Appendix B-2
Connell Wagner Feasibility Study, 2006

Feasibility Study

Dumaresq to Tenterfield 330kV Transmission Line Route Feasibility Study

July 2006

TransGrid

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Summary

Connell Wagner has been engaged by TransGrid to investigate the feasibility of securing a transmission line route between Dumaresq substation and Tenterfield. This document describes the investigation at a regional level to identify potential line options.

Site investigations and analysis of constraints and opportunities within the study area have indicated that the project is feasible. Based on an initial screening of the available information, two broad options were identified. These were then further refined into three main corridors as a result of more rigorous analysis.

Major constraints included steep and rocky terrain, existing habitation, Torrington State Conservation Area, National Parks, State Forests, the NSW/QLD state border, the township of Tenterfield, heritage listed properties, current and former mine sites, the Dumaresq River and minor airstrips. The topography varies from plateaus in the south and west to steep and undulating land in the north-east and along river valleys.

The majority of land within the identified corridors is used for cattle and sheep grazing, grain production and other agricultural purposes that could absorb the impacts of a transmission line.

The shortcomings of available data are recognised, particularly in relation to the currency of existing mapping, absence of community input into the process and lack of cohesive soil mapping. Accordingly, further refinement will be required at the route selection stage. A key component of this refinement would involve consideration of updated information on the current location of dwellings.

The identified corridor options are shown on the map accompanying this report and in Figure 5.1.

1. Introduction

1.1 Location

The project investigation area is located in northern NSW between the substations located near Bonshaw and Tenterfield, as shown in Figure 1.1.

1.2 Project Background

This project is one of a number of proposed measures to strengthen power supply in far northern NSW where the growth in power load has exceeded the State average over recent years. The far north NSW supply system is further under strain when the link between Dumaresq substation (NSW) and Bulli Creek Substation (QLD) is exporting power northwards to south-east Queensland.

A 330 kV transmission line between Dumaresq Substation and Tenterfield is proposed as part of a longer link between the Dumaresq and Lismore substations. The proposal involves connecting the Dumaresq – Tenterfield transmission line to a 330 kV line, which will most likely be constructed along the route of the existing 967L Tenterfield – Lismore 132 kV line.

1.3 Purpose of the Feasibility Report

Connell Wagner has been engaged by TransGrid to investigate the feasibility and potential route corridor(s) for the proposed 330 kV transmission line between Dumaresq and Tenterfield.

Line routes would be expected to fulfil the following criteria:

- Capable of being built;
- Cost effective;
- Acceptable to stakeholders;
- Environmentally acceptable; and
- Able to be maintained.

1.4 Structure of Report

The report is structured as follows:

Section 2 outlines the methodology adopted for the study;

Section 3 outlines the existing transmission supply infrastructure;

Section 4 examines the issues relevant to the selection of corridors and indicates the significance of the issues in relation to the study area;

Section 5 describes potential route corridors and examines the issues relevant to each option;

Section 6 describes the legislation and planning instruments that are likely to be relevant to the future construction of a 330 kV transmission line between Dumaresq and Tenterfield; and

Section 7 summarises the findings of the feasibility report.

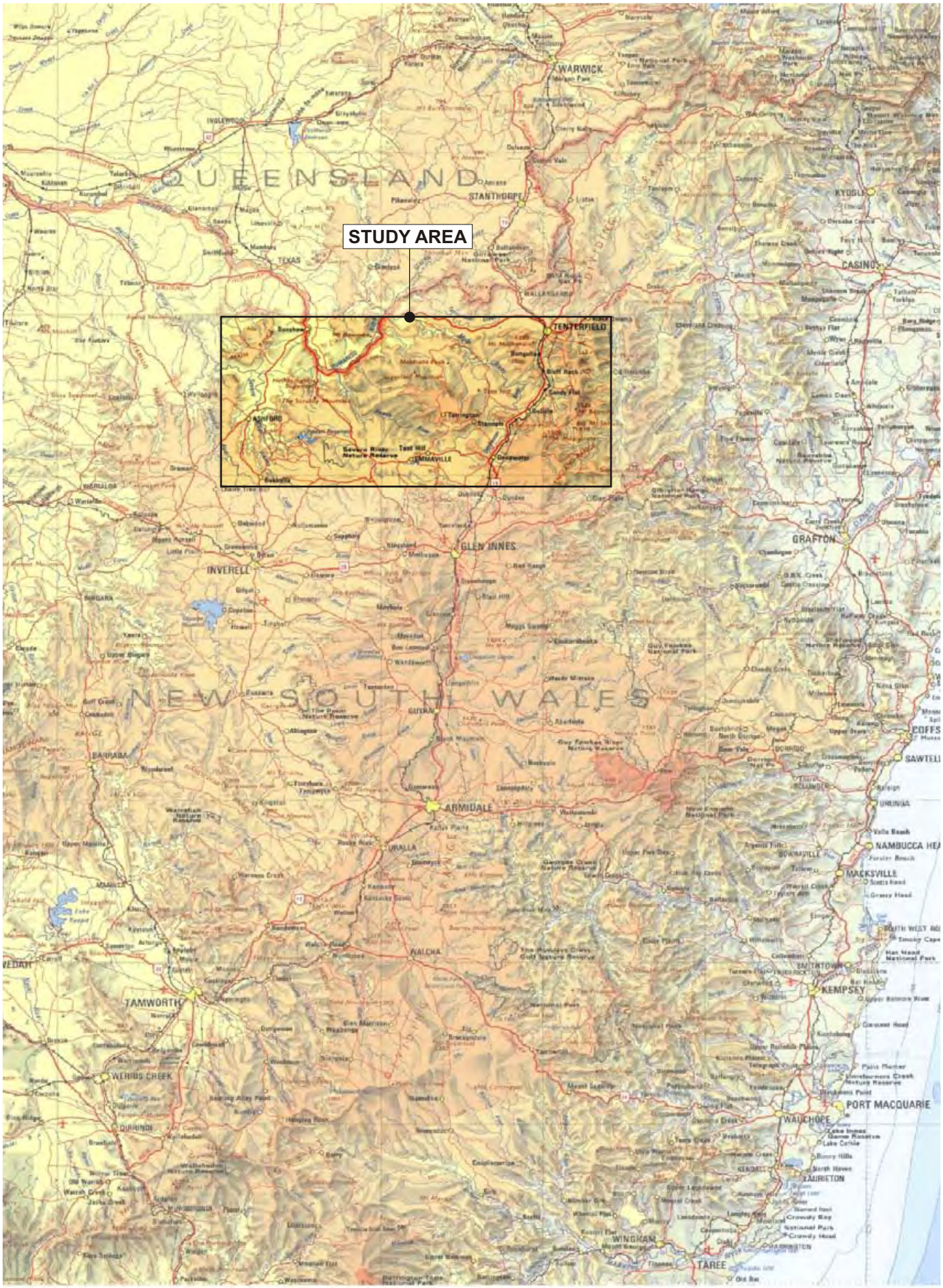

Figure 1.1

Site Location Plan

2. Methodology

2.1 Study Area Definition

The study area was determined by considering the locations of the two terminal points, Dumaresq Substation and somewhere in the vicinity of Tenterfield Substation, and the areas through which potential route options exist. The northern boundary was the New South Wales/Queensland border as instructed by TransGrid. Other constraints to the north of the study area include Bald Rock and Basket Swamp National Parks where electricity transmission lines are prohibited.

Accessibility in the areas surrounding the towns of Emmaville and Deepwater influenced the identification of the southern study area boundary. Additional considerations of overall line length and disturbance to the surrounding environment, determined that potential corridors pass north of the Severn River.

The eastern and western boundaries were determined by potential connections to the Tenterfield – Lismore line and the positioning of the Dumaresq substation respectively.

The location of major roads and infrastructure, the nature of the terrain and land ownership were also factors considered when defining the study area. The study area selected for analysis is shown in Figure 2.1.

2.2 TransGrid Scope of Works

TransGrid requested that the feasibility study include the following tasks:

- Identify and record a potential route envelope between the terminal points that allows for connection to the current Tenterfield to Lismore line;
- Identify and record constraints/issues (including planning, environmental and social issues) within the route envelope;
- Assess and record the significance of constraints;
- Develop and record potential line route corridors;
- Provide advice on the likely environmental assessment requirements; and
- Provide advice on the likely environmental assessment timetable.

2.3 Data Acquisition and Assessment

The following data was acquired and examined during the course of investigations:

- Cadastral information;
- Topographic maps;
- Geology maps (1:250,000);
- National Park, State Forest and State Conservation Area locations;
- Vegetation maps;
- Threatened species records;
- Aboriginal and Non-Aboriginal heritage records;
- Relevant planning instruments (SEPPs, REPs and LEPs); and
- Mining resource maps.

