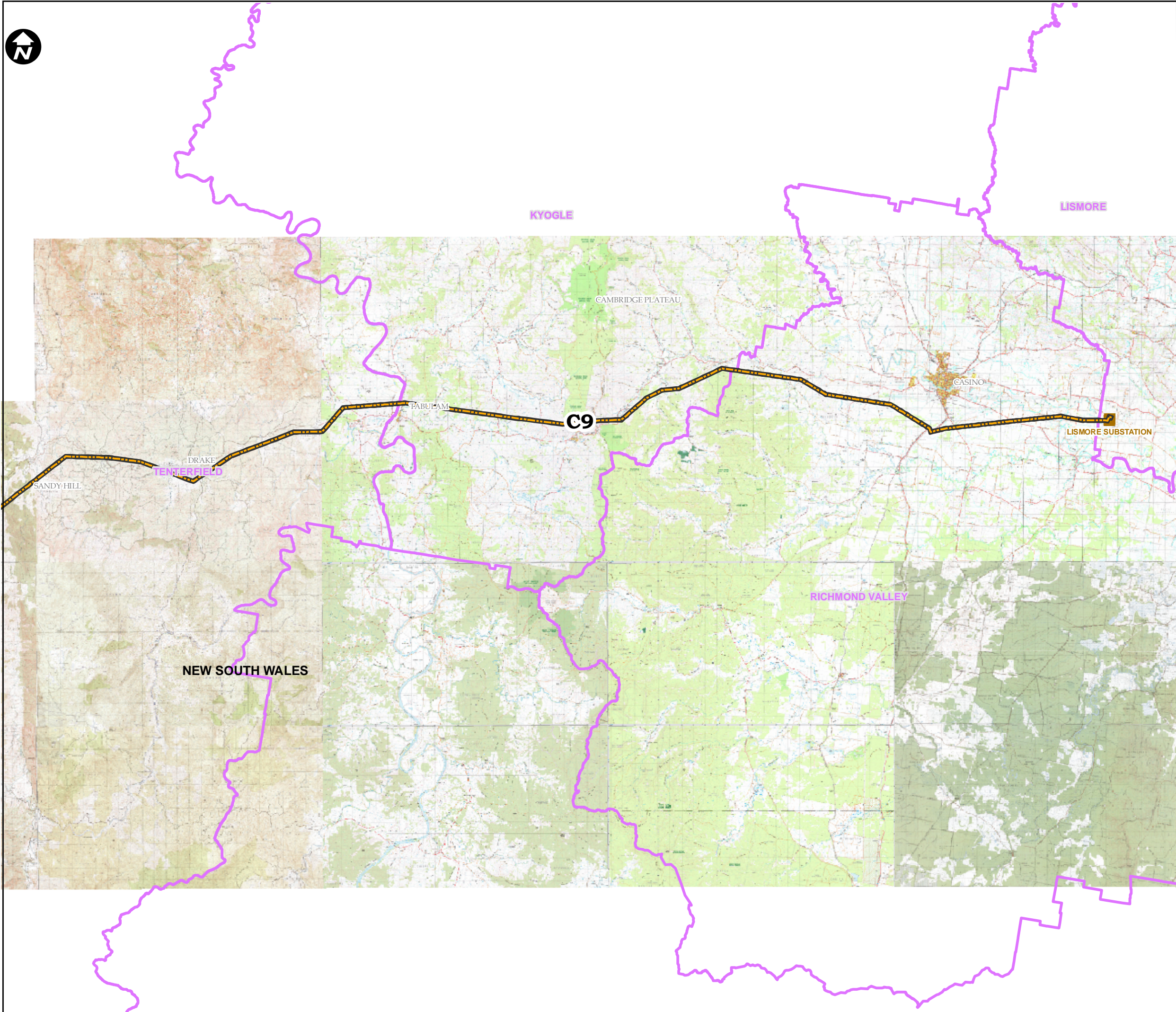


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Legend

- C9** Study Area Components
- Existing Transmission Lines
- Existing Substation
- Local Government Area

Source: TransGrid

Drawn: AJW	Approved: CB	Date: 23/09/2009
Job No.: 43177662	File No.: 43177662.046.mxd	

