eucalyptus tereticornis*) and Tallowwood (*Eucalyptus microcorys*) – will be minimal, the Proponent argues that construction of the project is unlikely to disrupt the life cycle of the species.

Submissions

The former Department of Environment and Climate Change raised concern that there was no commitment by the Proponent to provide compensatory plantings for native vegetation removed during the construction of the project. It indicated that compensatory planting should be required with the offset ratios taking into consideration the habitat quality and conservation status of both the land to be lost and offset and the development potential of the offset. Further, the former Department of Environment and Climate Change stated that revegetation of disturbed sites on its own is not considered to be an adequate offset even where the area to be regenerated or revegetated is greater than the area to be impacted.

The Byron Shire Council indicated that, based on its opinion, the ecological assessment is deficient in terms of the lack of thoroughness of the field assessment and level of detail presented in the assessment results. It argued that the vegetation descriptions do not conform to NSW Government guideline requirements and that there is a lack of information on the spatial distribution on all vegetation types across the project area. Consequently, it recommended that a detailed management plan for vegetation be prepared for the transmission line corridors. The Council also questioned the validity of the fauna assessment considering a fauna survey was not carried out, only opportunistic sightings were recorded.

The Council also raised concern over the assumption used in the assessment of impacts that only native vegetation provided suitable habitat for threatened fauna species. Council indicated that Camphor Laurel rainforests in the landscape also provide a functional habitat for threatened fauna species and, in not taking them into consideration, the Proponent has underestimated the usefulness of such habitats in the conservation of threatened flora and fauna species.

The Friends of the Koala Inc. indicated that it disagrees with an underlying assumption used in the assessment of Koala habitat. This assumption is Lismore City Council's identification of vegetation in the locality as being marginal/unsuitable koala habitat. Further the organisation raised concern that the approach taken to assess the presence of feed tree species may underestimate the likely impact of the proposal on Koala populations and that some areas do in fact provide potential or core koala habitat and require a Koala Plan of Management. Consequently, the organisation recommended that the Proponent reconsider its environmental assessment and develop appropriate plans of management for such areas should they be identified.

The Skinners Shoot Residents Group raised concern over the adequacy of the environmental assessment undertaken by the Proponent due to (among other issues) the lack of detailed ecological investigations.

Consideration

The Proponent argues that the potential impact on threatened flora and fauna species and endangered ecological communities will not be significant as the project will involve limited clearing and protection barriers will be placed around areas of vegetation near construction sites. However, the Department notes that a detailed survey was not completed for the entire length of the transmission line corridor. The Proponent's ecological was based on literature reviews and database searches, driving the network route and stopping to assess areas identified as potential ecological constraints, and assessing the likelihood of threatened species occurring based on the presence of suitable habitat for such species.

Therefore, the Department acknowledges that until such time as the detailed design is completed, the exact location of any clearing and amount and type of vegetation to be removed, including threatened flora species and endangered ecological communities, cannot be defined. Consequently, the Department has recommended that the Proponent be required to submit to the Director-General transmission line route alignment sheets and substation layout plans showing the location of any affected threatened flora species and endangered ecological communities, prior to construction. This requirement addresses Byron Shire Council's concerns over the need for more rigorous mapping and assessment of the presence of threatened flora species.

The Department has also recommended a condition of approval requiring the Proponent to prepare a Construction Flora and Fauna Management Plan which includes details of specific management procedures for all impacted threatened species and endangered ecological communities, along with other management procedures for protecting flora during construction. The preparation of such a plan is consistent with Byron Shire Council's request for a detailed vegetation management plan for the transmission line corridor.

In order to compensate for any impacts on threatened species, the Department has recommended that the Proponent be required to submit to the Director-General a program for offsetting the biodiversity impacts resulting from the clearing of native vegetation, with particular emphasis on threatened flora species and endangered ecological communities, including:

- measures for encouraging the natural regeneration of vegetation along the transmission line corridor;
- compensatory plantings and rehabilitation measures; and
- measures for replacing specific habitat values impacted by the project (e.g. provision of roost/nest boxes where significant habitat trees such as hollow bearing trees are impacted).

The offset program is to provide details of a timeline for the implementation of the identified measures, ongoing monitoring and maintenance measures and demonstrate how it would achieve the outcome of maintaining or improving biodiversity values in the local area. The requirement to provide biodiversity offsets is consistent with the recommendation of the former Department of Environment and Climate Change.

The Proponent has indicated that the project will have minimal impact on coastal wetlands listed under *State Environmental Planning Policy No. 14 – Coastal Wetlands*, as works will be restricted to trimming of overhead branches. In addition, the Proponent has committed that no additional vegetation removal or land disturbance will be undertaken in such areas. To ensure the integrity of the wetlands, this commitment has been reflected in the Department's recommended conditions of approval along with conditions requiring the Proponent to identify the location of wetlands on transmission line route alignment sheets and substation layout plans, and document the measures for avoiding adverse impacts on wetlands, in the Construction Flora and Fauna Management Plan for the project.

The Department also recommends that the Proponent be required to:

- limit the clearing of native vegetation to the minimal extent practicable required for the construction of the project;
- undertake all reasonable and feasible measures to avoid the clearing of Koala feed trees;
- detail the procedures for clearing vegetation and minimising the extent of clearing within vegetated corridors as part of the Construction Environmental Management Plan; and
- document the measures to be undertaken to control weed spread.

To minimise potential impacts on threatened fauna species, the Proponent has committed to implementing a number of mitigation measures including minimising the disturbance/removal of potential fauna habitat where possible, and staging works to avoid disturbance to threatened fauna that may potentially inhabit the area during their breeding season (e.g. the Koala). These commitments are reinforced in the Department's recommended conditions of approval along with the requirement to document specific management procedures for all threatened fauna species as part of the Construction Flora and Fauna Management Plan for the project.

A criticism raised by Byron Shire Council was the fact that standardised fauna surveys were not conducted. Rather, fauna species were only recorded opportunistically and evidence of traces such as tracks, scats and scratches on and around trees were noted. As such, there is the potential for threatened fauna species and habitats, other than those identified during field surveys, to occur throughout the project area. Consequently, the Department has recommended conditions of approval requiring the Proponent to map the location of threatened flora habitat on transmission line route alignment sheets and substation layout plans, and conduct pre-clearance fauna surveys in areas where potential fauna habitat is identified and removal is required so as to minimise fauna impacts.

In regards to the recommendation by Friends of the Koala Inc. for the development of appropriate plans of management should areas of core koala habitat be identified, this is a legislative requirement under *State Environmental Planning Policy No. 44 – Kola Habitat Protection* and as such, the Department is of the opinion that it does not need to be reiterated in the conditions of approval. To minimise the potential of the project on non-core Koala habitat, the Department is of the opinion that its recommended conditions requiring mapping and avoidance of Koala feed tree species and the preparation of specific management procedures for any Koala feed trees that cannot be avoided are reasonable strategies.

The Department believes that provided the Proponent implements all the nominated environmental commitments and the Department's recommended management measures defined in the conditions of approval, the construction and operation of the project will largely avoid significant ecological impacts.

5.2 Noise and Vibration

Issue

Construction Noise

Noise will be generated by the operation of trucks, excavators, backhoes, graders, compressors, agitators, cranes, paver/wackers, rollers and hand tools required for the construction of the substations and transmission lines. Blasting may be required along some lengths of the transmission line.