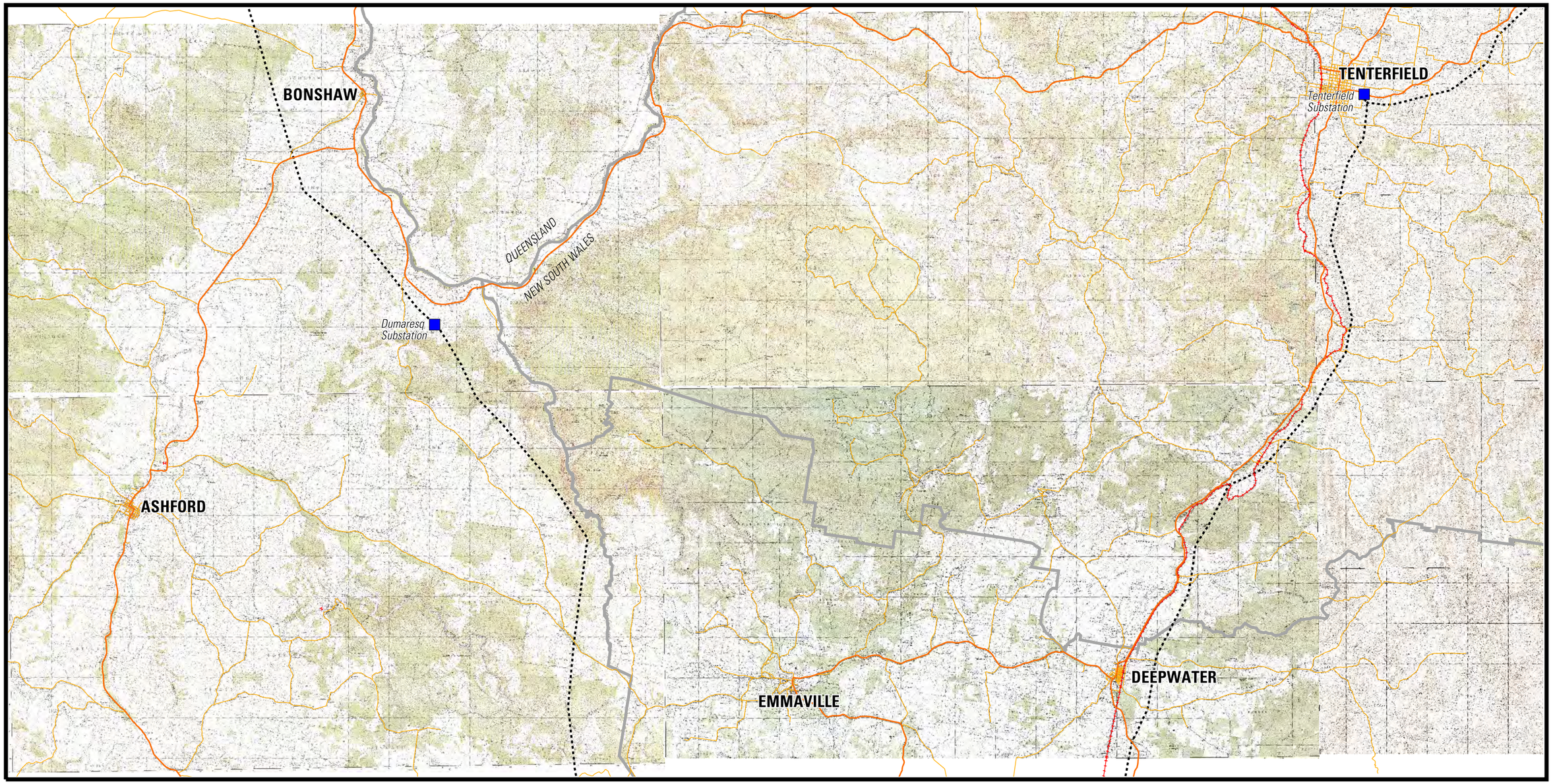

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FIGURE 2.1
STUDY AREA

Further information was gathered during the course of a site inspection of the study area.

2.4 Identification of Relevant Constraints and Opportunities

A range of issues were examined to assess the feasibility of potential power line corridors between Dumaresq and Tenterfield. These issues were grouped under the headings of land use, geology, landform and terrain, biodiversity and heritage. Where possible, information relating to relevant issues was mapped for subsequent analysis.

2.5 Constraint Mapping and Analysis

Cultural, cadastral, topographic, land use, vegetation and known heritage site mapping were all used, along with site investigations, in the creation of the constraint maps. Individual maps were prepared to illustrate the following features:

- Existing transmission line network and substation locations;
- Land use (including Local Environmental Plan (LEP) land use zones, location of utilities and services, National Parks, State Forests and State Conservation Areas);
- Terrain;
- Vegetation community distribution; and
- Heritage information.

Constraint maps were prepared using Connell Wagner's GIS. Viable corridor options were identified through inspection of the study area and examination of the constraint maps.

2.6 Community Consultation

No community consultation has been undertaken in relation to identifying feasible options. TransGrid advised that this would occur at a later date, following a decision by TransGrid to pursue the project. Some comment concerning potential community issues is made in Section 2.7 based on observations made during the field investigations.

2.7 Limitations to Available Information

The identification of feasible 330 kV transmission line corridors has been based on available information. This section summarises the most relevant limitations of the acquired data.

The topographic maps used were based on aerial photography from 1973-1975. While it is expected that subsequent development in the region has occurred at a slow pace, it is likely that additional constraints will exist as a result of development since the date of mapping. Urban features, infrastructure, rural residences and landing strips all create additional constraints. Updated information, based on recent aerial photography and site inspections, will be required for more detailed investigation of the proposed corridor options.

Terrain mapping was conducted using 50 m contour intervals. This was sufficient for a feasibility study, but contour data at lesser intervals is available and may be purchased at a later stage for a more accurate analysis of terrain constraints.

Soil landscape mapping had not been completed by the DNR for most of the study area at the time of preparation of this report. Draft digital information for the Inverell area, including a small section in the southern corner of the study area, was available. Mapping of the remainder of the study area was yet to commence but is regarded by the DNR as a future priority area and may be available at a later stage. Information on soil types in parts of the study area was collated from a variety of sources but varies in nature.

The investigation of heritage constraints was based on an overview of existing records. However, to a large extent these records may merely reflect the pattern of existing investigations. The existing records were used to formulate a view of the likely occurrence of Aboriginal sites within the landscape. This was then considered in the identification of feasible corridors. Heritage sites may be discovered and registered at a later date.

Maps of mining leases obtained for this study did not specify the exact location of mining activities within the respective lease areas. Nor was current information on the locations of abandoned mines included. The topographic maps indicated locations of both existing and abandoned mines at the time the maps were created. However, as discussed above, it is likely there have been changes to mining activities since then. For the purpose of this study, large mines and clusters of mines were avoided where possible.

Community consultation was not a part of the feasibility study. Local residents are key stakeholders and the route should aim to minimise impact on them. In particular, residents and visitors to the area who are protective of their semi-rural lifestyles may see the visual element as an intrinsic component of their lifestyle. Areas where the community has been involved in landscape restoration and similar projects may create conflicts with a proposed line. Commitments made to land owners in relation to the QNI project would also have a bearing on the feasibility of some options.

Discussions with local councils have been of a general nature and, while this has provided important information, some constraints may remain to be identified during subsequent route option investigations.

3. Transmission System

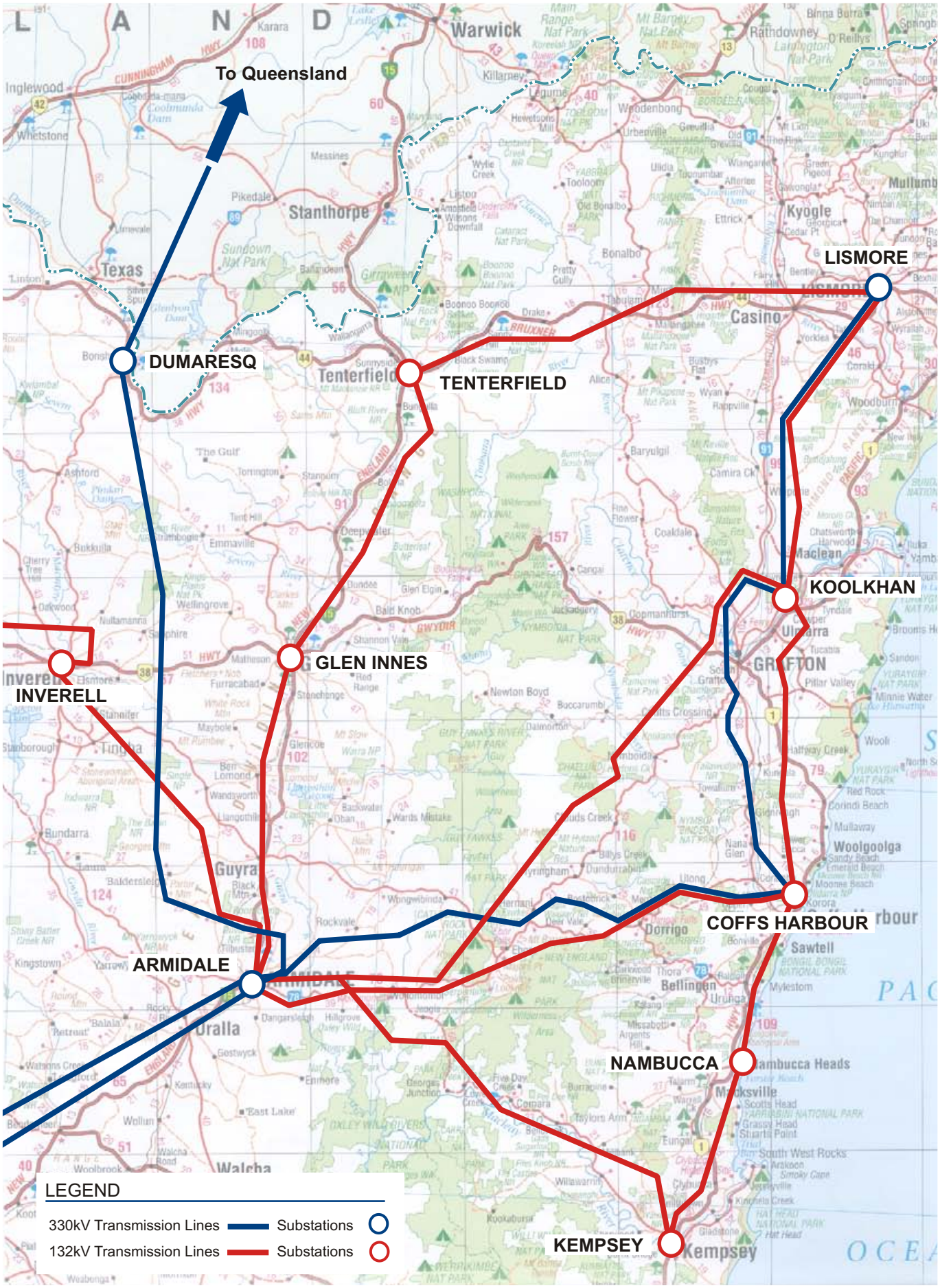
3.1 Existing Transmission Supply System

The main sources of electricity supply to the NSW far north coast are shown in Figure 3.1.

There are 330 kV transmission lines between Armidale and Coffs Harbour, Coffs Harbour and Koolkhan and Koolkhan and Lismore. Dumaresq substation is situated on the Queensland – New South Wales 330 kV Interconnection some 70 km west of Tenterfield. A 132 kV ring exists between Armidale, Koolkhan, Lismore, Tenterfield and Glen Innes. Tenterfield is supplied by this loop, through either of the Glen Innes – Tenterfield or Lismore – Tenterfield lines.

TransGrid has indicated that, due to the difficulties of finding new transmission line routes to the north coast of NSW, the existing 132 kV ring through Tenterfield could be broken at Tenterfield so that the existing 132 kV easement could be rebuilt to 330 kV between Tenterfield and Lismore. The benefits of creating a new 330 kV ring through far north NSW outweighs the loss of the 132 kV ring supply to Tenterfield.

