REPORT

Preliminary Environmental Assessment

Dumaresq Substation to Lismore 330 kV Transmission Line and Associated Works

Prepared for

TransGrid

Level 12
201 Elizabeth Street
Sydney NSW 2000

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43177662

URS

Project Manager: William Barrett
Senior Associate - Environment

URS Australia Pty Ltd

Level 3, 116 Miller Street
North Sydney NSW 2060
Australia
T: 61 2 8925 5500
F: 61 2 8925 5555

Project Director: Ian McCardle
Principal - Environment

Author: Clair Baxter
Environmental Scientist

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Table of Contents

Table of Contents

Tables

Figures

Introduction Section 1

1.1 Background

TransGrid is the owner, operator and manager of the high voltage electricity transmission system throughout New South Wales, connecting generators, distributors and major end users.

URS Australia Pty Ltd (URS) has been commissioned by TransGrid to provide environmental consultancy services in relation to the establishment of a 330 kV transmission line between Dumaresq substation near Bonshaw and Lismore substation together with associated substation works (**Figure 1-1**). The new transmission line is required to improve the reliability of electricity supply to far north NSW.

Initial constraints mapping and route investigations have been completed and a preferred study area has been selected. A Study Area has been identified for a new line between Dumaresq substation and Tenterfield (Study Area West) whilst the Tenterfield to Lismore section of the line will utilise the existing, but widened, 132 kV easement (Study Area East). It should be noted that although TransGrid has identified a preferred study area this does not preclude the consideration of options that extend outside of this area. The study area will be refined following further environmental and planning studies and from information provided by the community and other stakeholders.

This Preliminary Environmental Assessment (PEA) has been prepared under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The purpose of this document is to provide sufficient information on the Project and its potential environmental impacts to allow the Director-General of the NSW Department of Planning (DoP) to issue Environmental Assessment Requirements (EARs) under Section 75F of the EP&A Act, for a project approval in accordance with Part 3A of the Act.

This document has been prepared taking into consideration:

- Part 3A of the EP&A Act;
- Part 1A of the *Environmental Planning and Assessment Regulation 2000* (the Regulation); and
- Project Applications under Part 3A – Steps in the Process (DoP 2005).

This PEA presents an outline of the project and a preliminary assessment of key environmental issues and includes:

- background and site location identifying the Project Area and Study Area (Section 1);
- project description and justification (Section 2);
- statutory planning provisions that apply to the project (Section 3); and
- a preliminary assessment identifying the likely key environmental issues of the proposal (Section 4).

1.2 Proponent

The proponent is TransGrid, PO Box A1000, Sydney South, NSW 1235. The proponent contact is Denis Novakovic, Project Manager, Capital Program Delivery, TransGrid.

Section 1 Introduction

1.3 Terminology

Table 1-1 provides a summary of the terms used within this PEA along with the areas and activities to which they refer. Each of the areas referred to are shown on **Figure 1-1**, **Figure 2-1** and **Figure 2-2**.

Table 1-1 Terminology Summary

Terminology	Refers To
Existing 132 kV easement	The existing 45 metre wide easement between Lismore substation and Tenterfield substation.
The 330 kV easement	The 60 metre wide easement that will be established upon finalisation of the ultimate alignment.
Project Area	The broader area within which the 330 kV transmission line is proposed.
Study Area	The area in which environmental assessments have been undertaken to assist in determining the preferred alignment of the 330 kV transmission line. The study area comprises a western and eastern component as defined below.
Study Area West	The area between Dumaresq substation and Tenterfield in which environmental studies have been undertaken to assist in determining the preferred alignment of the 330 kV transmission line. There is no existing transmission line within this study area.
Study Area East	The area between Tenterfield and Lismore substation comprising the existing 132 kV transmission line and easement and adjacent areas to allow expansion to a 60 m easement.

Project Description Section 2

2.1 Study Area

The proposed 330 kV transmission line would extend between Lismore substation and Dumaresq substation, near Bonshaw, in northern NSW (**Figure 1-1**) and is divided into two sections:

- Lismore to Tenterfield, approximately 130 km in length, where the proposal is to utilise the existing, but widened, 132 kV transmission line easement wherever possible (Study Area East) (**Figure 2-1**); and
- Tenterfield to Dumaresq, approximately 90 km in length, which continues from Tenterfield to the Dumaresq substation (Study Area West) (**Figure 2-2**). The proposed route generally follows the route of the Bruxner Highway from Tenterfield to the Dumaresq substation just south of Bonshaw, NSW.

Land use within the Study Area includes a mixture of grazing, cropping and forested land, interspersed with access track, road and rail infrastructure.

At the conclusion of the environmental assessment process, and following detailed design and land owner discussions, a 60 m wide easement will be established over the entire length of the transmission line.

2.2 Project Need and Justification

TransGrid is constantly monitoring the demand for electricity in NSW with its planners forecasting the future demand for electricity. The forecasted growth in the demand for electricity in the Far North of NSW is 4.6 per cent per annum, more than double the NSW average.