The Proponent assessed the impact of construction noise in accordance with the *NSW Environmental Noise Control Manual* (Environment Protection Authority, 1994) which allows between a 5 dB(A) and 20 dB(A) increase above current background noise levels depending on the length of the construction period. The Department of Environment, Climate Change and Water has recently released the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, July 2009) which sets out a construction noise management level (as measured by a $L_{A10(15\text{-minute})}$ descriptor) at residences of "rating background level (RBL) plus 10 dB(A)". While the acoustic assessment adopted a 10 dB(A) increase for construction activities at substations, a 20 dB(A) increase was adopted for the construction of the transmission lines.

Table 1 sets out the construction project specific noise criteria for each substation and those nearest affected residences where the criteria will be exceeded. The construction noise assessment for the Suffolk Park Substation was addressed in terms of various stages of construction and hence the table depicts the predicted construction noise for each stage.

Construction noise levels do not comply with the 1994 and 2009 noise design objectives at all potentially affected receivers except the Lismore Bulk Supply Substation. Construction noise level exceedences are predicted to occur at residences along Union Street near the Lismore South Substation, at all nearest residences in the case of the Ballina and Ewingsdale Substations, at two residences near the Lennox Head substation, and at three residences near the Mullumbimby Substation. Construction noise levels for the Suffolk Park Substation will

exceed the noise objectives at the nearest sensitive receiver (L1) for most stages of construction. The locations of the nearest affected residences for all substations are illustrated in Figure 17 to 21.

Table 1 - Predicted Construction Noise Levels Associated with Substations

Substation	Affected Residences	Project Specific Noise Criteria (L _{Aeq})	Predicted Construction Noise Level (L _{Aeq})
Lismore South	Union Street	57 dB(A)	62 dB(A)
Ballina	Residence 1	43 dB(A)	62 dB(A)
	Residence 2	43 dB(A)	56 dB(A)
	Residence 3	43 dB(A)	53 dB(A)
	Residence 4	43 dB(A)	51 dB(A)
	Residence 5	43 dB(A)	56 dB(A)
Lennox Head	Residence 4	45 dB(A)	51 dB(A)
	Residence 6	45 dB(A)	51 dB(A)
Ewingsdale	Ewingsdale Road	47 dB(A)	55 dB(A)
	Parkway Drive	47 dB(A)	55 dB(A)
	Avocado Crescent	47 dB(A)	50 dB(A)
Mullumbimby	Residence 1	45 dB(A)	50 dB(A)
	Residence 2	45 dB(A)	52 dB(A)
	Residence 3	45 dB(A)	46 dB(A)
Suffolk Park Road Upgrade	L1 Residence	50 dB(A)	55 dB(A)
	L1 Artists Retreat	50 dB(A)	57 dB(A)
Suffolk Park Fencing/Cut/Fill	L1 Residence	50 dB(A)	55 dB(A)
	L1 Artists Retreat	50 dB(A)	58 dB(A)
	L2	50 dB(A)	51 dB(A)
Suffolk Park Foundation Works	L1 Artists Retreat	50 dB(A)	52 dB(A)
Suffolk Park Building Construction	L1 Residence	50 dB(A)	54 dB(A)
	L1 Artists Retreat	50 dB(A)	54 dB(A)

The noise level associated with the construction of the transmission line was not assessed for individual sensitive receivers. Rather a conservative daytime background noise level of 5 dB(A) above an adopted background noise level of 30 dB(A) was assumed (i.e. 35 dB(A)). Adopting the objectives set out in the 2009 guideline, the construction noise objective for the transmission line would be 45 dB(A) at the nearest residence. The acoustic assessment calculated typical noise levels associated with transmission line construction at distances of 25 metres, 50 metres, 80 metres, 150 metres, 200 metres, 500 metres and 1,000 metres. The calculations indicated that a construction noise level of 43 dB(A) would be achieved at approximately 500 metres from the point of construction. At 200 metres, the construction noise level is estimated to be 51 dB(A). Hence, it is assumed that the construction noise objective would only be met at residences located well beyond 200 metres from construction works.

Sleep Disturbance

The emission of peak noise levels for an instant or very short time period may cause sleep disturbance to residents. As substation noise is constant and free from impulsive sounds, and construction activities will not be undertaken during the night-time, an assessment of sleep disturbance was not undertaken.

Vibration

A quantitative assessment of ground borne vibration was not undertaken as the Proponent determined that vibration levels, and any associated annoyance or structural damage, would be negligible during construction of the project given the separation distances from these activities to the nearest potentially impacted receivers. In addition, operational activities will not generate vibration.

Operational Noise

The dominant noise sources associated with the operation of the substations are transformers and capacitor banks. Operational noise generated by the substations has been assessed in accordance with the *NSW Industrial Noise Policy* (Environment Protection Authority, 2000) and considered intrusive noise impacts and the impact on local noise amenity during the daytime (7.00 am to 6.00 pm), evening period (6.00 pm to 10.00 pm) and night time period (10.00 pm to 7.00 am) under calm and inversion conditions.

Figure 17: Location of Nearest Sensitive Receivers – Lismore Bulk Supply Point

Source: Figure 3.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Figure 18: Location of Nearest Sensitive Receivers – Lismore South Substation

Source: Figure 4.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Figure 19: Location of Nearest Sensitive Receivers – Ballina Substation

Source: Figure 5.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Figure 20: Location of Nearest Sensitive Receivers – Lennox Head Substation

Source: Figure 6.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Figure 21: Location of Nearest Sensitive Receivers – Ewingsdale Substation

Source: Figure 7.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Figure 22: Location of Nearest Sensitive Receivers – Mullumbimby Substation

Source: Figure 8.1 from Proponents Environmental Assessment – Appendix L (ERM, 2009)

Based on the noise assessment, the Proponent determined that daytime, evening and night time noise impacts associated with the operation of all of the substations, excluding the Ballina Substation, are predicted to be compliant with their respective project specific noise criteria. The operational project specific noise criteria for the Ballina Substation will be exceeded by up to 14dB(A) at several residences during all periods unless noise mitigation measures are incorporated. In order to mitigate these noise impacts, the Proponent proposes to install a 3.8 metre high barrier along the northern and eastern boundary of the substation site and install an attenuation kit on the capacitor bank. However, even with these mitigation measures in place, the Proponent's modelling indicates that the project specific noise goals at the Ballina substation would still be exceeded by up to 3dB(A) at some residences. In response, the proponent listed a number of additional mitigation measures that it will consider in order to meet project specific noise goals.

The key noise generating activities associated with the operation of the transmission lines would be maintenance and repair activities. There is the potential for some emission of noise due to the corona (buzzing) effect and wind noise. However, the Proponent argues that when conditions exist that might result in audible noise due to these effects, background noise levels would also generally increase resulting in the masking of the generated noise.

Submissions

The former Department of Environment and Climate Change raised concern that the operational noise from the Ballina Substation is likely to exceed the project specific noise criterion for the site by up to 14 dB(A), and that small exceedences are still expected to occasionally occur upon implementation of a proposed barrier wall. The former Department of Environment and Climate Change recommended that mitigation measures be implemented that reduce the predicted noise level to below the criterion and that the Proponent demonstrate how the proposed mitigation options will achieve the criterion.

The former Department of Environment and Climate Change also recommended that the Proponent be required to prepare a Construction Noise Management Plan and demonstrate the proposed management practices for attenuating noise from key construction equipment.