The construction of a 330 kV line along the route of the existing Lismore – Tenterfield 132 kV line, in combination with the project that is the subject of this feasibility study, will complete a 330 kV ring between Armidale and Coffs Harbour, Koolkhan, Lismore and Dumaresq. This will strengthen the system to better cope with the increasing load in far north NSW.



Source: HEMA Australian Road Atlas

Figure 3.1

Existing Supply Network

4. Corridor Identification

4.1 Introduction

As discussed in Section 2, various sources of information pertaining to regional issues have been used to create constraint maps and as input to the identification of potential transmission line corridors between Dumaresq and Tenterfield. This section describes the analysis of the information considered and its use to identify potential corridors.

4.2 Consultation

The feasibility analysis has included discussions of a general nature with officers from:

- Local Councils;
- Department of Primary Industries (DPI);
- Department of Environment and Conservation (DEC) including NPWS;
- State Forests; and
- Border-Rivers Gwydir Catchment Management Authority.

4.2.1 Public Authority Information

Information for the feasibility evaluation has included a review of Local Environmental Plans, published information and limited non-specific discussions with Planning and Development officers within Council. Significant issues and information include:

- Provisions of two, potentially three, LEPs;
- The presence of a number of threatened species and threatened ecological communities; and
- The appropriate use of public corridors is encouraged.

Information gathered from public authorities was used in the development of constraint maps for the analysis of corridors. Additional consultation will be required during later stages of the project.

Department of Planning (DOP)

Planning information provided:

- State Environmental Planning Policies (SEPPs);
- Regional Environmental Plans (REPs); and
- Local Environmental Plans.

Department of Primary Industries (DPI)

The DPI provided assistance with the following:

- Geology Mapping; and
- Mining Resources Mapping.

Other Authorities

Information was also sourced from the following authorities:

- Department of Environment and Heritage (via the Australian Natural Resources Atlas);
- Geoscience Australia;
- Department of Natural Resources;
- Border Rivers - Gwydir Catchment Management Authority; and
- NSW National Parks and Wildlife Service (NPWS).

4.2.2 Use of Road Corridor

While adopting a strategy to use publicly owned corridors where practicable, it is preferable to locate transmission lines away from main roads, in the vicinity of backroads with low traffic loads in order to minimise visual impacts on the broader community. Where proposed corridors follow major roadways such as the Bruxner and New England Highways it is important to consider minimising the visual impact on the road. Nevertheless, in some instances it may be preferable create a visual impact along a short length of the road corridor in order to avoid locating the transmission line through steep or vegetated land.

4.2.3 Use of Rail Corridor

The Main Northern Railway line between Tenterfield and Glen Innes has remained unused since 1989. This line runs south from Tenterfield, approximately parallel to the New England Highway. Part of this rail corridor could be utilised by the southern corridor option between Tenterfield and Deepwater. There is no other rail corridor within the study area.

4.3 State and Regional Planning Policies

Policies that are relevant to the project have been reviewed. While requirements regarding land uses exist, these are generally incorporated within the consideration of other issues. For example, they are incorporated into Local Environmental Plans. No Regional Environmental Plans were identified that apply to the study area.

The following discussion examines issues from State Environmental Planning Policies (SEPPs) that are relevant to the project.

SEPP 4 – Development Without Consent and Miscellaneous Exempt and Complying Development

In the event that development consent is required to install the proposed power line, Clause 11 of SEPP 4 permits the construction of electricity transmission lines, on behalf of a public authority to be carried out without that consent under the relevant LEP. The exclusions to Clause 11 do not appear to apply to this project and accordingly, any need to obtain development consent under the relevant LEPs would be removed.

SEPP 44 – Koala Habitat Protection

SEPP 44 may be applicable to installation of the power lines where development consent is required under the Native Vegetation Conservation Act for vegetation clearance. If this situation arises, appropriate assessment would be required to determine if the study area contains potential Koala habitat. The detailed route selection should aim to avoid known koala habitat where possible.

SEPP 55 – Remediation of Land

A development on land affected by SEPP 55 and its associated guidelines is required to:

- Ensure that changes of land use will not increase the risk to health or the environment;
- Avoid inappropriate restrictions on land use; and
- Provide information to support decision making and to inform the community.

An aim of the feasibility study is avoid or minimise corridor selection that triggers SEPP 55. The current registers were examined to identify known contaminated sites.

SEPP (Major Projects) 2005

SEPP (Major Projects) 2005 facilitates the implementation of Part 3A of the EP&A Act 1979, which aims to streamline the approval process for 'Major Projects'.

Projects that are classified as Major Projects are listed under Schedules 1, 2 and 3 of the SEPP. The type of project being evaluated has not been included in the Schedules and therefore it is not automatically considered to be a Major Project.

Further discussion of the likelihood that the project would be assessed under Part 3A of the EP&A Act is provided in Section 6.2.1.

4.4 Constraint Analysis and Mapping

The analysis of the issues described in Section 2 is discussed in the following section.

4.4.1 Land Use

The land use constraints and opportunities thematic map is provided as Figure 4.1. The following discussion examines land use issues.

The towns within the study area that are most significant to the corridor identification process include Tenterfield, Deepwater and Emmaville. The proposed corridors avoid the urban centres of these townships but pass near many rural residences.

Due to the positioning of the Tenterfield – Lismore line on the eastern side of Tenterfield, avoiding significant impacts while negotiating a passage around the township is an important consideration. Tenterfield has a population of approximately 3200 residents. If the corridor were to pass south of Tenterfield, dense vegetation and Tenterfield Water Supply Dam would be potential obstacles.

The location and distribution of dwellings is a key factor considered in the development of feasible corridors. The width of the proposed corridor options is sufficient to enable selection of a route alignment that would avoid passing too close to residences. TransGrid guidelines recommend passing rural residences at a distance greater than 400 m where possible and greater than 200 m in constrained areas.

As discussed in Section 2.7, the location of buildings on the available maps was considered in the analysis. Observation during the field inspection confirmed the presence of new residences and changes in the status of residences shown on the maps.

Population projections (DIPNR, 2004) indicate that the populations of Inverell and the former Severn Shires will experience negative average annual growth between 2001-2031 while Tenterfield Shire will experience negligible population change. On this basis, significant

development is unlikely in the study area in the foreseeable future. However, the Tenterfield - Urban and Rural Land Use Strategy (URLUS) (Parsons Brinckerhoff, 2006) predicts some growth within the Tenterfield Shire.

The rural lands within the study area support sheep and cattle grazing, tobacco cultivation, viticulture and grain production. Forestry and tin-mining are also important land uses. Significant areas of land within the study area have been subject to disturbance due to mining activities and many former mine sites are yet to be remediated. The study area is located at the northern end of the Fossickers Way and fossicking is still a common tourist.

A GIS layer containing landing strips locations was obtained from Geoscience Australia. There were several discrepancies between the Geoscience Australia data, copyrighted in 2002 and 2004 and the landing strips indicated on the topographic maps, prepared in the early-mid 1970s. The Geoscience Australia data was used to in the preparation of Figure 4.1, due to its currency and a 1 km buffer was applied. However, this data did not indicate the orientations of the various landing strips and further investigation at a later stage is required.

Torrington State Conservation Area (SCA) is in a central location of the study area and is the largest section of land in the study area where transmission lines are prohibited. SCAs are reserved for conservation, mining and mineral exploration. Torrington SCA contains more than 30,000 hectare of protected woodland and is managed by NPWS (NPWS, 2003a). Although the northern section of Torrington SCA, located in the Tenterfield Shire, is zoned as 'Existing National Parks and Reserves' the southern section, in Glen Innes Severn Shire is zoned 1(a) and consequently different land uses are permitted.

The majority of Torrington SCA, part of Torrington SF and surrounding lands are located in the Binghi Wilderness area. This wilderness area is 'identified' for consideration but not 'declared' wilderness. NPWS has indicated that there are no restrictions placed on the management and development of Binghi Wilderness Area at this stage.

Two Commonwealth properties are located within the project area: the Commonwealth Trading Bank of Australia and Communications, Information Technology and the Arts - Telstra Corporation Limited.

Table 4.1 outlines the various zoning restrictions that apply to utility installations. Although the Severn and Glen Innes Shires recently amalgamated, a combined LEP is yet to be produced. The Severn LEP considered in Table 4.1 covers the portion of Glen Innes Severn Shire that is located within the study area.

Table 4.1 – Existing ranking of Land Use Constraints based on LEP Zones

Zone	Level of Constraint		
	Permitted without consent	Permitted with consent	Prohibited
Tenterfield Local Environmental Plan 1996			
1(a) General Rural Zone		X	
1(f) Forests Zone		X	
2(v) Village or Urban Zone		X	
8(a) Existing National Parks and Reserves Zone			X
Severn Local Environmental Plan 2002			
1 (a) General Rural Zone	X		
1 (f) Rural (Forestry) Zone	X		
2 (v) Village Zone	X		
8 (a) Existing National Park and Nature Reserves Zone			X
Inverell Local Environmental Plan 1988			
1 (a) Rural (Agricultural) Zone		X	
1 (d) Urban Investigation Zone		X	
2 (a) Urban Residential Zone		X	
2 (b) Rural Village Zone		X	
3 Business Zone		X	
4 Industrial Zone		X	
5 (a) Special Uses Zone		X	
5 (b) Railways Zone		X	
6 (a) Open Space Zone		X	
6 (b) Proposed Open Space Zone		X	
6 (c) Special Purposes Open Space Zone		X	
7 (a) Environmental Protection (Scenic) Zone		X	
7 (b) Environmental Protection (Habitat) Zone		X	

Within Tenterfield, Glen Innes Severn and Inverell Shire utility installations are only prohibited in areas zoned as National Parks and Nature Reserves. The majority of the study area is zoned for general rural use and permits the construction of transmission lines with or without consent depending on the Council. As noted in Section 4.3, due to the effect of SEPP 4, transmission lines may be constructed without consent unless they are prohibited.

In March 2006 the NSW Government gazetted the Standard Instrument (Local Environmental Plans) Order 2006 requiring all NSW councils to produce a principal LEP within the next 5 years using set land use zonings. Given that the gaining of approval for the construction of a Dumaresq – Tenterfield transmission line may occur after the updated LEPs have been produced, it is pertinent to consider the provisions of the Standard Instrument.