While TransGrid's high voltage electricity transmission network is currently capable of adequately supplying the Far North of NSW, upgrades and additions to the existing electricity transmission network will be required to ensure the continued reliability of electricity supply.

The Far North of NSW region's population is expected to grow by over 60,000 people by 2031. TransGrid needs to upgrade the region's electricity supply to meet the growing energy needs of the area, in particular Lismore.

TransGrid identified that the construction and installation of a 330 kV transmission line, linking Lismore with Dumaresq substation, would reinforce the network and cater for the forecasted population growth in the Far North of NSW.

2.3 The Study Area

2.3.1 Lismore to Tenterfield

There is an existing 132kV transmission line and associated 45 m wide easement between Lismore and Tenterfield substations (**Figure 2-1**). A significant portion of the existing transmission line route traverses densely vegetated and undulating terrain as it crosses the Great Dividing Range. The preliminary identification of these environmental constraints through the Great Diving Range, together with the availability of utilising the centreline of the existing transmission line has meant that further development of alternative options was not undertaken. Therefore, a widening of the existing 45 metre wide easement to 60 m, the decommissioning of the existing 132 kV line and the construction of a new 330 kV line was considered the most feasible for the section from Lismore to Tenterfield.

Section 2 Project Description

2.3.2 Tenterfield to Dumaresq substation

To enable the connection of TransGrid's Dumaresq substation with Tenterfield, a 330 kV line is proposed to be constructed. A two kilometre wide area for further study (Study Area West) was selected based on a desktop and field analysis (**Figure 2-2**). Study Area West is generally located on the southern side of the Bruxner Highway.

A line route feasibility study was prepared on behalf of TransGrid to assess three options for connecting Tenterfield and Dumaresq substations.

2.4 Key Elements of the Proposal

2.4.1 Transmission Line Physical Components

The proposed transmission line would comprise of a 330 kV single circuit steel tower (the steel towers) and conductors (wires).

Supporting structures are required at regular intervals along the line to ensure that adequate and safe clearance is maintained. The towers will be located on average at approximately 250 m to 300 m intervals along the centreline of the 60 m easement. The intervals can be up to 400 m over gullies.

The steel towers will extend to a height of approximately 35 to 40 m. The steel towers are approximately 10 m in diameter at the base and 22 m in diameter at the top.

2.4.2 Construction Process

The construction process would include the decommissioning and removal of the existing 132 kV transmission line between Lismore and Tenterfield.

The construction works would be undertaken in a number of successive stages, comprising:

- pre-construction activities;
- access track upgrading and / or construction as required;
- establishment of a temporary site office;
- installation of temporary and permanent fences and gates;
- vegetation clearing along the 60 m wide easement as required for access and safety clearance purposes;
- site preparation and steel tower foundation work;
- installation of steel tower structures;
- conductor and earthwire stringing between each of the erected towers; and
- rehabilitation of site.

2.4.3 Access

Existing tracks will be used where possible to access the easement, however, new access roads may also be required, some of which may be needed at creek crossings. Access roads will be used for construction purposes and also for ongoing line maintenance. Tracks will be generally 4 – 5 m in width.

2.4.4 Maintenance

In summary, maintenance of the easement generally involves:

- vegetation clearing to maintain safe clearances from conductors to vegetation. Such work would predominantly involve removal of trees and the slashing of the shrub layer beneath conductors within the easement;
- in specific areas nominated for their environmental significance such as steep slopes, threatened species habitat and/or Endangered Ecological Communities, restricted clearing can be implemented to retain habitat and vegetation in the easement; and
- follow up inspections and application of herbicide where vegetation is identified as likely to infringe clearances before the next scheduled maintenance visit.

2.4.5 Substation Works

At both Lismore and Dumaresq substations, new 330 kV line switchbays will be constructed and electrical equipment installed within the switchyards. The work is necessary to allow connection of the line to the existing TransGrid network.

Other substation works may be required to ensure reliability obligations to consumers are met and full details will be provided in the Environmental Assessment Report.

Section 3 Planning Considerations

3.1 Commonwealth Legislation

3.1.1 Environment Protection and Biodiversity Conservation Act 1999

Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) states that an action which *has, will have or is likely to have a significant impact on a matter of national environmental significance* may not be undertaken without prior approval of the Commonwealth Minister for Environment and Heritage, as provided for under the provisions of Part 9 of the EPBC Act. The Act identifies the following matters as matters of national environmental significance for which Ministerial approval is required:

- World Heritage properties;
- National Heritage places;
- Wetlands of international importance (including Ramsar Wetlands);
- Listed threatened species and ecological communities;
- Listed migratory species protected under international agreements (CAMBA and JAMBA);
- Protection of the environment from nuclear actions; and
- Commonwealth marine areas.

Preliminary environmental assessment studies indicate that the Study Area contains listed threatened species and ecological communities. Further studies will be undertaken to determine the potential impact on matters of national environmental significance and a decision will then be made on whether the proposal needs to be referred to the Commonwealth.