Client

TransGrid

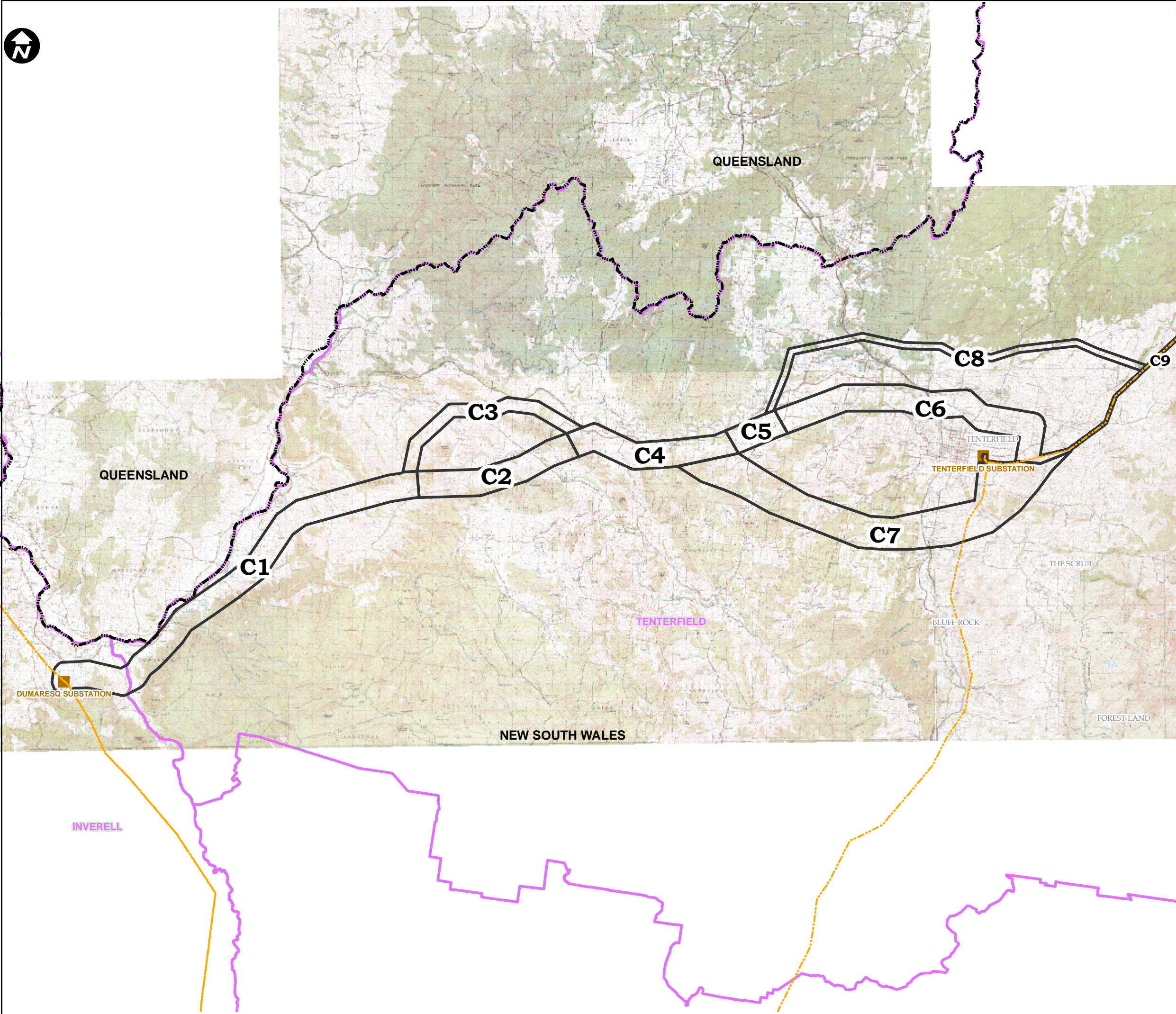
Project

DUMARESQ SUBSTATION TO LISMORE SUBSTATION 330 kV TRANSMISSION LINE

Title

STUDY AREA COMPONENTS (EAST)

Figure: 2-2a



Legend

- C9** Study Area Components
- Existing Transmission Lines
- Existing Substation
- Local Government Area

Source: TransGrid

Drawn: AJW	Approved: CB	Date: 23/09/2009
Job No.: 43177662	File No.: 43177662.046.mxd	

Client

TransGrid

Project

DUMARESQ SUBSTATION TO LISMORE
SUBSTATION 330 kV TRANSMISSION LINE

Title

STUDY AREA COMPONENTS (WEST)

Figure: 2-2b

Description of Study Area

3.1 Introduction

The Study Area extends over 200 km from Lismore local government area 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 corridor and study area include Lismore, Casino, Tabulam, Drake, Tenterfield and Bonshaw (**Figure 1-1**).