Under clause 36, an LEP prepared in accordance with the Standard Instrument (Local Environmental Plans) Order 2006, cannot be interpreted as restricting or prohibiting *'the*

carrying out by persons carrying on public utility undertakings, being water, sewerage, drainage, electricity or gas undertakings' including *'the provision of overhead service lines in pursuance of any statutory power to provide a supply of electricity'*.

However, this clause does not appear to extend to transmission lines and new LEPs could therefore either include requirements to obtain development consent or prohibit transmission lines within certain zones. This interpretation should be confirmed by legal opinion.

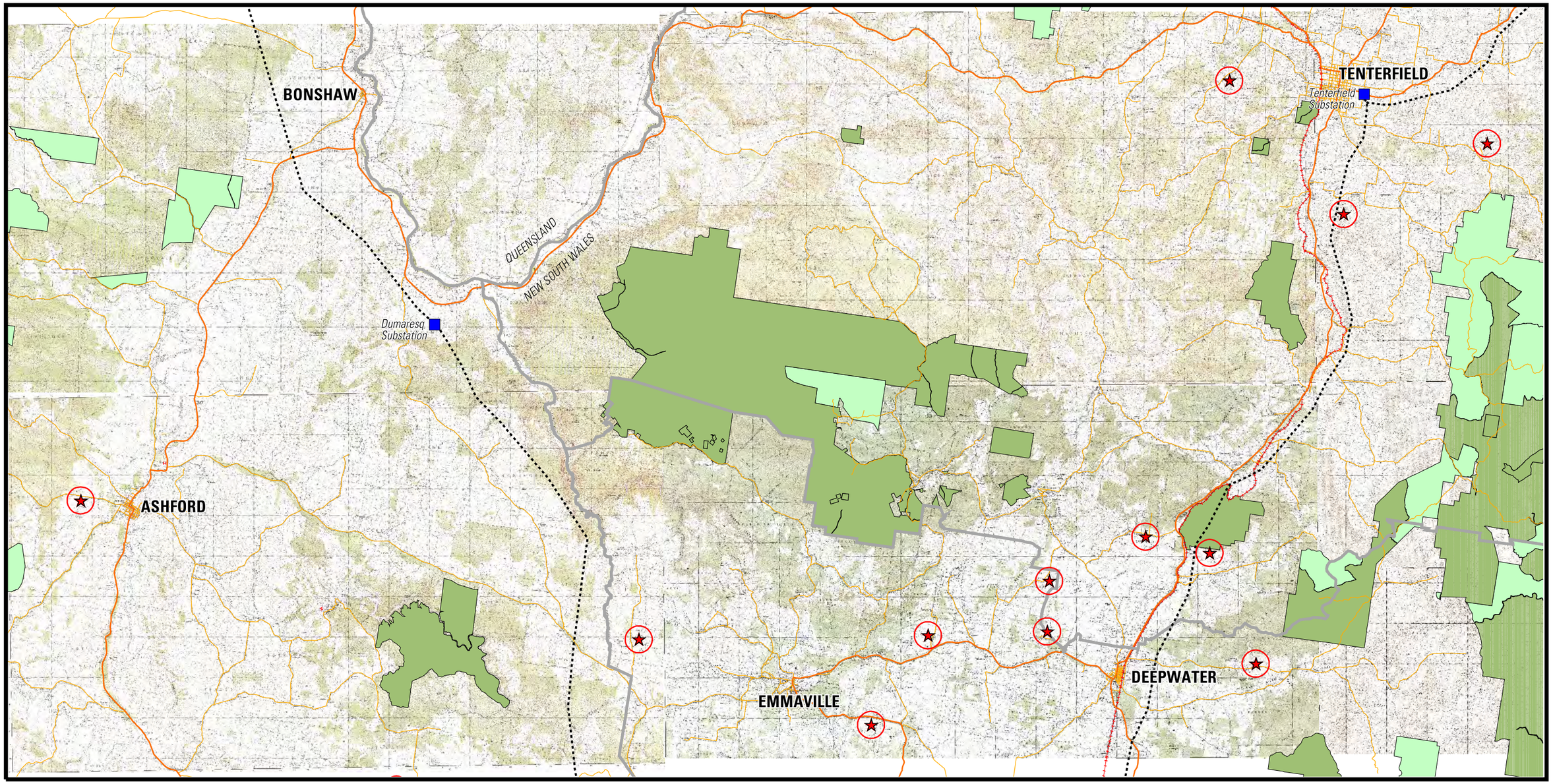


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FIGURE 4.1
LAND USE CONSTRAINTS

4.4.2 Soils, Landform and Terrain

A desktop study has been undertaken to identify potential soil, terrain and flooding constraints within the study area.

Soil Landscape Series Sheets are not available for the study area from DNR. The area is marked as a future priority and this information may become available at a later time. Information about soils in parts of the study area has been included in the Bioregion assessments conducted by NPWS, the Queensland – New South Wales Interconnection Environmental Impact Statement (EIS) and the Glen Innes Forest Management Area EIS. The soil types along potential corridors are considered in order to overview issues that may arise during construction and to identify any areas that would be best avoided.

The Bioregions of New South Wales: their biodiversity, conservation and history (NPWS, 2003b) provide general information about soils within each bioregion. Soils in the Nandewar Bioregion, which covers the northern and western sections of the study area, include "harsh texture contrast soils with subsoils prone to gully development" (NPWS, 2003b). Gully development can be triggered by changes in the landscape and may be an undesirable surface for construction. Red earths and mellow texture contrast soils of relatively low fertility, poor structure and prone to erosion are spread across the New England Bioregion (NPWS, 2003b) which contains the remainder of the study area. More investigation is required at a later stage to determine where soils that are prone to erosion are located in order to avoid or minimise construction on such soils.

Dames & Moore (1998) prepared information on the nature and distribution of soils within a 20-km buffer of the preferred alignment for the Queensland – New South Wales Interconnection. This information includes part of the western section of the study area and indicates the major soil types are sandy soils, uniform loams, cracking clays and loamy brown duplex soils. Cracking clays exhibit swelling after rainfall and cracking during dry periods, which may be a cause for concern. The other soil types listed have no obvious major constraints.

The soils in the majority of Torrington SF, as assessed by Veness and Associates (1991), are yellow podzolic soils. In the very western section of Torrington SF, Venness and Associates described the soil types as leached sands and sand and yellow podzolic soils. Both soil types are considered stable with a low to medium erosion hazard (Manidis Roberts Consultants, 1992).

The Inverell and Grafton Geological Series 1:250,000 maps were attained in digital form from Geoscience Australia and were referenced to gain an overview of the geology in the study area. From this, the geology of the study area appears to be characterised by three major lithology types:

- Extrusive igneous rocks, Wandsworth Volcanic Group comprising mainly rhyolite and rhyodacite and minor andesitic tuffs and ignimbrite. Forms part of all routes in the eastern half of the area;
- Intrusive igneous rocks predominantly adamellite and to a lesser extent granite. Present mainly in the eastern area, particularly along the eastern half of the southern route; and
- Sedimentary rocks, conglomerate, sandstone siltstone. Present over the western half of the northern route and part of the western half of the southern route).

Within each of these lithological groups there is potential for significant variation in composition and geotechnical characteristics. A number of faults are also evident in the mapping that may be associated with various degrees of ground fracturing. A further review of rock properties related to tower footings would be required for the selected route.

Information about mining and exploration activities was provided by the Department of Primary Industries. Additional details on mineral potential was gained from the publication, *"NSW Western Regional Assessment – Nandewar, April, 2004"*. The assessment has identified parts of the study area as having moderate to high mineral potential.

A large central section of the study area is subject to exploration licences. This Includes much of Torrington SCA. There is the potential for mine developments to occur subsequent to investigations under exploration licenses. Mining leases and mineral claims are scattered through the central and eastern sections of the study area but are small in area and can be avoided. A further review of the mineral development potential for possible routes should be undertaken before selecting the preferred option.

Potential terrain constraints were identified by importing available contours into the GIS to create a terrain model, as shown in Figure 4.2. Positioning transmission lines across steep slopes should generally be avoided as this can pose potential erosion problems, be more expensive and incur time penalties for additional approvals.

Much of the landscape is undulating. Steep slopes within potential corridor areas are concentrated in the north-east quadrant of the study area and along the Beardy and Mole River valleys. The presence of steep slopes south and south-west from Tenterfield is a constraint for all potential corridors. The surrounding lands of Deepwater and Emmaville in the south of the study area, and Ashford and Bonshaw in the west contain plateaus and gentle slopes that are better suited to transmission line construction.

The major rivers in the study area that pose potential flood risks include Severn River, Mole River, Beardy River and Tenterfield Creek. These waterways all drain north-west into the Dumaresq / MacIntyre River system. However it is noted that, given the terrain, extended flooding is likely to be limited to the floodplains adjoining these waterways. Flooding issues are therefore unlikely to be a significant constraint to feasible options.