Further, the former Department of Environment and Climate Change made recommendations in regards to additional matters to be included in the Proponent's Statement of Commitments so as to ensure that the construction and operation of the project will not create adverse noise impacts. In particular, it recommended that the Proponent commit to:

- ensuring that final noise mitigation measures will be modelled and selected to achieve the operational Project Specific Noise Criterion of 38 dB(A) at the Ballina substation prior to construction; and
- demonstrate how Best Available Technology Economically Achievable will be implemented to reduce noise levels to construction noise criteria.

Only one public submission expressed a concern over noise indicating that operational noise from the Mullumbimby Substation is already annoying and there is fear that the proposed upgrade will intensify noise levels. The submission questioned the adequacy of the noise assessment, noting that no low frequency noise testing was undertaken.

Consideration

Construction Noise

The Department is generally satisfied that the construction assessment approach adopted by the Proponent is appropriate and consistent with the *NSW Environmental Noise Control Manual* (Environment Protection Authority, 1994), which was the relevant guideline at the time of assessment. The Department acknowledges that the noise levels associated with upgrade of the existing substations, construction of the new Suffolk Park Substation and upgrade of the transmission line would exceed the adopted noise objectives and be audible at nearby sensitive receivers. The actual noise contribution will depend on the stage of construction and setback of receivers from the construction sites.

The Department acknowledges that the Proponent has committed to implementing a range of measures aimed at reducing construction noise impacts including: maximising the offset distance between noisy plant items and

sensitive receivers; avoiding any coincidence of noisy plant working together near sensitive receivers; and orientating noisy plant and equipment away from sensitive receivers. The Department is of the opinion that such measures will assist in reducing the impacts of construction noise.

To further limit the possible effects of construction noise on nearby sensitive receivers, the Department has recommended as conditions of approval for the project:

- restrictions on the hours and days of audible construction to 7:00 am to 6:00pm Monday to Friday, and 8:00 am to 1:00 pm on Saturdays, with the exception of work that is necessary for emergency or safety reasons; and
- limitation of activities resulting in impulsive or tonal noise emissions (such as rock breaking or rock hammering) in the vicinity of sensitive receivers to 9:00 am to 12:00 pm, Monday to Saturday, and 2:00 pm to 5:00 pm, Monday to Friday.

The Department has also recommended a condition of approval requiring the Proponent to prepare a Construction Noise Management Plan detailing the monitoring measures for assessing construction noise compliance, and all reasonable and feasible measures for minimising and managing construction noise and vibration impacts. This is in addition to a recommended requirement for the Proponent to minimise noise emissions from plant and equipment operated on construction sites by installing and maintaining where reasonable and feasible, efficient silencers, low-noise mufflers (residential standard), and screening of worksites, as committed to by the Proponent. These recommendations are consistent with the former Department of Environment and Climate Change's request regarding the management of construction noise.

Where the construction noise and vibration objectives are predicted to be exceeded, the Department has recommended that the Proponent include provisions for consultation with affected sensitive receivers including procedures for notifying such receivers of the nature and duration of construction activities that are likely to affect their noise and vibration amenity. This will provide for sensitive receivers to be prepared for noise disturbance. In addition, the Concept Approval which encompasses the project requires the Proponent to develop and maintain a complaints handling and response program to ensure that the concerns of any stakeholders (including noise complaints) are appropriately addressed.

Although it will not be possible to mitigate and/or avoid all construction noise impacts to an acceptable level, based on the recommended measures, the Department considers that the impact of construction on the acoustic amenity of sensitive receivers will be limited to the extent that is reasonably and feasibly practical.

Operational Noise

Substations

The Department is generally satisfied that the operational noise assessment undertaken by the Proponent for the substations is appropriate and consistent with the *NSW Industrial Noise Policy* (Environment Protection Authority, 2000). Based on the noise assessment, the Proponent has proposed project specific noise criteria for each of the substations and these are set out in Table 2. The Department has recommended these, with the exception of those listed for the Ballina Substation (for which stricter limits are recommended), as conditions of approval to ensure that operational noise is not excessive.

Table 2: Project Specific Noise Criteria for Substations

Substation Site	Project Specific Noise Criteria L_{Aeq} (15 minute)		
	Day 7:00 am to 6:00 pm	Evening 6:00 pm to 10:00 pm	Night 10:00 pm to 7:00 am
Lismore Bulk Supply Point Substation	35 dB(A)	35 dB(A)	35 dB(A)
Lismore South Substation	44 dB(A)	44 dB(A)	40 dB(A)
Ballina Substation	38 dB(A)	43 dB(A)	38 dB(A)
Lennox Head Substation	35 dB(A)	35 dB(A)	35 dB(A)
Ewingsdale Substation	42 dB(A)	45 dB(A)	41 dB(A)
Mullumbimby Substation	35 dB(A)	35 dB(A)	35 dB(A)
Suffolk Park Substation*	30 dB(A)	30 dB(A)	30 dB(A)

The Department also recommends that the Proponent undertake an Operational Noise Review to confirm the operational noise impacts of all new and upgraded substations. The review is to assess compliance with the project specific noise criteria and is to be undertaken within 30 days of commencement of operation. Where noise monitoring indicates noise levels in excess of the noise criteria, the Department has recommended the Proponent be required to submit a report detailing:

- an assessment of all reasonable and feasible mitigation measures for reducing noise at the source; and
- recommended measure(s) for reducing noise at the source, including timing of implementation.

The Department has also recommended as a condition of approval that the Proponent address noise management, including monitoring and reporting against the project specific noise criteria, in the Operational Environmental Management Plan to be prepared for the project. In addition, a condition requiring the Proponent to establish and maintain a complaints handling and response program has been recommended in the Concept Approval for the project.

Transmission Line

Sensitive receivers along the existing transmission line corridors are already potentially exposed to corona (buzzing) noise and wind noise. The level of wind noise depends on wind speed and duration but is also influenced by the number and size of conductors and conductor arrangement. The increase in the number of conductors from three to eight would potentially lead to an increase in wind noise. However, the Proponent has advised that wind noise would only be problematic when wind gusts exceed 10 metres per second. Such conditions occur infrequently within the project area and sustained wind speed events are not expected to be common. Thus wind noise is not expected to be a source of concern. The Proponent has advised that corona (buzzing) noise would be emitted during rain, fog and/or mist but is not expected to be a significant noise impact. In general, noise emitted from transmission lines associated with the project is unlikely to be significantly higher than background noise at any time.

The Department is satisfied that the recommended conditions of approval should provide the necessary mitigation measures to minimise wherever possible the operational noise impacts generated by the project, and that appropriate mechanisms are in place to confirm and re-evaluate the need for any further mitigation.

5.3 Aboriginal Cultural Heritage

Issue

The Proponent commissioned two Aboriginal archaeological assessments to identify any potential Aboriginal cultural heritage objects in the project area. Surveying was generally limited to areas that require ground disturbance in undisturbed areas (e.g. excavation or trenching for pole replacement or cabling), substation construction or the installation of poles for lengths of new transmission lines. The existing substation and transmission line sites were considered disturbed and of little archaeological value. A review of the *Aboriginal Heritage Assessment* (presented as an appendix to the Environmental Assessment) suggests that some 31 previously recorded sites are within close proximity to the broader transmission line corridor, however, no new sites were identified during the Proponent's assessment and the Proponent states that no known objects occur directly within the project area.

A number of other locations within the project area were identified as being "sensitive" in terms of potential Aboriginal cultural heritage. However, most of these were not surveyed as the Proponent indicated that the sites should not be disturbed by construction of the project. In its statement of commitments, the Proponent committed to undertaking further archaeological surveys during the final design stage in any areas where the transmission lines will deviate from existing disturbed easements. Design and construction at the new Suffolk Park substation site would also be subject to a site-specific heritage management plan and supervision by local Indigenous representatives.