If the project is deemed to be a controlled action, Commonwealth issues will be assessed under the Bilateral Agreement between the Commonwealth and NSW governments, whereby Part 3A assessment under the *Environmental Planning and Assessment Act 1979* is accredited for assessment purposes under the EPBC Act.

3.2 NSW State Legislation

3.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2000* (the Regulation) provide the framework for the assessment and approval of proposed developments in NSW.

Part 3A of the EP&A Act provides a process for the assessment of developments which are considered to be 'Major Projects' as declared by State Environmental Planning Policy (Major Projects) 2005 (SEPP MP) or by order of the Minister in the Government Gazette.

Planning Approvals

Notes under Clause 6 of SEPP MP state that under section 75B of the EP&A Act, development may be declared by a State Environmental Planning Policy or Ministerial Order to be a project to which Part 3A applies.

Ministerial Order No.96, published in July 2005, states that State government infrastructure projects which were likely to significantly affect the environment, must be determined by the Minister under Part 3A rather than the

State Governments proponent agency. The effect of Ministerial Order No.96 (2005) in this case is that if, in the opinion of TransGrid, a transmission line proposal would require an Environmental Impact Assessment (EIA) to be obtained under Part 5 of the EP&A Act, the proposal is declared to be major infrastructure development to which Part 3A applies.

On the basis of initial studies completed to date TransGrid has formed the view that the proposal is likely to have a significant impact on the environment. As such the project is defined as a major infrastructure development under Ministerial Order No.96 and Part 3A of the EP&A Act would apply.

3.2.2 Environmental Planning Legislation

While the EP&A Act provides the framework for the planning and development approvals system in NSW, there are a number of other Acts and Regulations of relevance to the proposed Project. These Acts and Regulations would be identified and considered during the environmental assessment of the Project. Key Acts of relevance are discussed below. It is noted that Part 3A of the EP&A Act removes the need to obtain some of the approvals under these Acts or Regulations.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (PoEO Act) relates to pollution and waste disposal in NSW and provides for the licensing of certain types of pollution caused by development or operation of developments.

Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) relates to the conservation, development and sharing of the fishery resources of the State for the benefit of present and future generations. For approved projects under Part 3A (s75U(b)) of the EP&A Act, a permit under section 201, 205 or 219 of the FM Act is not required.

Water Management Act 2000

The *Water Management Act 2000* (WM Act) provides for the protection of river and lakeside land in NSW, formerly held under the *River and Foreshore Improvements Act 1948* for areas covered by a Water Sharing Plan. The proposed works may involve the crossing of waterways to provide access to the easement. For approved projects under Part 3A (s75U(h)) of the EP&A Act, water use approval under section 89, water management work approval under section 90 or an activity approval under section 91 of the WM Act is not required.

Threatened Species Conservation Act 1995

Under the EP&A Act, impacts on threatened species listed under the *Threatened Species Conservation Act 1995* (TSC Act) are required to be assessed. The TSC Act provides legal status for biota of conservation significance in NSW. The Act aims to '*conserve biological diversity and promote ecologically sustainable development*'. The environmental assessment will identify the presence of any threatened species and the strategies for management and mitigation of impact.

Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides for the protection of items of local, regional and State heritage significance. It contains a list of State Heritage Items and outlines the process of assessment of development

which may impact items of heritage significance. Under Part 3A of the EP&A Act, an approval under Part 4 or an excavation permit under section 139 of the Heritage Act is not required, nor does Division 8 of Part 6 of the Heritage Act apply to prevent or interfere with the carrying out of an approved project.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the preservation of land and the protection of that land, as well as the protection of flora and fauna and aboriginal heritage. For approved projects under Part 3A (s75U(d)) of the EP&A Act, a permit under section 87 to excavate an aboriginal site or a consent under section 90 to destroy an aboriginal site is not required. There are no designated National Parks or Nature Reserves located within the Study Area. However, several National Parks are located nearby the Study Area but are not expected to be impacted.

3.2.3 State Environmental Planning Policies

State Environmental Planning Policy (Major Projects)

According to State Environmental Planning Policy (Major Projects) (SEPP Major Projects), developments referred to as a 'Major Project' requires assessment and approval of the Minister for Planning in accordance with Part 3A of the EP&A Act. The SEPP Major Projects defines certain types of developments as major projects.

As stated in **Section 3.2.1** the project is considered to be a 'Major Project'.

SEPP 44 (Koala Habitat Protection)

The Policy aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline:

a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and

b) by encouraging the identification of areas of core koala habitat, and

c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.

Inverell, Tenterfield, Kyogle, Richmond River and Lismore local government areas are listed under Schedule 1 of this Policy. As such, Council(s) will be consulted in relation to the presence of Koala habitat. An assessment for the presence of feed trees listed under Schedule 2, within the study area, will be undertaken as part of the environment assessment process for biodiversity.