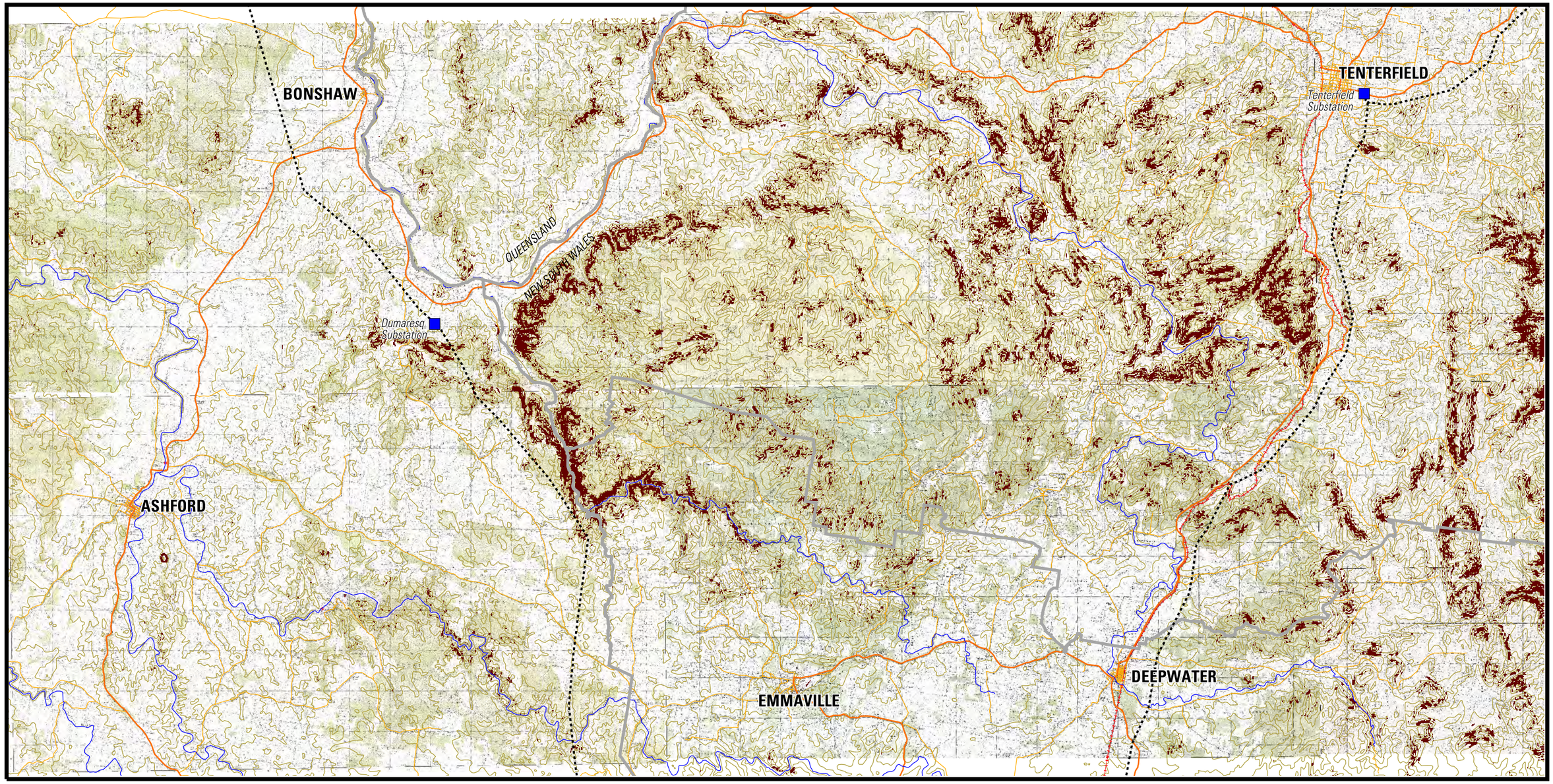

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FIGURE 4.2
SLOPE MAP

4.4.3 Biodiversity

The key ecological constraints that influence transmission line route selection in the project area are:

- The existence or likely existence of endangered ecological communities;
- The presence of threatened terrestrial flora and fauna;
- Potential habitat for threatened terrestrial flora and fauna;
- Wildlife corridors;
- Koala habitat; and
- Significant roadside vegetation.

Where practicable it is preferable to avoid options that may significantly impact such areas.

A search of the Environmental Protection and Biodiversity Conservation (EPBC) Act indicated several matters of national environmental significance that may occur, or relate to the study area. These were:

- 1 Wetland of International Significance;
- 1 Threatened Ecological Community;
- 56 threatened species (36 plant species, 7 birds, 7 mammals, 3 frogs, 2 reptiles and 1 ray-finned fish); and
- 9 migratory species.

The Wetland of International Importance, Little Llangothlin Nature Reserve, receives flows from the waterways east of the Great Dividing Range. The majority of the study area is west of the Great Dividing Range and is part of the Murray-Darling River catchment. Only a small portion of land in the south-east corner of the study area drains to the wetland and the proposed corridors will maintain a considerable distance from this land to minimise corridor length and avoid affecting the wetland catchment.

The threatened ecological community under the EPBC Act, Grassy White Box Woodlands, is characterised by the presence of White Box (*Eucalyptus albens*) and native grasslands. Yellow Box (*E. melliodora*) and Blakely's Red Gum, (*E. blakelyi)* are also likely to be present in this community.

A search of threatened species registered with the NSW National Parks and Wildlife Service (NPWS) revealed that a total of 115 threatened species, populations and communities exist or are predicted to exist in the study area. This includes:

- 43 Endangered Species;
- 63 Vulnerable Species;
- 2 Endangered Populations; and
- 7 Endangered Ecological Communities.

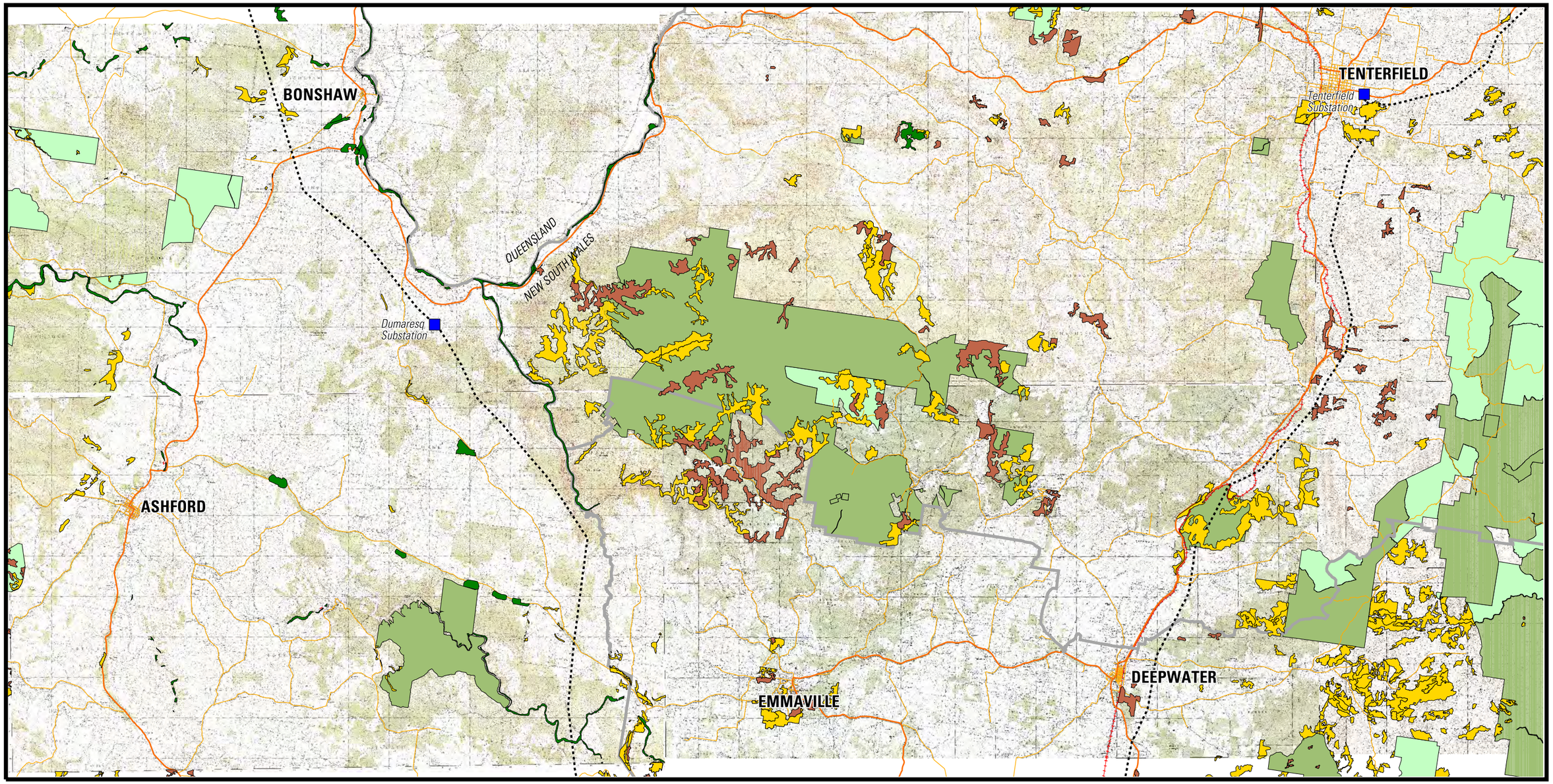
NPWS has prepared recovery plans for seven of the threatened species – *Grevillea beadleana*, *Boronia granitica*, *Ninox connivens* (Barking Owl), *Ninox strenua* (Powerful Owl), *Tyto tenebricosa* (Sooty Owl), *Tyto novaehollandiae* (Masked Owl) and *Phascolarctos cinerus* (Koala).

Two of the threatened species, *G. beadleana* and *B. granitica* are listed as endangered, and accordingly, under the *Threatened Species Conservation Act 1995* critical habitat can be declared making it an offence to damage the nominated habitat and requiring all development activities within the critical habitat to prepare a Species Impact Statement (SIS). Listed critical habitat for *G. beadleana* includes eastern parts of Torrington SCA. Although *B. granitica* is found throughout Torrington SCA, no critical habitat has been listed for this species but it is possible that Torrington SCA may be nominated at a later stage.

Endangered ecological communities (EECs) under the NPWS register that exist or are predicted to exist in the study area include the nationally identified EEC, Grassy Whitebox Woodlands, as well as New England Peppermint Woodland, Ooline Community and McKies Stringybark/Blackbutt Open Forest. Figure 4.3 shows the locations of known and potential EECs in the study area.

In 1991 the Director-General of the NSW National Parks and Wildlife Service (NPWS) listed the Binghi Wilderness area as identified wilderness under the Wilderness Act 1987. This area includes most of Torrington SCA, a portion of Torrington SF and other surrounding lands. Once land is identified for consideration as wilderness the Minister for the Environment may declare part or all of the identified area as wilderness. Management of the declared wilderness, usually by NPWS, will then be in accordance with the management principals of the Wilderness Act. There is no declared wilderness in Binghi Wilderness Area. However, this area was still excluded from the potential corridors in Figure 5.1, where possible, due to the increased environmental impact and the possibility that this area could later be declared and hence pose additional constraints on the approval process.

The best available mapping of vegetation communities was procured under license from NPWS and is reproduced in Figure 4.3. This vegetation community data was prepared for two separate projects that completely cover the study area (excluding QLD) with some overlap: NPWS produced mapping of vegetation in the Nandewar Bioregion in 2004 and of the Upper North East as part of the UNE CRAFTI 2000 project in 2001. Due to the increased likely environmental impact, the inclusion of EECs and potential EECs within the potential corridors was minimised.



DUMARESQ TO TENTERFIELD
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FIGURE 4.3
ECOLOGICALLY ENDANGERED COMMUNITY DISTRIBUTIONS

4.4.4 Heritage

The key heritage constraints that influence transmission line route selection are:

- The existence or likely existence of Aboriginal and Non-Aboriginal heritage sites;
- Areas with high likelihood of past occupation;
- Areas that have not been previously disturbed; and
- Identified cultural heritage sites.