The Study Area passes through a number of land uses including grazing land, cropping, rural residential and forested areas. It 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 and 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 (**Figures 1-2a and 1-2b**). 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 infrastructure. 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.

URS undertook a field investigation on 6 to 8 April 2009 to confirm desktop mapping. The following describes the Study Area (East) surrounding the existing line between Tenterfield Substation and Lismore and the proposed Study Area (West) for the establishment of a new easement between Dumaresq Substation and Tenterfield.

3.2 Study Area Lismore to Tenterfield (C9)

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

The Tenterfield 132kV Substation is located to the east of the township and is accessed via the Bruxner Highway and Bellevue Street.

The first section of the existing easement from the Lismore 330kV Substation west to Casino comprises rural properties, grazing and cropping land and is within the flood plain of the Richmond River. The existing easement traverses the north coast railway line just south of Casino at this point.

From Casino the existing 132kV 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.

3 Description of Study Area

The township of Tabulam is located just to the south of where the easement passes over the Clarence River. The land use in the immediate vicinity includes grazing land and is sparsely vegetated at this point. The easement passes over the 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 the following section passing through the Girard State Forest and the township of Drake.

At White Rock Mine Road the existing 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 the Tenterfield 132kV Substation.

The end of C9 is defined as where it meets with C8. From this point into Tenterfield Substation and then heading around the north of the Tenterfield township is C6 (see **Figure 2.2b**).

3.3 Study Area Tenterfield to Dumaresq Substation (C8 to C1)

The Study Area West intersects with the existing corridor at the Tenterfield Substation (C6). There are a number of rural residences within the Study Area at this point. The Study Area heads north several kilometres to near Bryans Gap Road where it turns west toward Mt Lindsay 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 rural residential properties before passing over the New England Highway and Blacksmiths Creek.

C8, the Study Area option further north from the Tenterfield township, joins the existing 132kV easement approximately 14km to the north-east of Tenterfield 132kV Substation. The land within this vicinity is generally open grazing land, interspersed with rural residential properties. Approximately 1km to the north west of the juncture with the existing easement, the Study Area crosses the Bruxner Highway.

Heading west, the Study Area then crosses Cataract River Road, Black Swamp Road and the Cataract River. The land use in the area comprises largely flat open paddocks interspersed with rural residential properties. This continues until The Mount Lindsay Highway, where there are patches of denser vegetation at the base of the hills associated with Bald Rock National Park.

The Study Area then heads directly west for approximately 4km across grazing/sparsely vegetated land before heading slightly north to provide a buffer around the Tenterfield Airfield. The Study Area continues in a westerly direction to the north of the Airfield, crossing the New England Highway and Tarban Road, before heading in a south-westerly direction over Tenterfield Creek and the Bruxner Highway. This section of the Study Area contains a mix of larger agricultural properties along with a number of smaller rural residential lots. C8 joins C5 approximately 0.5km south of crossing the Bruxner Highway.

3 Description of Study Area

The Study Area runs almost parallel with the Bruxner Highway for approximately the next 20km before turning south-west toward Mole River. The land use within this section consists of grazing land, cropping and scattered open woodland vegetation. Around Mole Station Road the land is sparsely vegetated and used for grazing.

C3 deviates in a north-westerly direction from C4 where the Bruxner Highway heads north alongside Tenterfield Creek. This section of the Study Area predominantly contains larger grazing and agricultural properties, with some areas of heavy, closed dense vegetation. The Study Area follows the general direction of the Bruxner Highway from the junction of C3 and C4, until just before it crosses Mole River Road, when it begins to head south where it crosses the Mole River to join with C1.

C2 runs along the foothills from Mole River, almost parallel with Reedy Creek Road. The land use in this area comprises grazing land and cropping along with areas of low density woodland.

Heading southwest toward Dumaresq Substation, C1 runs along the base of rugged densely vegetated terrain. The flat area along the foothills consists of a number of rural residences, grazing land, and cropping along with a number of vineyards.

C7 is located to the south of Tenterfield. It heads directly south from the existing 132kV easement, near the Tenterfield Substation. It crosses Billarimba Road and Scrub Road, and includes areas of dense vegetation along with a number of residences just to the south of Tenterfield. The Study Area then heads west where it crosses Tenterfield Creek and the New England Highway. Component C7 has been excluded from further study as discussed below.