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (SEPP Infrastructure) provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

Division 5, subdivision 1, section 41 – Development permitted without consent applies to the proposal. Clause 1 states that development for the purposes of an electricity transmission or distribution network may be carried out

by, or on behalf of, an electricity supply authority or public authority without consent on any land. However, such development may be carried out without consent on land reserved under the NPW Act only if the development:

a) is authorised by or under that Act, or

b) is, or is the subject of, an existing interest within the meaning of section 39 of that Act, or

c) is carried out on land to which that Act applies over which an easement has been granted and is not contrary to the terms or nature of the easement, or

d) is an electricity work to which section 53 of the *Electricity Supply Act 1995* applies.

The project would be permissible without consent and is to be assessed under Part 3A of the EP&A Act

3.2.4 Regional Environmental Plans

North Coast REP 1988

Provides local government with state and regional policy guidelines for the preparation of local environmental plans and for certain types of development. The plan sets the basis for new urban and rural development. The emphasis is on progress coupled with careful management.

The plan applies to local government areas of the North Coast including Lismore, Kyogle and Richmond River.

3.2.5 Local Environmental Plans

The Study Area transverses five local government areas as follows:

- Inverell LGA
- Tenterfield LGA
- Kyogle LGA
- Richmond Valley LGA
- Lismore LGA

Under the SEPP Infrastructure the proposed development can be carried out without consent (refer **Section 3.2.3**).

Inverell LEP 1988

The Study Area is zoned 1(a) Rural (Agricultural) under the *Inverell Local Environmental Plan 1988* (Inverell LEP).

The plan identifies that transmission lines on land zoned 1(a) Rural (agricultural) would be permissible under Item 4 with development consent.

Tenterfield LEP 1996

The Study Area is zoned 1(a) (General Rural) and identified under Clause 20 – Special Emphasis Area under the *Tenterfield Local Environmental Plan 1996* (Tenterfield LEP).

Section 3 Planning Considerations

The plan identifies that transmission lines on land zoned 1(a) (General Rural) and under Clause 20 – Special Emphasis Area would be permissible with development consent.

Kyogle Interim Development Order

Kyogle Council is currently preparing a draft LEP which is proposed for completion in late 2009; they have advised to apply the zoning under the Kyogle Interim Development Order. Upon completion of the amended LEP, any new zonings will be reviewed.

The Study Area is zoned 1(A) (Non Urban) and 1(B) (Non Urban – 400 metres either side of a Main Road) under the *Kyogle Interim Development Order* (Kyogle IDO).

The plan identifies that transmission lines on land zoned 1(A) (Non Urban) and 1(B) (Non Urban – 400 metres either side of a Main Road) would be permissible with development consent.

Richmond River LEP 1992

The Study Area is zoned 1(a) Rural (Prime Agricultural Land), 1(b1) Rural (Secondary Agricultural Land) and 7(b) Environmental Protection (Scenic Escarpment) under the *Richmond River Local Environmental Plan 1992* (Richmond River LEP).

The plan identifies that transmission lines on land zoned 1(a) Rural (Prime Agricultural Land), 1(b1) Rural (Secondary Agricultural Land) and 7(b) Environmental Protection (Scenic Escarpment) would be permissible under Item 3 with development consent.

Lismore LEP 2000

The Study Area is zoned 1(a) (General Rural), 1(b) (Agricultural Rural) and 1(r) (Riverlands) under the *Lismore Local Environmental Plan 2000* (Lismore LEP).

The plan identifies that transmission lines on land zoned 1(a) (General Rural), 1(b) (Agricultural Rural) and 1(r) (Riverlands) would be permissible under Items 30.4, 31.4 and 35.4 with development consent – advertised development.

Key Environmental and Social Issues Section 4

4.1 Introduction

This section provides a preliminary assessment of the key environmental issues associated with the Dumaresq substation to Lismore 330 kV transmission line and associated substation works. Key environmental issues have been identified through a review of previous studies carried out for the proposed transmission line, and preliminary desk-based and field investigations.

The following have been identified as key issues that will require detailed evaluation in the Environmental Assessment Report:

- consultation;
- land use and ownership;
- ecology;
- cultural heritage;
- visual amenity;
- landform;
- soils, geology and topography;
- surface water;
- traffic and transport;
- mineral resources;
- noise;
- socio-economic;
- air quality; and
- Electric and Magnetic Fields.

4.2 Consultation

In order to undertake a comprehensive Environmental Assessment of the proposed Dumaresq to Lismore 330 kV Transmission Line Project, appropriate emphasis needs to be placed on those issues of greatest significance to the local environment, neighbouring landowners and the wider community. To ensure this occurs, a program of community and Government consultation, preliminary environmental studies and review of the literature will be undertaken to identify relevant environmental issues and potential impacts.

The objectives of the community consultation program are to notify and inform the community of the proponent's proposal and encourage the provision of feedback to assist in the identification of key environmental and community issues.