Submissions

The former Department of Environment and Climate Change raised a number of concerns including:

- the inability to assess the adequacy of any proposed management measures due to the lack of a comprehensive archaeological survey (which was limited due to the large size of the project area);

- the apparent overlooking of potentially impacted Aboriginal cultural heritage objects, as identified in the route selection studies;
- the lack of evidence of support by the Aboriginal community as to the proposed management measures;
- absence of discussion of the Native Title Claims registered over parts of the project area;
- no indication as to whether reburial of Aboriginal remains is acceptable to the Aboriginal community;
- lack of detail regarding the sacred Women's site and the proposed management measures;
- no mention of the significance and management of known Aboriginal cultural heritage objects along Three Chain Road near the Lismore Bulk Supply Substation; and
- the inadequacy of the Statement of Commitments with respect to protection of Aboriginal cultural heritage.

The former Department of Environment and Climate Change also recommended proposed inclusions to the Statement of Commitments to ensure the appropriate identification, assessment and management of Aboriginal cultural heritage values.

Consideration

The Department acknowledges that a comprehensive archaeological survey of the entire project area was not feasible due to the large project area, with investigations limited to areas of known ground disturbance and Aboriginal archaeological sensitivity. The Proponent's response to submissions acknowledges that there is a need for additional survey work (once the final line routes and substation layouts are identified and detailed) in areas of moderate to high archaeological sensitivity where new ground disturbance is proposed. The additional survey work will ensure that any Aboriginal cultural heritage values likely to be impacted by the project are identified and action can be taken to avoid impacts or, if impacts are unavoidable, appropriate management measures are developed and implemented. Consequently, the Department has recommended a condition of approval requiring the Proponent to undertake further archaeological assessment in areas where ground disturbance is proposed outside existing transmission line corridors and identified as being of archaeological sensitivity (as defined in the archaeological surveys undertaken as part of the environmental assessment for the project).

The Department has also recommended that the Proponent be required to:

- identify the location of Aboriginal cultural heritage sites on route alignment sheets and substation layout plans;
- prepare an Aboriginal Cultural Heritage Management Plan, in consultation with Aboriginal stakeholders, addressing management measures for recorded sites and any proposed conservation areas;
- develop an Aboriginal Cultural Education Program to ensure the appropriate induction of all construction personnel and their obligations with respect to the management of Aboriginal objects and cultural heritage values;
- prepare a Burial Management Plan which sets out the protocols to be undertaken in the event that Aboriginal skeletal material is uncovered;
- take all reasonable and feasible efforts to avoid impacts to Aboriginal cultural heritage values at all stages of the project;
- ensure monitoring by Local Aboriginal Land Council representatives where ground disturbance is proposed in areas of archaeological sensitivity; and
- cease work in the event that previously unidentified heritage objects are uncovered and consult with Local Aboriginal Land Council representatives and the former Department of Environment and Climate Change regarding management of the objects.

The recommended conditions will enable the impacts of the project on Aboriginal cultural heritage to be better defined and hence address the former Department of Environment and Climate Change's concerns regarding the lack of information on site location and assessment, involvement of the Aboriginal community in the monitoring and management of Aboriginal cultural heritage values, as well as ensure appropriate management measures are implemented. They also reflect the former Department of Environment and Climate Change's request that a Cultural Heritage Management Plan be prepared, and submitted and approved by the Director-General prior to the commencement of construction. The Department believes that the recommended conditions of approval will ensure the appropriate assessment and management of Aboriginal cultural heritage items.

5.4 Non-Indigenous Heritage

Issue

The Proponent has indicated that only two items of heritage significance occur within the project area – the Mullumbimby Power Station and the Lismore Power Station.

The Mullumbimby Power Station was commissioned in 1926 and is located adjacent to the Mullumbimby Substation which is to be upgraded as part of the proposed project. The power station is identified as a heritage item on the *Country Energy Heritage and Conservation Register* (s.170 Register), the *North Coast Regional Environmental Plan 1988*, the *Byron Local Environmental Plan 1988*, and the *National Trust of Australia (NSW) Register*.

Although the upgrading of the Mullumbimby Substation will result in some changes to the immediate setting of the heritage item, the Proponent contends that the works will have a limited effect on the heritage values of the site and has committed to retaining the power station and its equipment in-situ and to its ongoing conservation. However, to date, the Proponent has not prepared and implemented a plan for the ongoing conservation of the power station.

The site of the Lismore Power Station forms part of the operational areas of the electricity network, even though the power station itself is no longer operational. The power station is identified as a heritage site on the *Country Energy Heritage and Conservation Register* (s.170 Register), the *Lismore Local Environmental Plan 2000*, and the *National Trust of Australia (NSW) Industrial Archaeology Register*. The Proponent has yet to conduct an options analysis to determine whether the power station will be retained in the upgrade of the Lismore South Substation.

Submissions

The Byron Shire Council raised concern that other heritage items listed in the *Community-Based Heritage Study* (and draft *Byron Shire Local Environmental Plan 2009*) were not considered in the heritage impact assessment. The Council recommended that, should any listed items be affected by the construction of the project, measures should be taken to mitigate and/or avoid adverse impacts.

The Council also suggested that the recommendations of the heritage impact assessment for the Mullumbimby Power Station be included in the conditions of approval for the project.

Consideration

The Proponent has indicated that the upgrading of the Mullumbimby Substation will not directly impact on the heritage values of the Mullumbimby Power Station as the power station will be retained. Although the Proponent has committed to preparing an archival recording for the power station, there is no commitment to prepare a Conservation Management Plan to ensure its ongoing conservation, care and maintenance. Consequently, the Department has recommended a condition of approval requiring the preparation of such a plan encompassing the buildings and associated plant and equipment. The Department has also included the Proponent's commitment to prepare an archival recording in the recommended conditions of approval along with requirements relating to the lodgement of the recording with local and State heritage organisations.

In regards to the Lismore Power Station, the Proponent is yet to determine whether it will retain or relocate/demolish the structure. Consequently, the Department has recommended that the Proponent prepare, in consultation with an industrial archaeologist, an options analysis of the feasibility of retaining the power station building and its associated plant and equipment. The analysis is to be submitted to the Director-General prior to the commencement of construction.

In the absence of any commitment by the Proponent to ensure the conservation of the Lismore Power Station should it be retained, the Department has recommended a condition requiring the Proponent to prepare a Conservation Management Plan for the site. The Department has also recommended that the Proponent prepare an archival recording for the power station, regardless of whether the power station is to be retained or demolished so that there is an historical record of the buildings, plant and equipment. The Department has also

stipulated requirements relating to the lodgement of the archival recording as part of the recommended conditions of approval.

The Proponent has committed to preparing a Moveable Heritage Management Plan in the event that the Lismore Power Station is to be removed from the site and erecting appropriate signage outlining the heritage significance of the site. The Department supports the preparation of such a plan for ensuring the appropriate relocation and conservation of the power station's buildings, associated equipment, tools, control panels and signage and has recommended the requirement for such a plan in the conditions of approval.

In its submission, the Byron Shire Council raised concern that heritage items identified in the project area in Council's *Community-Based Heritage Study* for the Shire (and draft local environmental plan) were not considered in the assessment process undertaken by the Proponent. To ensure that any items listed in the study are taken into consideration during the construction of the project and appropriate management measures are implemented to minimise impacts on such items, the Department has recommended conditions of approval requiring the Proponent to:

- detail the measures for avoiding and/or managing non-indigenous heritage items, including those listed on draft local heritage registers, in the Construction Environmental Management Plan for the project; and
- ensure all construction personnel are inducted prior to commencing construction works as to their obligations to protect non-indigenous heritage items and relics.