3.4 Exclusion of Component C7

Following initial constraints analysis, it became evident that the overall impact of C7 was considerably higher than any of the other study area options being proposed. The specific constraints identified are outlined below:

Terrain: this is one of the key constraints to this option, with numerous instances and series of both steep and rugged ridges with substantial rocky outcrops (i.e. granite) that appear to dominate the countryside, particularly at higher elevations directly south and south-west of the Tenterfield township. Positioning transmission lines across steep slopes is generally avoided due to the potential for erosion problems and associated expenses relating to structure types, construction and access.

Nature Reserves, State Conservation Areas and Vegetation: the presence of a number of nature reserves and state conservation areas significantly restricts the available paths for a transmission line route. In addition this also leads to areas where the vegetation is denser and more substantive clearing would be required. This also leads to a less efficient line design as the requirement for additional angle positions increases when attempting to traverse in and around the narrower route options.

Number and Proximity to Dwellings and Use of Crown Land: upon approaching the New England highway it became apparent that the number and proximity of surrounding established dwellings was not significantly less than the numbers and proximity that were present within the other components. Also, the availability and use of Crown Land was found to be less than what is available within the other components.

3 Description of Study Area

Ecologically Endangered Communities (EEC): C7 would need to utilise the existing Glen Innes to Tenterfield 132kV transmission line in order to connect with the existing 132kV transmission line easement to be utilised between Tenterfield and Lismore. The area directly surrounding the existing Glen Innes to Tenterfield 132kV easement and Tenterfield Substation traverses thorough a significantly larger area of registered EEC. Utilising this component would incur a much larger impact on the EEC than the other components being investigated.

As a result of the constraints identified above, it was decided that C7 would not be developed further.

Consultation

4.1 Introduction

In order to undertake a comprehensive Environmental Assessment of the proposed Dumaresq to Lismore 330kV Transmission Line Project, appropriate emphasis needs to be placed on those issues of greatest significance to the local environment, affected and neighbouring landowners and the wider community. To assist in this process, a program of community and government agency consultation, preliminary environmental studies and review of the literature was undertaken to identify relevant environmental issues and potential impacts. A report on the consultation process to date and outcomes is provided in **Appendix B**.

The key objectives of the consultation program were to ensure key stakeholders were:

- appropriately informed of the project parameters;
- aware of the approvals process;
- provided with an opportunity to ask questions and to identify areas of concern with respect to the project; and
- provided with an opportunity to provide feedback to assist in the identification of key environmental and community issues.

4.2 Consultation Activities

Key steps in community consultation to date have included:

- letters to potentially affected lot holders updating them at each stage of the project;
- provision of a 1800 number as a means of providing feedback and contacting the project team;
- media releases;
- newspaper advertisements;
- exhibition of the Study Area for community input;
- public information sessions;
- direct response to letters, emails and 1800 number enquiries by TransGrid representatives;
- ongoing field visits by TransGrid representatives to discuss the constraints on their properties; and
- a series of focus group discussions held during 1st – 3rd September 2009, the results of which are provided in **Appendix B**.

Key steps in government stakeholder consultation have included the following:

- Council meetings were held with Kyogle, Tenterfield, Lismore and Inverell Councils to brief them on the Project, allow feedback and give them the opportunity to provide useful information. Richmond Valley Council was not available for a meeting and indicated that they would make a submission if they had any questions;
- a letter was received from the Department of Planning on 21st April 2009 confirming that the project would be assessed under Part 3A of the EP&A Act 1979;
- a Project Application and Preliminary Environmental Assessment was lodged with the Department of Planning on 21st July 2009; and
- a Planning Focus Meeting was held on 24th August 2009 to allow for relevant Government Stakeholder to have an input into the Director General's Requirements.

4 Consultation

4.3 Key Issues Identified

4.3.1 1800 Number, Feedback and Questionnaire/ Focus Group Registration Forms

New transmission lines can be the cause of concern within communities even as they recognise the benefits of such projects. As a result of the consultation carried out, issues of interest and concern to the stakeholders associated with this project were identified. Three different forms of data collection were utilised. These included an 1800 number which stakeholders can call and express concerns or ask for more information, a Feedback Form and a Questionnaire and Focus Group Registration Form. The results of these are outlined below.

In general terms, stakeholders were concerned with the proximity of the transmission line to residences, particularly when the transmission line was proposed to run through their property. The visibility of the infrastructure and the potential environmental impact the line would have in the area were two other commonly voiced concerns.