Section 4 Key Environmental and Social Issues

A range of consultative and assessment mechanisms are being implemented to engage the community, from the preliminary environmental assessment stage and throughout the preparation of the environmental assessment, as outlined below:

- letters to potentially affected lot holders updating them at each new stage of the project timeline (initial project notification 8 April 2009);
- provision of a 1800 number to allow feedback;
- direct response to letters, emails and 1800 number enquiries by TransGrid representatives;
- reply paid address for mail responses;
- ongoing field visits by TransGrid representatives to discuss the position of the transmission line on their property;
- media releases (initial media releases 19 March; 27 April; 11 May 2009);
- project update releases (May 2009);
- public meetings (initial public meeting 13 June 2009);
- one on one meetings with landholders;
- public display material; and
- information sessions at various locations.

4.3 Land use and Ownership

The transmission line would extend over 200 km from Lismore substation in the east to Dumaresq substation, within Inverell local government area, near the township of Bonshaw in the west. The townships in the vicinity of the transmission line include Lismore, Casino, Tabulam, Drake, Tenterfield and Bonshaw.

The transmission line would pass through a number of land uses including grazing land, cropping and forested areas.

Lismore to Tenterfield

The existing 132 kV easement connects at the Lismore 330 kV substation and travels west, approximately 120 km, to connect with the Tenterfield 132 kV Substation (**Figure 2-1**). The Lismore substation is located at McKees Hill off Rogersons Lane and accessed via the Bruxner Highway into Schneiders Lane at McKees Hill approximately half way between the towns of Lismore and Casino.

The first section of the existing easement from the Lismore substation west to Casino comprises rural properties, grazing land and cropping and is within the flood plain of the Richmond River. The easement traverses the north coast railway line just south of Casino.

From Casino the easement continues west through the Richmond Valley, traversing rural properties, grazing land, cropping, the Shannon Brook and Mummulgum Creek where the land moves into more rugged hilly country, passing the northern boundaries of the Hogarth Range Nature Reserve and Mallanganee National Park and the southern boundary of the Richmond Range National Park.

Within Kyogle LGA, the section between Cambridge Plateau Road and Bonalbo Woodenbong Road is relatively flat agricultural land with sparse, if any, remnant vegetation. West from Bonalbo Woodenbong Road the easement passes through rugged and densely vegetated terrain and over Tunglebung Creek.

The township of Tabulam is located just to the south of where the easement passes over the Clarence River. Land use includes grazing land and vegetation is sparse at this point. The easement passes over Plumbago Creek and further along Teatree Creek and is now located within the local government area of Tenterfield. The terrain is rugged and densely vegetated through this section passing through the Girard State Forest and the township of Drake.

At White Rock Mine Road the easement runs almost parallel with Fairfield Creek, traversing steep and densely vegetated terrain until it turns slightly south towards MacLeods Creek Road where there is an open sparsely vegetated section of land for approximately a kilometre before crossing Sandy Creek and passing through rugged and densely vegetated land. The easement crosses Clear Creek where the land is less densely vegetated and heads toward Tenterfield. The land within this vicinity is more open grazing land. The easement crosses Cataract River and Barney Downs Creek before connecting with Study Area West, east of the Tenterfield 132 kV substation.

Tenterfield to Dumaresq Substation

The study area intersects with the existing 132 kV easement approximately 4 km east of the substation at Tenterfield (**Figure 2-2**). There are a number of rural residences at this point. The study area heads north several kilometres to near Bryans Gap Road where it turns west toward Mt Lindesay Highway, Tenterfield Creek and Pitkins Swamp Creek. The land use in this area is primarily grazing land with rural residences. The study area traverses Washpool Creek Road and Old Ballendean Road and a number of residences before passing over the New England Highway and Blacksmiths Creek.

The study area runs almost parallel with the Bruxner Highway for approximately 20 km before veering south west toward Mole River. The land use within the section from Tenterfield to Mole River consists of grazing land, cropping and scattered open woodland vegetation. Kildare Road and Ross Road provide access to the study area. Around Mole Station Road the land is sparsely vegetated and used for grazing. Gibraltar Road provides access from the Bruxner Highway to the study area, crossing the Mole River before joining with Mole River Road.

The study area runs along the foothills from Mole River, almost parallel with Reedy Creek Road. The land use in this vicinity is grazing land and cropping and as well as some open woodland.

Heading southward toward Dumaresq substation the study area runs along the base of rugged densely vegetated terrain. The flat area along the foothills consists of some rural residences, grazing land, cropping and horticulture such as vineyards and open woodland.

Around Black Creek Road the Study Area West is bounded by rugged densely vegetated terrain to the south east and the Dumaresq River, NSW and Queensland border, to the north west. The study area crosses Black Creek and Beardy River before connecting with the Dumaresq substation. The surrounding land use in this area consists of grazing land, cropping, open woodland and several rural residences.

Section 4 Key Environmental and Social Issues

4.4 Ecology

A desktop review and preliminary field survey was undertaken by the URS Ecology team to identify potential constraints within the Study Area based on biodiversity values.

The Study Area contains three main landscape units: human population centres and associated infrastructure; ranges and hills supporting native forest; and cleared or partially cleared plains supporting agriculture or low density residential areas.