The following heritage databases were reviewed to ascertain potential constraints due to heritage constraints within the study area:

- Department of Environment and Conservation Aboriginal Heritage Information Management System (AHIMS);
- NSW Heritage Office State Heritage Register (SHR);
- Australian Heritage Places Inventory (AHPI); and
- Australian Heritage Database (AHD).

The distribution of recorded Aboriginal heritage sites tends to be in clusters or along waterways. Along Mole River there are a significant number of sites that will potentially constrain the Northern Corridor. The Southern Corridor contains Aboriginal sites parallel to Beardy River and the Queensland – New South Wales Interconnection and a few scattered sites in the vicinity of Bolivia.

The locations of Aboriginal heritage sites, as provided by AHIMS, is shown in Figure 4.3 and the site types within the study area are summarised in Table 4.2. Heritage from the SHR, AHPI and AHD are listed in Appendix B.

Three Native Title claims are currently active within the local government areas covered by the study area. Two of the claims are in the Tenterfield shire while the third includes land in both Inverell and Glen Innes Severn Shires. An Australian wide map produced by the National Native Title Tribunal showing the locations of claimant applications indicates that the aforementioned applications extents are near the southern and eastern boundaries of the study area and that the majority of the study area is not subject to current Native Title claims.

Table 4.3 – Aboriginal Heritage Sites

Site Type	Number of Sites
Aboriginal Ceremony and Dreaming	2
Art (Pigment or Engraved)	9
Artefact (Stone, Bone, Shell, Glass, Ceramic and Metal)	117
Burial	3
Ceremonial Ring (Stone or Earth)	5
Conflict	2
Modified Tree (Carved or Scarred)	7
Artefact and Stone Quarry	1
Aboriginal Ceremony and Dreaming and Artefact	3
Artefact and Modified Tree	1

Development proposals that could affect heritage sites may require additional assessment by the Australian Heritage Council or NSW Heritage Office and such areas are preferably avoided if it is practicable to do so.

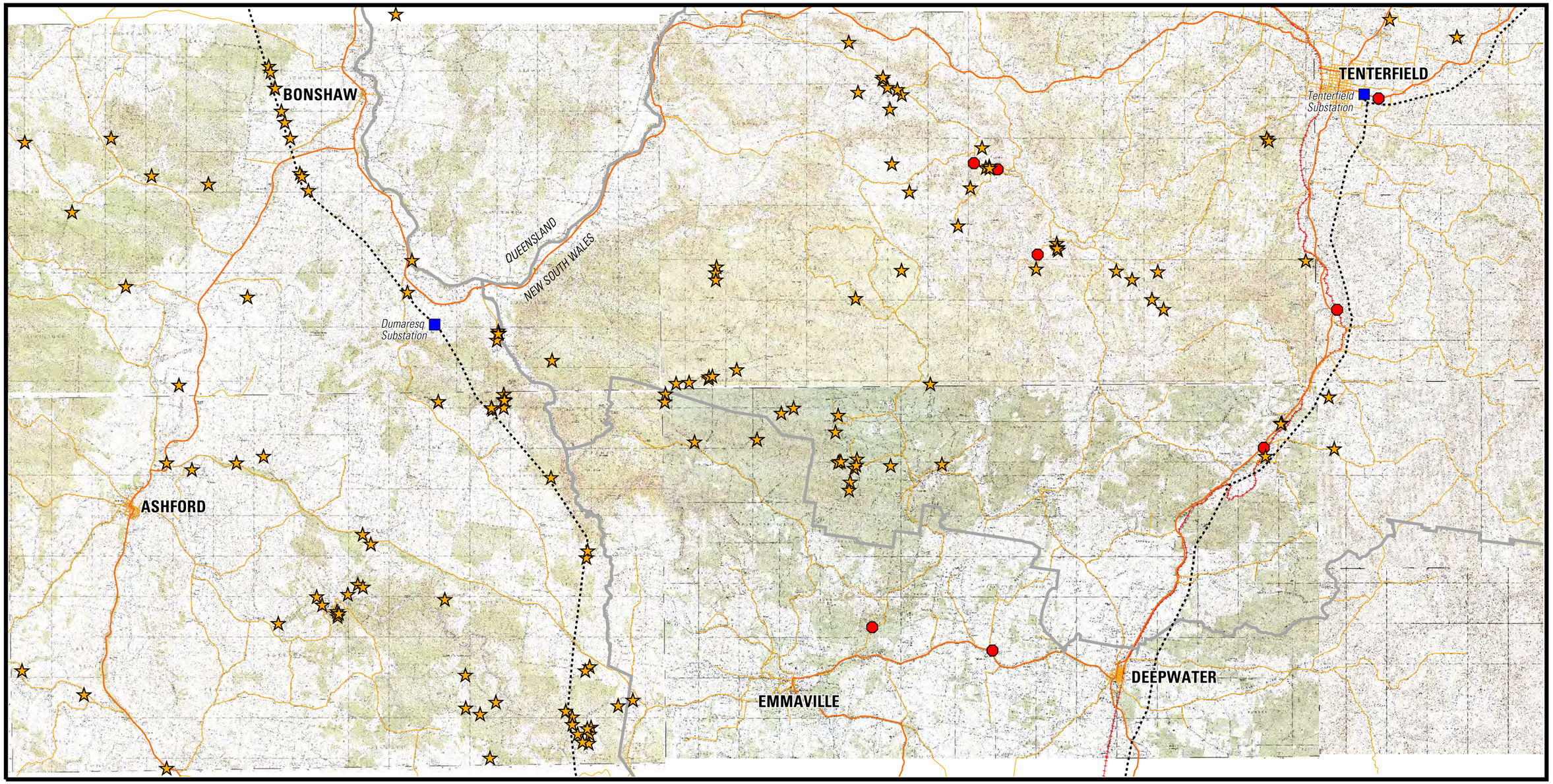

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FIGURE 4.4
HERITAGE SITES

5. Potential Corridor Descriptions

The main issues considered in the corridor identification process were:

- Transmission lines are a permitted use;
- The corridor must be entirely within NSW;
- Waterways should be avoided where practicable to reduce potential impact on the drainage system and due to the increased likelihood of aboriginal heritage in the vicinity of a waterbody;
- Areas of steep slopes (greater than 18 degrees) should be avoided where possible;
- Heritage sites and known locations of the threatened ecological communities are also avoided where practicable;
- Rural residences within the corridors should be passed at a distance greater than 200 m to minimise aesthetic impacts;
- Roadside vegetation should be maintained to screen the appearance of power lines and protect existing plant communities and wildlife corridors; and
- Minor airstrips should be passed at a distance of 1 km.

The presence of Torrington State Conservation Area in the centre of the study area resulted in two broad areas, a northern and a southern area, being identified for more detailed investigation. The locations of corridors within these investigation areas were chosen to minimise the constraints of land use, soils and terrain, biodiversity and heritage. These potential corridors are shown in Figure 5.1. At some locations, particularly in areas of steep terrain, multiple options have been proposed. These require further investigation at a later stage to determine the best option.

The approximate range of the lengths of the northern corridor from Dumaresq to Tenterfield (including all options) is 82 to 90 km. The southern corridor is approximately 105 km in length.

Northern Corridor Options

From Dumaresq substation the northern corridor initially travels east and then north-east parallel to the Bruxner Highway for a distance of 20 km. Along this section, the corridor is restricted to the north by the NSW/Qld border and the Dumaresq River. The corridor is predominantly on the southern side of the highway where the main restrictions are homesteads and the topography. Heavily vegetated land to the south of the Bruxner Highway also reduces corridor opportunities in some locations. Due to the proximity of the corridor to the highway, regard must be had to minimising the visual impact of any preferred alignment on road users.

A rural landing strip is indicated on the topographic map in the vicinity of the Bruxner Highway, several kilometres east of the Dumaresq Substation. This airstrip is not in the Geoscience Australia GIS airstrip layer and while it appears to no longer be in use, this requires further investigation as it could significantly constrict the corridor if this is not the case.

The Northern Corridor turns east some 6 km south of the intersection of the Bruxner Highway and Reedy Creek Road and travels in the vicinity of Reedy Creek Road. While it may be possible to follow the highway beyond this point, this was not considered further due to the additional length and the presence of steep, vegetated land very close to the roadway. The landscape within the Reedy Creek Valley is relatively flat and used for grazing cattle and sheep. The soil appears to be silty clay and exhibits low infiltration. Rocky Creek Road is a dirt road of variable quality but would be suitable for access.

The northern corridor branches into two main options near the point where the road crosses Reedy Creek, 4 km west of Blaxlands Gap. As shown in Figure 5.1, Corridor 1 heads north-east back towards the Bruxner Highway while Corridor 2 continues to parallel Reedy Creek Road and other minor roads, eventually approaching Tenterfield from the south. Due to the complexity of the landscape there are several options linking Corridors 1 & 2 to maximise opportunities during route selection.

Corridor 1

Corridor 1 is within the vicinity of the Bruxner Highway for the majority of its length. Of the proposed corridors, Corridor 1 has the least number of deviations but the greatest potential visual impact due to the greater density of dwellings and the higher traffic volumes along the highway. The corridor boundary is often constricted to the south by steep terrain. Tenterfield Creek lies to the north of the Bruxner Highway at the eastern end and to minimise potential flooding effects and reduce visibility, most of Corridor 1 lies on the southern side of the highway.

Corridor 1 passes north of Tenterfield to either meet the Lismore – Tenterfield line at Tenterfield substation or make a connection east of this point. The option to link with existing line east of the substation takes advantage of the topography 3 km east of Tenterfield to conceal some of the line and hence reduce the visual effects of the transmission line on the Tenterfield township.

Corridor 2

Corridor 2 continues in proximity to Reedy Creek Road as the road ascends a low range of hills before entering the Mole River valley. One option links Corridors 1 & 2 via Blaxlands Gap, in the vicinity of Gibraltar Nature Reserve. Corridor 2 descends towards Mole River after passing south of Gibraltar Nature Reserve. It then continues along gently sloping land dominated by pastures and grasslands.