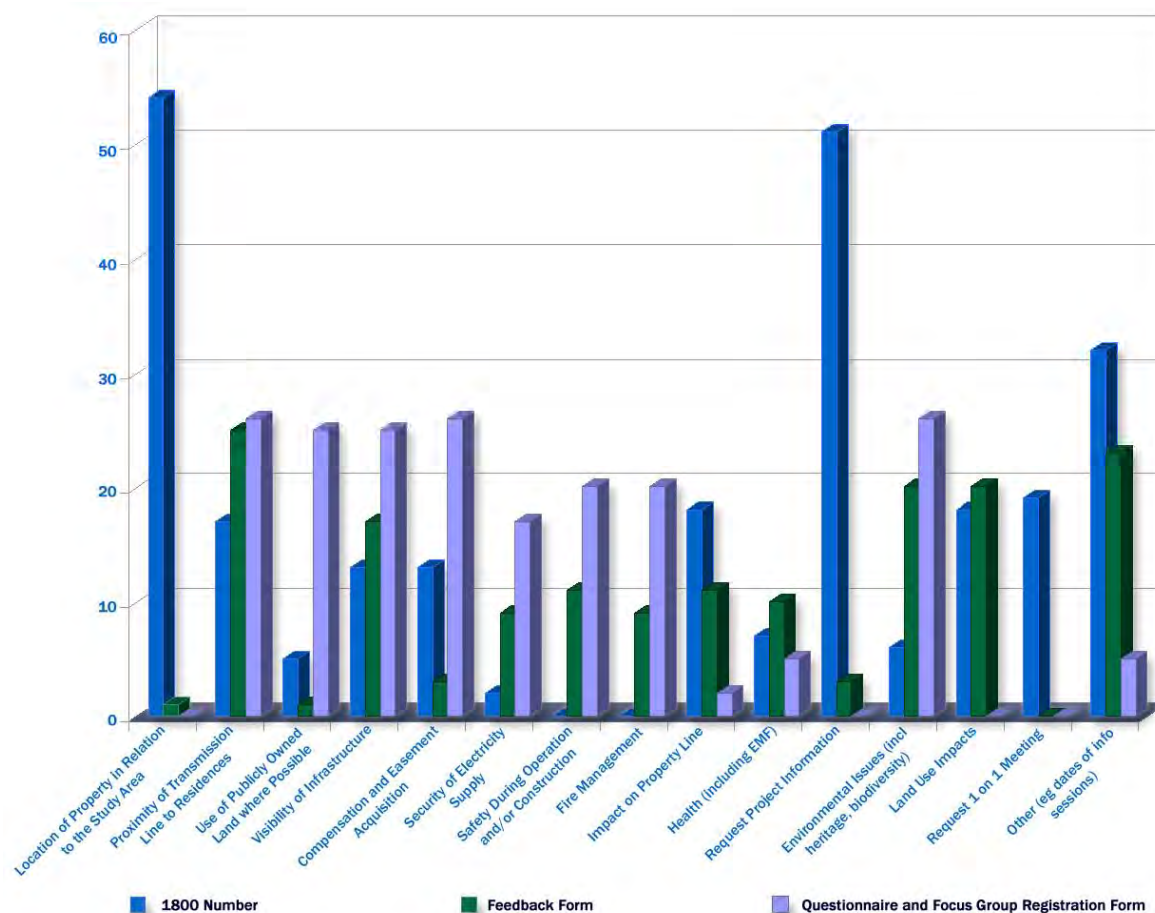
Many participants sought confirmation of the location of their property with respect to the transmission line. Many whose property did not fall within the potential area, but their neighbours did, also sought information regarding the development, and requested to be kept up to date with the project development.

Many members of the community believed the transmission line should be moved to localities where there are fewer properties/the area is less populated. Perceived health effects of the transmission line on both humans and stock were raised in all three forms of feedback.

The majority of the community understood the need for the development, however most were generally opposed to the project. Reasons for this are identified below. Environmental and social considerations were both important to the local community. **Figure 4-1** presents the issues raised by the community, and the number of community members who raised the issue.

4 Consultation

Figure 4-1 Consultation Issues Summary



A number of residents did not have a problem with the transmission line going through their property if it went in certain areas. These individuals stated their request to meet with TransGrid so that they would have an opportunity to discuss the project and its implications on their property.

4.3.2 Public Exhibition of the Study Area

Following the identification of the Study Area, preliminary environmental studies, aerial surveys and feedback from the community, two additional areas were identified for consideration and were announced in July 2009. The expanded Study Area was placed on public exhibition for four weeks during the period 27 July to 28 August 2009. The purpose of the exhibition was to invite community members to review and provide comment on the Study Area as part of the on-going consultation process.