Ranges traverse from north to south through the centre and western end of the Study Area. In general these ranges are well vegetated and include lands protected in National Parks, State Forests and Nature Reserves. There are no National Parks or Nature Reserves located within the Study Area (refer **Figure 2-1** and **Figure 2-2**). There are large contiguous patches of native forest and woodland within these areas which are bisected in various places by cleared easements for roads and electricity lines. The foot slopes of these ranges and lower hills contain a mixture of remnant vegetation, disturbed regrowth and cleared land. The remainder of the Study Area consists of open plains and partially cleared paddocks that are used for agriculture. There are large areas of intact or regenerating woodland along road corridors, waterways, floodplains and within conservation reserves.

The Study Area contains biodiversity constraints that will require a detailed assessment of impacts and may require 'biodiversity offsets' as per Department of Environment and Climate Change (DECC) guidelines depending on the final alignment of the transmission line. Parts of the Study Area have undergone extensive clearing and modification so there are opportunities to restrict the majority of the proposed transmission line to areas with low biodiversity value.

A desktop review identified 245 threatened species listed under the TSC Act that could potentially occur within the Study Area.

The Commonwealth protected matters searched identified one ramsar site, five threatened ecological communities, 145 threatened species and 38 migratory species that may occur within the Study Area.

Field surveys identified four EEC's listed under the TSC Act and one EEC listed under the EPBC Act (**Table 4-1**).

Table 4-1 Endangered Ecological Communities (EEC) recorded within the Study Area

Endangered Ecological Community
EPBC Act
White box – yellow box – Blakely's red gum grassy woodlands and derived native grasslands
TSC Act
Inland grey box woodland in the Riverina, NSW south western slopes, Cobar peneplain, Nandewar and Briglow Belt south bioregions
Montane Peatlands and Swamps of the New England Tableland, NSW north coast, Sydney Basin, south east corner, south eastern highlands and Australian alps
New England Peppermint (*Eucalyptus nova-anglica*) woodland on basalts and sediments in the New England tableland bioregion
White box, yellow box, Blakely's red gum woodland

In addition to these EECs incidental observations identified three threatened bird species listed under the TSC Act, the Brown Treecreeper (*Climacteris picummnus*), Turquoise Parrot (*Neophema pulchella*) and Diamond Firetail (*Stagonopleura guttata*).

Biodiversity Impacts

The biodiversity assessment will follow the general principle of 'avoid, mitigate then offset' impacts on biodiversity values, particularly native vegetation and threatened biota. Route selection and detailed design will aim to minimise impacts on biodiversity.

Developments assessed under Part 3A of the EP&A Act must assess the significance of potential impacts of a proposed development on threatened biota. However assessments pursuant to Part 3A must also ensure the development 'maintains or improves biodiversity values (i.e. there is no net impact on threatened biodiversity or native vegetation)'. Hence, although s.5A of the Act does not have to be considered by the consent authority in the determination of a Project Application under Part 3A, a biodiversity offset may be required where loss of biodiversity values (particularly clearing of EECs) cannot be avoided.

As part of preliminary assessments, biodiversity constraints were defined and mapped across the Study Area based on the presence of EECs, including:

- conservation status of native vegetation (i.e. its legal status on the TSC and EPBC Act); and
- age, structure and degree of disturbance to native vegetation.

It is likely that some clearing of native vegetation will be required and there is the potential for secondary impacts such as increased erosion, sedimentation or weed invasion. Appropriate mitigation measures will be developed to minimise negative impacts. 'Residual impacts' are negative environmental impacts arising from a development after all practicable means to avoid or mitigate impacts have been exhausted. These residual impacts will be addressed in a suitable biodiversity offsets package accompanying the Environmental Assessment.

4.5 Cultural Heritage

Indigenous Heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) database in April 2009 identified 47 registered aboriginal sites in the Project Area. Only 5 are within the Study Area and are all open sites.

The Study Area contains a number of landscape units that are likely to contain sites of interest including riparian corridors, spurs and hill crests.

Further studies will be undertaken as part of the indigenous environmental assessment, including the following:

- use of landform modelling using aerial photographs and topographic maps to determine the location of landforms most likely to contain sites;
- consultation with the LALC and Traditional Owners to determine any known culturally significant sites; and
- assessment of indigenous heritage constraints along the transmission line Corridor.

Consultation with the Aboriginal Community will be consistent with the *Interim Community Consultation Requirements* released by DECC in 2005 and the draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* prepared by DECC in 2005.

Section 4 Key Environmental and Social Issues

Non-Indigenous Heritage

A search of the Australian Heritage Database was undertaken for items listed in the Inverell, Tenterfield, Kyogle, Richmond River and Lismore LGA's. The search revealed a total of 69 items listed for the five LGA's (none were listed in the Richmond River LGA). The majority of these items are unlikely to be within the Study Area due to their location within townships, however, this will be assessed further as part of the environmental assessment.

A search was undertaken of the NSW Heritage Office's Heritage Database for items listed in the Inverell, Tenterfield, Kyogle, Richmond River and Lismore LGA's. A search of the database revealed 24 items listed under the *Heritage Act 1977* and total 471 items listed by Local Government and State Agencies.