North of Mole River the terrain becomes rugged. The corridor is tightly restricted as it passes between the peaks of Razorback Mountain and Mount Ararat. Due to the presence of two heritage-listed properties, the corridor does not go south of the southern peak, Mount Ararat,. The corridor widens again as it turns south-east 1 km east of Mount Ararat and travels roughly parallel to Upper Mole River Road. Investigations have identified two further options to connect with Corridor 1, heading north-west towards Doctors Nose Mountain. Corridor 2 continues south-east for 9 km and then heads east in the vicinity of the intersections of Upper Mole River Road with New Mole Road. Areas along Yard and Benders Creek are sparsely vegetated. These could be utilised to minimise the amount of clearing required. Two kilometres east of the New England Highway, Corridor 2 turns north-east and parallels the existing easement for the Glen Innes – Tenterfield line. This corridor then approaches Tenterfield Substation from the south.

Options between Corridors 1 and 2

There are three options linking Corridors 2 to Corridor 1, as outlined below.

Option A diverges from Corridor 2 at Blaxlands Gap and heads north-east, crossing Mole River at Bogey Camp Flat. Although the land either side of the Mole River is relatively flat the connection of Option A and Corridor 1, 5 km west of Five Mile Swamp, is restricted due to the series of ridges parallel to the highway.

Option B leaves Corridor 2, 3 km south-east of Razorback Mountain, and travels north-east across the steep Gipsies Ridge which is the key constraint to this option. After this ridge there is flatter, sparsely vegetated land available near the banks of several small creeks.

Option C avoids Gipsies Ridge and heads north-east from the intersection of Upper Mole River Road and Woodside Road, joining with Option B on the north-east side of Draining Rock, 5 km south-west of Doctors Nose Mountain. Options B and C were separated due to the presence of Mount Perry, Red Rock Peak and general steep slopes between the two options. Both options are in granite country and

rocky outcrops are common. The combined options continue north-east and eventually join up with Corridor 1 at a point 6 km west of Leeches Gully parallel to the highway. Doctors Nose Mountain and another ridge are excluded from the combined section of the options due to the steep nature of terrain and heavy vegetation.

Southern Corridor (Corridor 3)

While significantly longer, a southern corridor has been identified in case unforeseen constraints prevent the adoption of a northern corridor option. In the unlikely event that a southern option becomes desirable the establishment of a viable alignment between Dumaresq substation and Emmaville requires greater scrutiny. An additional option to travel further west in the more open grassy land towards Ashford may need to be considered.

There are two options from Dumaresq substation, both heading south-east. The two options merge after approximately 25 km and the southern corridor passes between Emmaville and the southern boundary of Torrington SCA, through moderate to dense vegetation on undulating terrain. Midway between Emmaville and Deepwater, around Kangaroo Flat, the vegetation thins and is replaced by flat grazing lands with scattered woodland remnants. There are several airfields located throughout the area but few other environmental constraints were identified.

The southern corridor crosses the New England Highway immediately north of Bolivia Hill Nature Reserve and parallels the Glen-Innes – Tenterfield 132 kV line for the remainder of the distance. This route is predominantly pastures and grasslands with some native forests and woodlands. There appears to be a landing strip within 1 km of the existing Glen-Innes – Tenterfield transmission line on both the Geoscience Australia data and the topographic map. In this case, the 1 km buffer was not strictly applied but further investigation is required at a later stage.

Options for Corridor 3

Two options head south-east from Dumaresq substation. One option runs parallel to the Queensland – New South Wales Interconnection (QNI) easement and passes through sparse to moderately vegetated land. This option may be unpopular with the community, based on undertakings made during the process of constructing the QNI. The advantage of this option would be that access tracks built for the Queensland – New South Wales Interconnection could be used in some instances, thereby reducing the amount of additional clearing required for access.

The second option follows the Beardy River valley, 3 km east of Dumaresq Substation. The western side of the valley is potentially more suitable for transmission structures as the land cover is more open. Negotiating the terrain from the Beardy River on to the tablelands area north west of Emmaville would require some rugged terrain to be crossed. Potential endangered ecological communities (EECs) parallel a section of the river on the east side of the river valley and EECs are located in a several clusters just south of Torrington SCA, constraining the eastern section of the southern corridor. This option is likely to be more ecologically sensitive than the QNI corridor option between Dumaresq Substation and the tablelands north-west of Emmaville.

Should a longer southern route be required and detailed investigations rule out both of these options, a final option would be to establish corridor further to the west, before turning eastwards towards Emmaville. This has not been considered further at this stage.

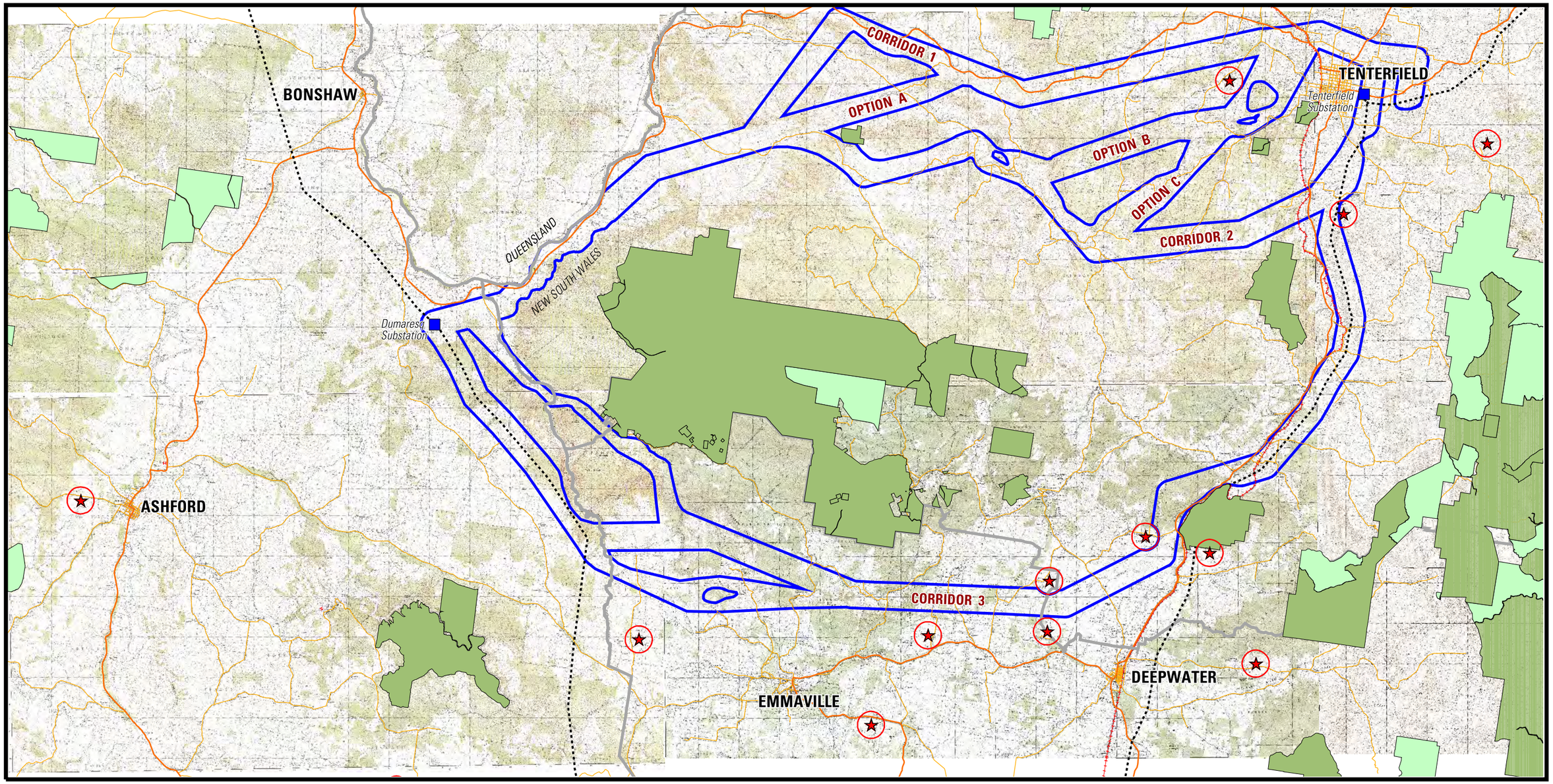

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FIGURE 5.1
POTENTIAL CORRIDORS

6. Discussion of Environmental Assessment Process

There are a number of NSW and Commonwealth statutes and regulations that will need to be considered should it be proposed to proceed with the Dumaresq to Tenterfield 330 kV transmission line project. The objective of this section is to document the main relevant legislation and identify relevant provisions that are likely to be involved in the detailed environmental assessment of the project. This includes identification of specific approvals required, and the information necessary to support applications for any such approvals.

6.1 Commonwealth Legislation

6.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a person must not take an action that has, will have, or is likely to have a significant impact on a matter of National Environmental Significance (NES) without approval from the Commonwealth Environment and Heritage. Threatened species and ecological communities are included as a matter of NES under s.18 of the EPBC.

The presence of significant areas of the threatened ecological community Grassy White Box Woodlands and threatened flora and fauna within the study area is likely to require the project to be referred to Environment Australia for consideration. The Minister will provide a binding decision within 20 days of referral as to whether the project causes a 'significant impact' on matters of NES and hence becomes a 'controlled action', for which approval is required under the EPBC Act. If the Minister determines that approval is required, the Minister is then responsible for deciding if approval is granted and whether any conditions are to be applied to the approval.

The final alignment of the transmission line will impact the assessment as to whether the project causes a significant impact to the threatened ecological community. The likelihood of the EPBC Act being triggered can be lowered by avoiding threatened ecological communities identified on vegetation mapping and during site investigations.

Based on the above discussion and a review of recent referrals that have included the threatened species and ecological communities found in the area, there is a reasonable expectation that the project could be declared a 'controlled action' under the EP&BC Act.

6.1.2 Australian Heritage Council Act 2003

This Act establishes the Australian Heritage Council (AHC) to protect and conserve items of national significance. Although there are no National or Commonwealth heritage places within the study area, there are many sites listed on the Register of National Estate (refer Appendix B). Route refinement and selection will confirm whether any listed items or items nominated for listing on the Register of National Estate will be affected.

6.1.3 Aboriginal and Torres Strait Islands Heritage Protection Act 1984

Under this Act, the Commonwealth Minister for Aboriginal Affairs may, upon application, intervene to protect items deemed to be traditionally significant to Aborigines, and which are under threat. A search of the National Native Title Tribunal records has indicated that there are currently three claimant actions within the local government areas of the study area. Route refinement and selection will determine whether any sites/items of Aboriginal heritage will be affected. However, existing native title claims would not appear to be a significant issue for the project at this stage.