As outlined in **Appendix B**, this process included public information sessions as well as the provision of unmanned fixed displays in the five Councils. These enabled a number of constraints to be identified by the community and provided to the Project Team. These constraints included the identification of private residences, sheds, dams, proposed developments, agricultural airstrips and historical grave sites. Many of these had already been identified via aerial photography and field visits. Where constraints were shown to the Project Team which had not been previously readily identifiable they have been included in the constraints analysis and will be subject to ground truthing.

4 Consultation

4.4 Conclusion

In identifying a preferred corridor for the proposed line, TransGrid faces the challenge of balancing the different needs and expectations of many stakeholders. The consultation undertaken has identified key issues of concern to stakeholders associated with the line and those who have a general interest in the project. The majority of the community raised issues primarily in relation to impact on property, proximity to residences, perceived health effects and visibility of infrastructure. Questions were raised in relation to these key issues along with clarifications regarding project detail including project schedule, the easement acquisition and compensation process and the approvals process. The majority of potentially affected landholders expressed a desire to be informed as soon as possible once a decision regarding the proposed route and preferred alignment was made.

Constraints Identification

5.1 Introduction

This section provides an overview of the key environmental and social issues within the Study Area and identifies matters for further consideration as part of the Environmental Assessment. As discussed in **Section 2**, key environmental issues have been identified through a review of previous studies carried for the proposed transmission line, and desk-based and preliminary field investigations within the Study Area.

5.2 Ecology

5.2.1 Desktop Studies

The URS ecology team reviewed the following reports and information sources:

- Connell Wagner (2006) Dumaresq to Tenterfield 330kV Transmission Line Route Feasibility Study (Connell Wagner 2006);
- the DECCW Wildlife Atlas Database for threatened species, populations and ecological communities previously recorded in the locality;
- the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) on line Protected Matters database to identify 'matters of national environmental significance', including Ramsar wetlands, migratory birds, threatened species and ecological communities; and
- DECCW and CMA vegetation, conservation significance and land use mapping and accompanying reports.

The desktop review and database search was used to compile a record of threatened biota listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that could potentially occur with the Study Area based on the habitats present.

Spatial datasets were compiled into a GIS database. Vegetation mapping by Keith (2004) was the highest resolution and most current data available, however the broad scale of this mapping meant it was not suitable for identifying constraints at a scale relevant to the Study Area. Detailed vegetation mapping is available for State Forests within the area and this has been requested from the Department of Primary Industries.

5.2.2 Field Methodology

A five day, vehicle based assessment of the Study Area was undertaken by URS ecologists. For the purposes of the report 'biodiversity values' are described as the ecological, conservation and intrinsic values of:

- native vegetation;
- habitats and resources for native flora and fauna;
- aquatic and riparian habitats associated with rivers and creeks;
- threatened species populations and communities listed under the TSC Act, and;
- matters of national significance or threatened species, communities or populations listed under the EPBC Act.

5 Constraints Identification

5.2.3 Key Constraints

Desktop Review

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 (**Figure 5.1**). 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 infrastructure. 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 predominantly consists of open plains and partially cleared paddocks used for agriculture. There are large areas of intact or regenerating woodland along road corridors, waterways, floodplains and within conservation reserves.

The desktop review identified 245 threatened species listed under the TSC Act that could potentially occur within the Study Area (**Appendix C**). The Commonwealth protected matters search identified one Ramsar site, five threatened ecological communities, 145 threatened species and 38 migratory species that may occur within the Study Area (**Appendix C**).

Field Surveys

Field surveys identified four Endangered Ecological Communities (EEC) listed under the TSC Act and one EEC listed under the EPBC Act within the Study Area (refer **Table 5-1** and **Figure 5.2 series** provided in **Appendix D**).

Table 5-1 Endangered Ecological Communities (EEC) Recorded within the Study Area

EEC
<i>EPBC Act</i>
White box – yellow box – Blakely's red gum grassy woodlands and derived native grasslands
<i>TSC Act</i>
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 Pettermint (<i>Eucalyptus nova-anglica</i>) 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 within close proximity to the Study Area, the Brown Treecreeper (*Climacteris picummnus*), Turquoise Parrot (*Neophema pulchella*) and Diamond Firetail (*Stagonopleura guttata*) (**Figure 5.2 Series**)