The Department has also recommended that the Proponent cease works in the event that previously unidentified significant non-indigenous heritage items or relics are uncovered.

The Department believes that the Proponent's commitments in conjunction with the recommended conditions of approval will ensure that the project will not significantly affect non-indigenous heritage in the project area.

5.5 Visual Amenity

Issue

Vistas throughout the project area comprise flat to gently undulating cleared and cultivated farmland, moderate to steeply undulating farmland, forested hills, riverine and estuarine areas, wetlands, scattered rural residential areas, and townships comprising residential, commercial and industrial developments.

In order to assess the potential visual impacts of the upgraded network, the Proponent commissioned a visual impact assessment which addressed the potential visual impact at representative publicly accessible viewpoints. Based on the outcomes of a visual assessment, the Proponent claims that the impact of the proposed transmission line upgrade on visual amenity is likely to be low in most areas in that transmission lines are already an existing part of the surrounding landscape for the majority of the route alignment and, where possible, existing timber poles will be retained and only the head gear or insulators replaced. In addition, there are also few sensitive receivers along the majority of the route corridor.

In addition to the upgrading of the overhead transmission lines, the upgrade works will include the construction of new underground power lines as well as undergrounding sections of existing overhead lines. An example of the proposed overhead to underground infrastructure is illustrated in Figure 23 .

Figure 23 - Example of Overhead to Underground Transition Infrastructure

Source: Figure 3.2 from Proponents Environmental Assessment – Appendix (ERM, 2009)



All of the existing substations are located behind visually permeable fence and have visible electricity infrastructure entering and exiting the sites. The upgrade of the substations may result in some visible changes. Ballina Substation and Lismore South Substation are both located within forty metres of residences.

The proposed new Suffolk Park Substation will present some visual impact due to its commanding position on the spur ridge high in the valley landscape. However, the Proponent contends that the level of visual impact will be low as the area is already highly modified and contains many large sheds and existing transmission line infrastructure. In addition, there are few residential properties that are orientated towards the substation location.



(source: Brewster Murray)

As part of the project, the Proponent intends to install two new communication towers at the Mullumbimby and Lismore Bulk Supply Substations. This will involve the installation of an approximately 30 metre high concrete pole supporting two antenna dishes at each site. A green pole will be used at Mullumbimby to reduce the visual impact. The Proponent claims that the installation of the communication towers will not significantly add to the visual landscape as it already comprises other electrical infrastructure including a high concentration of transmission poles. An example of the type of communication tower to be installed is illustrated in Figure 24.

Figure 24 - Typical Communication Tower

Source: Figure 3.6 from Proponents Environmental Assessment – Appendix M (ERM, 2009)

Submissions

Byron Shire Council indicated concern over the likely impacts on visual amenity as a result of new corridors, a new substation and the expansion of the existing substations. The Council recommended that appropriate landscaping should be provided around the perimeters of the substations to assist in reducing the bulk and scale of the substations and therefore the overall visual impact. The Council also recommended that a condition be imposed requiring the Proponent to submit a landscape plan for each new substation to Council for approval.

Given that some of the transmission line poles are located within areas zoned 7(d) Scenic Escarpment under the *Byron Local Environmental Plan*, Council requested that these be assessed in accordance with clause 30 of the *Byron Local Environmental Plan* - Development within the 7(d) Scenic Escarpment Zone and clause 31 - Development on Ridgetops. Council also indicated that it would support the undergrounding of transmission lines in the 7(d) Scenic Escarpment zone and other prominent visual locations.

A number of public submissions raised the issue of the adverse impact of the electricity network upgrade on visual amenity. In particular, concern was raised by submitters in the Skinners Shoot Road area who requested that the transmission line from the proposed Suffolk Park Substation through the Skinners Shoot area to be placed underground due to the high visual impact of an above ground transmission line. A petition containing 33 signatures supported their submission. Residents in Citriadora Drive, Ewingsdale and Raywards Lane, Byron Bay also requested that the transmission lines in their streets be placed underground on the basis of visual amenity impacts.

Consideration

Transmission Lines

The Department acknowledges that overhead transmission lines create a visual impact on the landscape. In considering the community's and Byron Shire Council's concern's about the visual impact of the transmission lines, the Department took into consideration that in most instances upgrading of the existing lines would involve retaining the existing pole structure and only replacing the head gear or insulators. Where poles require replacement, slim line poles will be used and finished in a colour which complements the surrounding landscape.

Figure 25 and Figure 26 illustrate the existing and proposed transmission line at two sections along the network. The Department believes that the visual impact of the lines would not increase to any significant degree.

Figure 25 - Viewpoint Newrybar Swamp Road (Lennox Head) Looking South



Source: Figures 6.12 and 6.13 from Proponents Environmental Assessment – Appendix M (ERM, 2009)

Figure 26 - Viewpoint from Tregeagle Road (Tregeagle) Looking West



Source: Figures 6.30 and 6.31 from Proponents Environmental Assessment – Appendix M (ERM, 2009)

The only area where a new overhead transmission line is proposed (and there are no existing 66 kV or 132 kV transmission lines) is between the Lismore South Substation and Lismore Switching Station. No concerns were raised in regards to the visual impact of the transmission line and the Department notes that there are few residences in the area, the main developments being the Lismore Landfill and sewage treatment works. The Department has also taken into consideration the fact that transmission lines are not a newly introduced landscape feature in the area with existing 66 kV transmission lines spanning east-west some 500 metres to the north of the proposed route. It also notes that the Proponent intends to use slender poles finished in a green colour in visually sensitive areas where a vegetated backdrop is present in order to blend in with the environment. Consequently, the Department is of the opinion that the visual impact of the new overhead transmission line would be low.

Nevertheless, the Department requested that the Proponent consider the issue of undergrounding lines in the areas identified in public submissions and provide further justification for overhead lines in these areas. Although Country Energy acknowledged that underground cables would reduce visual impacts, it determined the extra expense of underground cables in the Skinners Shoot and other areas could not be justified. Additionally, construction of underground lines can have a greater impact on soil erosion, water quality and flora and fauna than overhead lines due to the clearing required during construction. It is also generally more difficult to locate faults in underground cables than in overhead lines and the undergrounding of cables contributes little to reducing

any hazard and risk associated with transmission lines. The Department believes that the low level of visual impact created by overhead transmission lines is not significant enough to justify undergrounding of cables in the areas requested by submitters.

Substations

The Department considers that all of the substation sites are visually prominent. Although the Proponent has proposed some landscaping mitigation measures to reduce the visual impacts of the substations and transmission line as part of the environmental assessment process, the only commitment made by the Proponent is to develop a landscape plan for the Ballina Substation. The Department is of the view that this is insufficient and has consequently recommended a condition of approval requiring the Proponent to develop, and submit for approval, a Landscape/Revegetation Plan for the project. The Plan is to outline the measures to minimise visual impacts and ensure the visual compatibility of all project components with the surrounding environment.

Overall, the Department is satisfied that the proponent's proposed mitigation measures and Department's recommended conditions of approval should ensure that appropriate landscaping measures are employed to reduce the visual impact of the project.