High Conservation Value Old Growth (HCVOG) is listed under the *Heritage Act 1977* within four of the LGAs. It is ecologically mature eucalypt forest showing few signs of human disturbance. National Parks in the area containing HCVOG include Boonoo Boonoo National Park, Richmond Ranges National Park, Washpool National Park and Gibraltar Range National Park.

Further assessment will be undertaken as part of the non-indigenous assessment and will include:

- approaching local historical societies for any knowledge held within their group regarding the Study Area; and
- further assessment of any items within close proximity of the Study Area.

4.6 Visual Amenity

The existing visual amenity of the Study Area is that of a typical rural environment, with views of the existing 132 kV transmission line from rural properties within the vicinity of the 132 kV easement. The main thoroughfare is the Bruxner Highway, with a number of secondary roads leading off along the way. There are a number of small villages that are located in the surrounding area with surrounding rural residential properties where land use consists of grazing, cropping and open woodland as well as national parks and state forests.

An assessment of visual impact of the transmission line and any associated works will be presented in the Environmental Assessment Report which will take into account the existing landscape and visual characteristics of the location and present an assessment of the potential impacts of the proposal on the landscape and visual amenity of the area.

4.7 Soils, Geology and Topography

Soil Landscapes Series Sheets are only available for the first section of the Study Area from Lismore to Casino. A review of relevant reports and desktop searches have been undertaken for the remainder of the Study Area.

Lismore to Tenterfield

The geology of the easement from Lismore to Casino consists of deep alluvial sediments – alluvium, clay and sand and fine-grained basaltic sediments predominate (Soil Landscapes of the Lismore to Ballina 1:100 000 Sheet).

Between Lismore and Tenterfield the easement lies within the North Coast bioregion and the New England Tableland Bioregion and it is part of the New England Fold Belt. Small bodies of granite have intruded the sedimentary rocks and there are three centres of tertiary basalt eruption (DECC, 2003).

Soils within the North Coast Bioregion are typically red, friable loams or clay loams with high fertility, good structure and excellent water-holding capacity, on the basalts. Whereas shallow yellow earths are found on hillcrests, yellow and brown texture contrast profiles are found on the slopes, and organic loams or sandy loams are found on the alluvial plains, on granites and most of the quartz rich sedimentary rocks (DECC, 2003).

Tenterfield to Dumaresq Substation

The study area from Tenterfield to Dumaresq lies predominantly within the New England Tableland bioregion and is part of the New England Fold Belt. The geology of this region is described as consisting of several intrusions of granites each of slightly different composition. The soil type consists of siliceous sands amongst granite rock outcrops. Widespread mellow texture contrast soils of relatively low fertility and poor structure, prone to erosion (DECC, 2003).

Soil in basalt areas consists of shallow stony loams on the steep areas, and red brown to black, fertile, well-structured loams are found on the flatter slopes. In the valley floors soils are sometimes waterlogged. Siliceous sands and red earths occur on tertiary sands and gravels (DECC, 2003).

Further impact assessment to be undertaken and included in the environmental assessment report will include:

- identification of potential hazard areas for access tracks and tower foundations works;
- identification of the relationship between slope and feasibility for potential access roads;
- visual analysis of soils supplemented with shallow test pits in representative locations to identify physical soil attributes and the potential for erosion hazards;
- identification of extent of groundcover; and
- visually confirm the extent of the floodplains.

An outline erosion and sedimentation control plan would be prepared for inclusion in the Environmental Assessment Report in accordance with *Managing Urban Stormwater – Soils and Construction Volume 1 (4th Edition)* (Landcom 2006) *and Volume 2 (DECC, 2008).*

4.8 Surface Water

The Study Area is located within the Richmond River and the Clarence catchment within the larger Northern Rivers catchment area and Border Rivers-Gwydir catchment. There are a number of river systems within the vicinity of the Study Area. These include the Richmond River, Wilsons River in the vicinity of Lismore and Casino, the Clarence River in the vicinity of Tabulum and the Dumaresq River which creates the border between NSW and QLD near the Dumaresq substation.

There are also many smaller creeks and a number of rural dams within the Study Area.

Lismore to Tenterfield

The existing easement lies partially within the Richmond River catchment which covers an area of 7,022 km^2 and includes the Wilsons River and the Richmond River which ultimately discharge to the ocean at Ballina. The catchment coastal plain extends south from Evans Head to almost Cape Byron in the north, as far as the Border Ranges National Park and the Richmond Ranges forming the northern and western limits of the catchment. The townships of Lismore, Ballina, Casino and Kyogle are located within this catchment. The major land use in

the area of the catchment in the vicinity of the study area is cattle grazing with dairy, beef and timber industries being the dominant land uses around Kyogle and Casino (Northern Rivers CMA, 2009).