6.2 New South Wales

6.2.1 Environmental Planning and Assessment Act 1979

All development proposals in NSW must be assessed to ensure that they comply with relevant planning controls and, according to nature and scale, that they are environmentally and socially sustainable. State, regional and local plans and policies direct what level of assessment is required. The assessment system in NSW is set out in Parts 3A, 4 and 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Part 4 of the EP&A Act relates to development that requires development consent under an environmental planning instrument, such as a Local Environmental Plan (LEP). As discussed in Section 4.3, either due to being permitted without consent or due to the provisions of SEPP 4, the proposal would not appear to require development consent.

Under Part 5, TransGrid is the determining authority for its transmission lines. Pursuant to Section 111 of the EP&A Act, TransGrid needs to consider the impacts of the proposed transmission line on the environment. A Review of Environmental Factors (REF) is required to be undertaken and, in the event that a significant environmental impact is considered likely, an EIS would be required.

The Minister for Planning has gazetted an order that Part 3A of the EP&A Act shall apply to "Development that is an activity for which the proponent is also the determining authority and that, in the opinion of the proponent, would (but for this Order) require an Environmental Impact Statement to be obtained under Part 5." Part 3A aims to streamline the integrated assessment process of major projects by making the Minister the approval authority and removing the need for separate approvals. If it was determined that the project came under Part 3A of the EP&A Act, TransGrid would be the proponent.

Due to the scale of the project, it is considered likely that an Environmental Impact Statement (EIS) would be required and that, as a consequence the project would fall under Part 3A of the EP&A Act.

Additionally, the Minister for Planning may 'declare' through publication of a notice in the Government Gazette that Part 3A of the EP&A Act applies to a project, due of the economic, social or environmental planning significance to the State or a region.

A breakdown of the assessment process under Part 3A and indicative durations of each component is provided in the following section:

Step 1: Preparation of the Environmental Assessment	
• Proponent prepares and submits proposal outline to DOP. DOP confirms if Part 3A applies • Proponent then submits a preliminary assessment with project application • A Planning Focus Meeting (PFM) is conducted with relevant agencies/councils (if required)	approximately 2 months
• Assessment requirements issued by DOP with focus on prioritising key issues	28 days after application
• Proponent conducts studies to support Environmental Assessment • Consultation conducted by Proponent	approximately 6-9 months

• Proponent prepares draft Environmental Assessment with preliminary Statement of Commitments. • Finalised Environmental Assessment is submitted to DOP	
Step 2: Lodgement, exhibition, consultation and review	
• Pre-exhibition evaluation of Environmental Assessment with draft Statement of Commitments. If inadequate, Director General may request additional information or refuse to exhibit	approximately 4 weeks
• Review of additional information request and submission of modified Environmental Assessment (if required)	approximately 2-4 weeks
• Environmental Assessment exhibited and submissions invited	minimum 30 days
• Proponent may modify proposal in response to submissions. If changes, a Preferred Project report is prepared and made public	approximately 1-2 months
Step 3: Assessment and determination	
• Assessment by DOP and drafting of Director General Assessment Report with recommended approval condition(s) or refusal. DOP finalises assessment report including consultation and recommendations from agencies/council	approximately 3 months
• Submission to Minister for decision	variable

6.3 Other approvals

The provisions of the following legislation and environmental planning instruments may affect the environmental assessment requirements of the project:

- Fisheries Management Act 1994;
- Mining Act 1992;
- Native Vegetation Act 2003;
- National Parks and Wildlife Act 1974;
- Protection of the Environment Operations Act 1997;
- Rail Safety Act 2002;
- Rivers and Foreshores Improvement Act 1948;
- Roads Act 1993;
- Threatened Species Conservation Act 1995;
- Transport Authorities Act 1988;
- Wilderness Act 1987;
- State Environmental Planning Policy 4;
- State Environmental Planning Policy 11;
- State Environmental Planning Policy 44;
- State Environmental Planning Policy 55;
- State Environmental Planning Policy 60; and

- State Environmental Planning Policy (Major Projects).

When the preferred corridor/route has been identified, obtaining s. 149 certificates for the affected lands will help determine what consents will be required.

Should the project be assessed under Part 3A of the EP&A Act, separate approvals under the above acts would not be required. However, the Department of Planning would be expected to seek input from the relevant agencies as part of its overall assessment.

7. Conclusions

This investigation of the feasibility of finding a viable route for a 330 kV transmission line between Dumaresq and Tenterfield substation confirmed that there are likely to be feasible options within the study area.

The investigations have considered the available information and data and indicated areas that information will need to be updated and refined during the process of identifying a preferred route. In this regard, the need to examine the current distribution of rural dwellings is a priority. The subsequent community consultation may also reveal issues that are not obvious at the level currently investigated

The study has identified three main corridors along which it is likely that a viable line route could be established. These are:

- *Corridor 1:* Constraints - Steep terrain, landing strips, homesteads, Dumaresq River, Tenterfield Creek, Bruxner Highway road corridor.

  Opportunities - Generally good access, extensive areas of cleared or partially cleared land, generally favourable terrain, shortest length.

- *Corridor 2:* Constraints - Steep terrain, heritage sites, rocky outcrops, landing strips, homesteads, Mole River, Gibraltar Nature Reserve, narrow corridor in some locations.

  Opportunities - Road reserves, Glen Innes – Tenterfield 132 kV line easement, grazing lands.

- *Corridor 3:* Constraints - Longer overall length, steep terrain, landing strips, endangered ecological communities, dense vegetation, Bolivia Hill Nature Reserve.

  Opportunities - Access advantages of the existing Queensland – New South Wales Interconnection 330 kV line easement, Glen Innes – Tenterfield 132 kV line easement, open grazing lands.

It is considered likely that the proposal would require assessment under Part 3A of the EP&A because an EIS is expected to be required. Otherwise the project would most likely be assessed under Part 5 of the EP&A Act. The environmental assessment process for a project under Part 3A is estimated to take around 18 months before submission to the Minister for final approval.

It is concluded that a feasible transmission line route exists between Dumaresq Substation and the Tenterfield Substation or a nominated connection point along the Lismore – Tenterfield line 132 kV line route.

Appendix A

Reference Documents

1. Belson, E. (2002) *Roadside Management Report for the Severn Shire and Glen Innes Municipality*, Severn Shire and Glen Innes Shire Councils, March 2002.

2. Dames & Moore (1998) Queensland Interconnection Environmental Impact Statement, Prepared for TransGrid, February 1998.

3. DIPNR (2004) *NSW Statistical Local Area Population Projections 2001-2031 – Northern West*, 2004 release, Department of Infrastructure, Planning and Natural Resources Transport and Population Data Centre.

4. Manidis Roberts Consultants (1992*) Glen Innes Forestry Management Area Environmental Impact Statement*, Prepared for NSW Forestry Commission, October 1992.

5. NSW National Parks and Wildlife Service (2003a) *Torrington State Conservation Area Plan of Management*, National Parks and Wildlife Services, January 2003.

6. NSW National Parks and Wildlife Service (2003b*) The Bioregions of New South Wales: their biodiversity, conservation and history*, NSW National Parks and Wildlife Service, Hurstville.

7. Veness and Associates (1991) *Soil Report - Glen Innes Forestry Management Area EIS Study*, Report No. VA 581/02, Veness and Associates, Coffs Harbour.

Planning Documents:

Border Rivers Catchment Blueprint 2003

Inverell Local Environmental Plan 1988

Severn Local Environmental Plan 2002

Standard Instrument (Local Environmental Plans) Order 2006

Tenterfield Local Environmental Plan 1996

TransGrid Transmission Line Route Selection GD EG G2 013

Appendix B

Registered Heritage

Tenterfield Shire Summarised Heritage List

Heritage Item	Location	Registered Status
Ayrdrie House	Bruxner Hwy, Tenterfield, NSW	Register of the National Estate
Bluff River Rail Bridge	Sandy Flat, NSW	Register of the National Estate
Bolivia Hotel former	New England Hwy, Bolivia, NSW	Register of the National Estate
Central Eastern Rainforest Reserves Main Range Group	Killarney, QLD	World Heritage List
High Conservation Value Old Growth Forest	Upper North East NSW	NSW Heritage Act
Indigenous Place (Wellington Rock Aboriginal Place)	Tenterfield, NSW	Register of the National Estate
Mole River Arsenic Mine	Potters Rd, Mole Station via Tenterfield, NSW	Register of the National Estate
North East Rainforest World Heritage Area	North East NSW	NSW Heritage Act
Railway Hotel former	2 Manners St, Tenterfield, NSW	Register of the National Estate
School of Arts former	203 Rouse St, Tenterfield, NSW	Register of the National Estate
Tenterfield Courthouse Group	Molesworth St, Tenterfield, NSW	Register of the National Estate
Tenterfield Creek Rail Bridge	Main Northern Railway Line, Sunnyside, NSW	Register of the National Estate, NSW Heritage Register
Tenterfield Post Office	225 Rouse St, Tenterfield, NSW	Register of the National Estate, NSW Heritage Register
Tenterfield Railway Station group	Main Northern railway, Tenterfield, NSW	NSW Heritage Register
Tenterfield School of Arts	Manners St, Tenterfield, NSW	NSW Heritage Register
Tin Buddles at Pyes Creek	Johnstones Rd via Torrington, NSW	Register of the National Estate
Two Tobacco Curing Barns	Spring Rd, Mole Station via Tenterfield, NSW	Register of the National Estate
Washpool National Park	Gwydir Hwy, Cangai, NSW	Register of the National Estate

Glen Innes Severn Shire Summarised Heritage List

Heritage Item	Location	Registered Status
High Conservation Value Old Growth Forest	Upper North East NSW	NSW Heritage Act
North East Rainforest World Heritage Area	North East NSW	NSW Heritage Act
Ottery Mine	8km north-east, Emmaville, NSW	Register of the National Estate
Washpool National Park	Gwydir Hwy Cangai, NSW	Register of the National Estate
Wellington Vale Homestead	Deepwater-Emmaville Rd Wellington Vale, NSW	Register of the National Estate

Inverell Shire Summarised Heritage List

Heritage Item	Location	Registered Status
Indigenous Place	Bonshaw, NSW	Register of the National Estate
Indigenous Place	Graman, NSW	Register of the National Estate
Severn River Nature Reserve (1977 boundary)	via Emmaville, NSW	Register of the National Estate