5.6 Land Use Impacts

Issue

The upgrade of existing transmission lines is unlikely to adversely affect surrounding land uses as the upgrade would be restricted to existing easements. However, the installation of new transmission lines has the potential to impact the use of surrounding lands by restricting access to adjacent properties and enforcing easements across private property which preclude some activities.

Submissions

A number of the public submissions called for underground cabling for reasons of protection of property values, preserving rural tourism values and maintenance of land uses. Other public submissions called for deviations to the proposed transmission line route for similar reasons.

One of the public submissions objected to the routing of the new 132 kV line around three sides of the Alstonville substation and across their and neighbour's properties on the basis of loss of property values and restriction on land use adjacent to the line, as well as visual amenity. The submitters suggested two alternative routes so that their properties would not be impacted and requested that the Proponent discuss possible options directly. A resident in Goonellabah raised concern that the creation of an easement on the property would limit any future plans for subdivision and requested that the existing transmission line on the property be removed and a new line constructed on the adjacent unformed Crown road.

Other matters raised in the public submissions included a request by a resident along Skyline Rd that the line running through their property be removed and a new line be constructed along the unformed Crown road to the north of the property, and a request by a property owner in Alstonville that the Proponent reconsider the route of the transmission line across their property as it will impact on access to their only water supply source.

Consideration

The Department does not believe that the requests to alter existing easements on the basis of land use impacts from the upgrade of the lines is justified given that these impacts are unlikely to change as a result of the project. Furthermore, the upgrade of the lines should not represent any opportunity for landowners to seek the removal of easements from their properties in order to facilitate potential future land subdivision, especially in areas outside identified urban growth areas.

The routing of the new 132 kV line around the Alstonville substation is largely within an existing transmission line easement and the main restriction on land use within the easement is the type of vegetation that is permitted to be planted. The Department does not consider that the restrictions imposed by the easement on this landowner would justify a realignment of the proposed line. Finally, in its Preferred Project Report, the Proponent indicated that a private agreement has been reached with one submitter to ensure that the concerns raised regarding access to their water supply have been satisfactorily addressed. The Department believes that the potential

restrictions on land use that would be imposed on adjacent property owners as a result of the project are not significant enough to justify the realignment of the new easements.

5.7 Electric and Magnetic Fields

Issue

The proposed transmission lines and substations will generate both electric and magnetic fields. There is much debate on the human health impact of electric and magnetic fields and although adverse health effects have not been established, the possibility that they may exist has not been ruled out. According to the Australian Radiation Protection and Nuclear Safety Agency's (2008) *Fact Sheet 8*, human studies have consistently shown that there is no evidence that prolonged exposure to weak electric fields (such as those found in the home or in most workplaces), results in adverse health effects. Whether chronic exposure to weak magnetic fields is equally harmless remains an open question. However, studies to date have indicated either no association or a weak association with adverse health effects. In addition, electric fields are relatively easy to shield unlike magnetic fields. Consequently, the general focus of recent concern has been on magnetic rather than electric fields.

NSW Health has previously advised the Department that it would be appropriate to use the Prudent Avoidance Principle when considering magnetic fields associated with new or upgraded high voltage power lines, with the objective of minimising the level of magnetic field exposure for residents.

In order to determine whether the upgrade of the electricity network has the potential to adversely impact on the health of nearby residents, the Proponent undertook a generic assessment of the electric and magnetic fields likely to be associated with the transmission lines and substations. Six sections of the line route and five specific sites were assessed and the following scenarios modelled:

- in 2012 with the existing 66 kV lines in operation;
- in 2012/2015 as applicable, following commissioning at 132 kV; and
- around 2027 (i.e. long term).

Based on the outcomes of the assessment, the Proponent concluded that the upgraded network is unlikely to impact on human health for the following reasons:

- even directly underneath transmission lines, the magnetic fields will normally be less than 2% of the relevant health guideline of 1,000 milligauss for general public exposure over a 24-hour period;
- overall, the magnetic fields associated with the proposed 132 kilovolt transmission lines will be less than or of similar magnitude to those associated with the existing 66 kilovolt lines as magnetic fields are related to current rather than voltage;
- the magnetic field will decrease rapidly with distance from the centre-line;
- the electric fields associated with transmission lines will be less than 1,000 Volts/metre or 20% of the relevant health guideline of 5,000 Volts/metre, decreasing to 300 volts/metre (6% of the guideline value) within 15 metres; and
- electric fields associated with the upgraded substations, although doubled from 500 Volts/metre to 1,000 Volts/metre, and at the proposed Suffolk Park substation will be 20% of the relevant the relevant health guideline; and
- increase in the supply voltage at substations will not increase the existing magnetic fields on the supply side.

Submissions

In its submission the Byron Shire Council raised concern over electric and magnetic fields and recommended that the assessment of the application have regard to the issue of such fields. The Council also recommended that the project application be referred to the Australian Radiation Protection and Nuclear Safety Agency for its review and comment regarding the claims of minimal impact by the Proponent.

The issue of electric and magnetic fields was also raised in two of the public submissions with one of the submitters stating that the Proponent has failed to adequately address the impacts to human health arising from the upgrade of the electricity network. The other submitter questioned the potential for adverse impacts due to

increased electrical loads considering the effect of electric and magnetic fields have yet to be proven to have no effect on humans or animals.

Consideration

The Department notes that magnetic field impacts from transmission lines and substations already exist in the area. The Department accepts that there is concern about the potential health impacts of electric and magnetic fields. However, based on the predicted changes in magnetic field strengths, it does not appear the upgraded and new lines and substations will have any significantly greater impact on human health than the current infrastructure. In most instances, magnetic field strengths will remain the same as the existing situation or be reduced.

The Department considers that the existing design parameters and easements associated with the transmission lines and substations are appropriate to ensure the safety of surrounding residents and consistent with the policy of prudent avoidance. Nevertheless, to ensure that magnetic fields generated by the project are consistent with the currently accepted levels of safety, the recommended conditions of approval require the Proponent to prepare an Electric and Magnetic Field Management Protocol as part of the Construction Environmental Management Plan for the project. The Protocol would require the Proponent to develop strategies and design measures to ensure that the exposure of sensitive receivers to electric and magnetic fields is minimised. The Department believes that this condition would ensure that impacts associated with electric and magnetic fields are appropriately managed.

5.8 Traffic and Access

Issue

Upgrading of the transmission line network and substation and construction of the new Suffolk Park Substation will involve the mobilisation and demobilisation of plant to worksites and the delivery of equipment and materials. The Proponent has advised that there will be several trailer loads of materials and equipment delivered to the various construction sites over the construction period. This will involve heavy vehicles using an array of road types from a multi-lane, high volume national highway (Pacific Highway) to sub-arterial and collector roads (e.g. Old Pacific Highway, Skinners Shoot Road and Ewingsdale Road) and unsealed access roads. It will also involve the use of multiple access points along the route.

The Proponent has indicated that the construction-related traffic is unlikely to significantly impact on traffic flows and volumes with the exception of temporary traffic delays during the delivery of transformers and other major project infrastructure. The Proponent has also advised that the majority of line installation activities will be undertaken along existing easements, and vehicles and construction equipment traffic within the easements will be minimal. In addition, the progression of works will mean that any traffic generated will be only of short duration.

No details on the traffic volumes, haulage routes and access points were provided by the Proponent to verify the Proponent's claim that the project will have minimal impact on traffic and access. The Proponent has indicated that such information will be determined as part of the detailed design and documented in the Traffic Management Plans to be prepared for the project. In addition, the Proponent has indicated that damage to local road surfaces from heavy vehicle movements is unlikely.