The easement also lies partially within the Clarence catchment covering an area of 22,716 km^2, including the Clarence River, the biggest river on the east coast of NSW within the catchment discharging to the ocean at Yamba. The catchment extends from Stanthorpe to Glen Innes by the Great Dividing Range; by Baldblair, the Doughboy Ranges and The Dorrigo Plateau in the south; and the MacPherson Ranges forming part of the border to the north. The boundaries to the east extend from Coffs Harbour to Yamba. The major land use is beef cattle production with sugar cane being the dominant crop (Northern Rivers CMA, 2009).

Tenterfield to Dumaresq Substation

The Tenterfield to Dumaresq section lies within the Border Rivers – Gwydir catchment which covers an area of approximately 50,000 square kilometres. The main rivers that drain the eastern slopes of the eastern highlands are the Dumaresq, Severn and Macintyre. The Gwydir River is located to the south of the Study Area in the southern part of the overall catchment (Border Rivers-Gwydir CMA, 2009).

For the Environmental Assessment Report field and desk based studies will be used to describe the existing hydrological and hydraulic environment of the Study Area. Investigation will be undertaken to determine and mitigate potential surface water impacts arising from the proposed transmission line and associated works during its construction and operation. An outline erosion and sedimentation control plan will be prepared.

4.9 Traffic and Transport

During the construction phase of the project, traffic levels are likely to increase from a number of activities including transport of construction material and general personnel vehicles. Once operational, it is expected that only occasional visits to the sites would be required for inspection and maintenance purposes.

The major thoroughfare in the vicinity of the Study Area is the Bruxner Highway. There are numerous local roads and unsealed tracks which provide access from the Bruxner Highway to the Study Area.

A transport impact assessment would be undertaken as part of the environmental assessment and would include:

- review of relevant existing documentation including existing traffic data;
- traffic counts to determine the existing traffic flow, heavy vehicle component, identification of peak periods and the existing Levels of Service based on the *Guide to Traffic Engineering Practice, Par 2: Roadway Capacity* (Austroads, 1994);
- consultation with RTA and Councils; and
- qualitative assessment to determine the impacts of the proposal on the existing transport network, assessment of construction and operational traffic generation, impacts on surrounding network and identification of mitigation and management measures.

4.10 Mineral Resources

Information from the Department of Primary Industries (Minerals) (DPI) will be obtained as part of the environmental assessment to establish any previous mining in the area and leases granted for future

exploration. An assessment will be undertaken to determine whether there may be any potential impacts due to subsidence.

4.11 Noise

The Study Area is located within a rural setting and is zoned primarily 1(a) Rural.

The environmental assessment would incorporate a noise impact assessment which would include:

- monitoring of existing background noise at the nearest residential locations. All noise monitoring would be carried out in accordance with the NSW INP and the relevant Australian Standard (AS 1055.1:'Acoustics – Description and Measurement of Environmental Noise');
- establishment of construction noise criteria assuming the lowest background noise levels at receptors for each day, evening and night time period in accordance with the NSW Environmental Noise Control Manual;
- calculations and predictions of noise levels at surrounding residents by undertaking computer noise modelling for the construction and operational phases of the project; and
- provision of management and mitigation measures.

4.12 Socio-Economic

The proposed 330 kV transmission line would have positive impacts on the existing social and economic environment of the local and regional area with the provision of a reliable source of energy for the growing population of the far north of NSW.

The environmental assessment will include a social impact analysis of the potential effect of the proposed transmission line on local and regional employment, infrastructure and demography. An economic impact assessment will be undertaken which will identify the economic attributes and benefits to the surrounding communities and region.

4.13 Air Quality

Local air quality in the vicinity of the Study Area would be typical of a rural environment. The major influences likely to affect air quality would be from local traffic along the Bruxner Highway and local roads in the area. Other sources contributing to air quality degradation would include local industry and wood heaters.

The main potential for the project to impact on air quality would be during the construction phase.

The environmental assessment would incorporate an air quality impact assessment which would include:

- documenting the likely causes of unacceptable air emissions (primarily dust);
- identifying management strategies; and
- identifying any monitoring requirements to demonstrate that dust has been successfully managed.

Section 5 Conclusion

TransGrid is proposing to construct a 330 kV transmission line between Lismore substation and Dumaresq substation, near Bonshaw, in northern NSW and associated substation works.

The proposed works would reinforce the network and cater for the forecasted population growth in Far North NSW.

The proposal is considered to be a major project as Ministerial Order No.96 is relevant. The effect of Ministerial Order No.96 (2005) is that if in the opinion of TransGrid, the transmission line proposal would require an environmental impact assessment to be obtained under Part 5 of the EP&A Act, the proposal is declared to be a major infrastructure development to which Part 3A applies.

This document acts as a formal request to the DoP to issue environmental assessment requirements for the project. This preliminary environmental assessment indicates that the key issues associated with the proposal comprise potential impacts on soils, ecology, visual amenity and heritage. These issues along with a number of additional issues would be assessed in detail as part of the environmental assessment.

Upon receipt of the environmental assessment requirements, TransGrid will prepare an environmental assessment and submit the assessment to the DoP in support of this Project Application.