Access to the Suffolk Park site is likely to present the project's most significant traffic impact. Access to the substation will be via Skinners Shoot Road and Yagers Lane. Skinners Shoot Road is a rural road with the sealed section less than four metres wide. During certain wet weather events the road can become inundated and impassable. There is a need for considerable upgrade of parts of Skinners Shoot Road and Yagers Lane to accommodate heavy vehicle movements and oversized loads during construction and operational vehicle movements. The Proponent intends to undertake upgrade works in accordance with project-related vehicle types and volumes.

Submissions

In its submission, Byron Shire Council stated that the Suffolk Park Substation has the most significant impact upon Council's road assets. However, the level of detail provided by the Proponent is insufficient in regards to the works to be undertaken. Consequently, Council has requested detailed engineering plans be lodged with the Council to assess and approve the works proposed along Skinners Shoot Road and Yagers Lane. Council also requested that traffic control plans (including details of the measures to remove/repair damage to roads and road-related infrastructure) be assessed by Council prior to the commencement of road works. In addition, Council stated that access by local residents must be maintained at all times.

As part of its submission, Council forwarded a petition by residents in the Skinners Shoot area requesting that the access roads to the substation are upgraded to meet AUSTROADS Standards with bikeway design included in the works.

One public submission questioned the validity of the traffic assessment noting that it contained outdated and incorrect information regarding Skinners Shoot Road. The submission also raised concern that a sub-grade evaluation of the road was not undertaken.

Consideration

The Department acknowledges that there will be a minor short-term increase in traffic movements on the local road network in association with the mobilisation/demobilisation of earthmoving equipment during construction. However, the proposed traffic increases on major roads resulting from haulage of plant and equipment are unlikely to significantly affect motorists as they will only represent a small increase in the overall traffic volume. Nevertheless, the Department has recommended a condition of approval requiring the Proponent to prepare a Construction Traffic Management Plan addressing construction traffic routes and construction vehicle volumes and details of construction activities that would require disruption to traffic such as road closures and detours. The Plan is to be prepared in consultation with the relevant road authorities and include the measures for the control and management of construction-related traffic. This means that the Proponent will need to consult the Byron Shire Council for road works in its local government area, as requested by the Council in its submission.

The Department believes that the local community should be informed of any impacts on traffic and access and has consequently recommended a condition of approval in the Concept Approval for the project requiring the Proponent to prepare and implement a Community Information Plan to ensure an appropriate level of consultation with affected stakeholders. Issues to be addressed in the plan include traffic management and access.

Access to the transmission lines and substations will require heavy vehicles to travel along local residential streets for at least part of the journey affecting sensitive receivers. The Department recognises that it is not possible to prohibit heavy vehicles through local streets, and hence eliminate their impact, as in built up areas access to the work sites may in some instances only be gained by traversing local streets. Although the impacts of heavy vehicles on the amenity and safety of sensitive receivers cannot be avoided, it is possible to reduce the level of impact through the implementation of appropriate mitigation and management controls. Consequently, the Department has recommended a number of conditions of approval that require the Proponent to:

- minimise construction traffic queuing and idling in local residential streets;
- minimise the use of local roads (through residential streets and town centres);
- comply with a Construction Vehicle Code of Conduct prepared to manage driver behaviour along the local road network; and
- adhere to nominated haulage routes.

The Department also recommends a condition requiring the Proponent to undertake condition surveys of nominated roads used by construction traffic and repair any deterioration attributable to such traffic on completion to a standard at least equivalent to that existing prior to the damage and to the satisfaction of the relevant road authority.

In regards to the request by residents in the Skinners Shoot area for Skinner's Shoot Road to be upgraded to meet AUSTROADS Standards with a bikeway design included in the works, the Department agrees with the Proponent's opinion that such upgrading is the responsibility of Byron Shire Council. The Proponent has

committed to upgrading Skinners Shoot Road by regrading and resealing the section of the road between its intersections with Wentworth Street and Yagers Lane, and upgrading Yagers Lane from the intersection with Skinners Shoot Road to the Suffolk Park Substation access driveway. The sealed pavement will be widened from the current width of 3 metres to 4 metres. The Department believes that the Proponent is responsible for upgrading the road to the standard required to allow for all-weather access by construction and operational vehicles accessing the Suffolk Park Substation and has recommended a condition of approval to this effect.

Operational traffic volumes associated with the project will be low and restricted to occasional maintenance works and consequently specific conditions of approval are not required. The Department is satisfied that the recommended conditions of approval should provide the necessary measures for managing construction traffic impacts to an acceptable level.

5.9 Other Issues

The Proponent has assessed the potential construction and operational noise impacts of the project and the effects of the project on air quality, soils (erosion and sediment control, and acid sulphate soils), and hydrology. In addition, an assessment has been undertaken of waste generated during construction and operation. The Proponent has committed to implementing a number of measures to minimise any associated impacts during the construction and operation of the project. The Department is satisfied with the assessment and the management measures proposed by the Proponent and its detailed consideration of these issues is provided in Table 2.

Table 2: Department's Consideration of Other Environmental Issues

Issue	Department's Consideration
Air Quality	Construction of the project has the potential to generate dust through the removal of vegetation, excavation, trenching through soils/rock and vehicular movements. The Department recognises that the Proponent has proposed a number of standard measures to mitigate dust impacts and has committed to addressing air quality as part of the Construction Environmental Management Plan for the project. To ensure minimal dust emissions, the Department has recommended a condition that requires the Proponent to undertake all works with the objective of preventing visible dust emissions. It has also recommended that the Construction Environmental Management Plan detail the measures to monitor and manage dust emissions. The Department is satisfied that with the implementation of the above management and mitigation measures, and recommended conditions of approval, air quality impacts associated with the construction and operation of the project can be appropriately managed and the residual risk minimised to an acceptable level.
Erosion and Sediment Control	The project will involve excavation for the placement of new transmission line poles, upgrading of existing substations and construction of the new Suffolk Park Substation and/or trenching for the installation of underground lines. Consequently, there is a high risk of erosion and sedimentation impacts arising during construction until the exposed areas are stabilised. The Proponent has committed to implementing standard erosion and sediment controls in accordance with its <i>Environment Operations Manual</i>. It is not known whether the practices set out in the Manual are consistent with the principles set out in Landcom's <i>Managing Urban Stormwater: Soils and Construction</i> (the Blue Book). Considering the Blue Book is the guideline accepted by Government as standard practice, the Department has recommended a condition of approval requiring the Proponent implement controls in accordance with the Blue Book. The Department has also recommended, as a condition of approval, the requirement to detail the proposed measures for the control and management of erosion and sedimentation in a Construction Soil and Water Management Plan for the project. These recommendations are consistent with the request by the former Department of Environment and Climate Change in its submission that the Proponent prepare a Soil and Water Management Plan with reference to the Blue Book.

Acid Sulphate Soils	Sections of the proposed transmission line corridors and Yagers Lane (which will be upgraded to provide access to the proposed Suffolk Park Substation) are located in land identified as having potential for acid sulphate soil. Excavation, or lowering of the water table, may result in the oxidation of sulphur contained within the soils and the subsequent generation of acid discharge from the exposed soil or spoil. In its submission, the former Department of Water and Energy raised concern that the issue of acid sulphate soils was not covered in any detail in the Environmental Assessment, and stressed the importance of including procedures in areas of risk for screening soils (e.g. at pole replacement or new pole sites, roadworks along Yagers Lane, and the Suffolk Park Substation site) in accordance with Acid Sulfate Soil Management Advisory Committee guidelines. Implementation of investigation and management measures as per the guidelines was also recommended by Byron Shire Council which, in its submission, noted that the occurrence of acid sulphate soil is widespread in the Shire. The need to comply with Acid Sulfate Soil Management Advisory Committee guidelines is reinforced in the Department's recommended conditions of approval. The former Department of Water and Energy also indicated that excavated potential or actual acid sulphate soil will need to be treated before respreading or use in construction. Similarly, the quality of any water seepage from shallow water tables in areas of potential or actual acid sulphate soil will need to be checked for neutralisation requirements before treatment and discharge. Consequently, the Department has included in its recommended conditions of approval that the Proponent document the protocols for construction works in areas of potential or actual acid sulphate soil, including the procedures for investigation, handling, treatment and management of such soils and water seepage. The Department is satisfied that the recommended conditions of approval will ensure the appropriate management of acid sulphate soils, where encountered.
Contaminated Land	A predominant land use in the project area is grazing. In the past, farmers would treat cattle for ticks by immersing them into dip solutions. Many of the former dip sites remain scattered throughout the area and are contaminated with a range of chemicals including arsenic. There are approximately 16 sites located within 200 metres of the proposed transmission line alignments, of which six are potentially located within 50 metres. Two sites were identified in close proximity to the Ewingsdale Substation site however, upon examination it was determined that the area where the substation is to be located was not contaminated. Nevertheless, as underground feeder lines are proposed in and out of the substation, the location of the dip sites will need to be further considered. A cattle dip site is also located in the valley floor near the intersection of Skinners Shoot road and Yagers Lane which will be used to access the Suffolk Park substation. The dip site may be within the specified management buffer zone for the substation and where works are required for road construction, pole placement or underground cabling. To minimise the potential for adverse environmental impacts arising from the exposure of contaminated soils, the Department recommends that prior to the construction of underground feeder lines to the Ewingsdale substation and upgrade of Yagers Lane, the Proponent undertake investigations to determine whether the sites were part of former cattle dip areas. If the land is found to be contaminated, the Department has recommended conditions of approval that require the Proponent to: • take all reasonable and feasible measures to avoid construction through these areas; and • if the areas cannot be avoided, prepare a soil contamination report detailing the proposed remediation measures; • incorporate any remediation measures into the Construction Soil and Water Management Plan

	In terms of managing potential soil contamination localised around the base of redundant treated (with copper chrome arsenic or creosote) timber power poles, the Proponent intends to bury potentially impacted soils down hole following pole removal. The Department acknowledges that this is current industry practice. The Department is of the opinion that the recommended conditions of approval will ensure the appropriate management of contaminated soils, where encountered.
Hydrology	The existing transmission lines span a number of drainage lines and water courses, the most notable being the Wilson River, North Creek Canal and Duck Creek. The Proponent has indicated that the proposed transmission line upgrade does not involve any activities within rivers. To ensure this occurs and that watercourses are afforded the necessary protection to avoid adverse water quality and flow impacts, the Department has recommended a condition of approval requiring the Proponent to avoid constructing temporary watercourse crossings for heavy vehicles and machinery and ensure that no works are undertaken in, and no machinery is placed within, any natural waterway or riparian zone. The Department has also recommended that the Proponent ensure that any construction activities within 40 metres of the bank of a watercourse are consistent with <i>Controlled Activity Guidelines</i> (Department of Water and Energy, 2008). This is consistent with the recommendation made by the former Department of Water and Energy in its submission. In its submission, the former Department of Water and Energy also raised concern that there was little discussion on the risk of intercepting groundwater during construction. To minimise the potential for adverse groundwater impacts, the Department has recommended as a condition of approval that the Proponent address groundwater management, including dewatering procedures, as part of the Construction Environmental Management Plan. In their submissions both the DECC and Byron Shire Council noted the need for appropriate handling and containment of chemicals during construction and operation of the project as a means of minimising the potential for adverse impacts on surface and groundwater quality. Consequently, the Department has specified requirements for bunding and spill management in the recommended conditions of approval. The Department is satisfied that with the implementation of the above recommended conditions of approval, any potential impacts on hydrology will be appropriately mitigated and or managed.
Fire and Explosion	In regards to the potential for bushfires, one public submitter indicated that the transmission lines should be placed underground as this would eliminate the dangerous occurrence of sparking due to litter across lines which in turn can result in bushfires. Elimination of bushfire risk by installing underground transmission lines in the Skinners Shoot area was also raised in the submission by the Skinners Shoot Residents Group. The risk of fires being created by fallen transmission line wires is a universal risk. The Proponent has indicated that this will be managed by the standard industry practice of clearing and maintenance strategies. The Department believes that these strategies would adequately address bushfire risk and that undergrounding of transmission lines is not justified by the level of bushfire risk. The potential risk for bushfire was considered for the proposed Suffolk Park Substation as this is a new development. The Proponent concluded that bushfire hazard is not considered to be a significant risk for this site considering the presence of a buffer area and distance of the site to vegetation classed as Category 1 (in terms of bushfire vegetation classes). The upgrade of all other substations would not result in increased proximity to fuel sources and bushfire risk would not increase as a result of the upgrades. The Department concurs with this assessment.

Waste	The Department considers that the main impacts associated with waste management would be restricted to the construction stages of the project. Waste streams will include green waste (from clearing), general construction waste and general rubbish. The Proponent has committed to identifying opportunities for waste reduction, reuse and recycling. Where wastes cannot be beneficially reused, the Proponent has committed to managing the wastes in accordance with the relevant guidelines. The Department is satisfied with this approach and has recommended conditions of approval to ensure that these commitments are implemented. The Department's recommendation that the Proponent maximise the treatment, reuse and/or recycling during construction and operation of any excavated soils, vegetation or solid waste materials is consistent with the NSW Government's policy of turning waste into recoverable resources.
-------	--

6. CONCLUSIONS AND RECOMMENDATIONS

In assessing the project, the Department has considered the views of the Proponent, local and State authorities, community groups and the public. The Department is satisfied that sufficient justification exists for the project given forecast population growth and electricity demand in the region, and that the impacts of the project can be mitigated and/ or managed to an acceptable level.

Construction of the project would be largely restricted to existing disturbed areas along road reserves, transmission easements, and substation sites, and the design of the infrastructure is flexible enough to allow diversions around identified areas of ecological or heritage value. In most cases, the replacement of existing lines and poles with new lines and poles of similar appearance will mean the upgrade will have little to no visual impact. Construction activities along the transmission lines would be transitory and short in duration, and all construction impacts will be appropriately managed to protect the environment and the public. Construction associated with upgraded and new substations will occur in existing cleared areas and will be appropriately managed to ensure impacts are minimised.

During operation, the project will form part of the larger Country Energy network and activities associated with the project will be restricted to routine maintenance. The substations will be appropriately landscaped and noise limits specified in the recommended conditions of approval will ensure that surrounding residents are not adversely impacted by the project.

The Department notes that the project will assist in achieving the aims of the NSW Government's *Far North Coast Regional Strategy* by meeting future population projections, facilitating urban and industrial development and improving the security of electricity supply infrastructure within the region.

The Department recommends that the Minister for Planning consider the findings and recommendations of this report and approve the project, subject to the conditions of approval.

APPENDIX A – ENVIRONMENTAL ASSESSMENT

APPENDIX B – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX C – RESPONSE TO SUBMISSIONS

APPENDIX D – STATEMENT OF COMMITMENTS
