QUEENSLAND

QUEENSLAND

BALD ROCK

BOONOO

DONNYBROOK

DONNYBROOK

TENTERFIELD CREEK

TENTERFIELD CREEK

TENTERFIELD

TENTERFIELD SUBSTATION

DOCTORS NOSE MOUNTAIN

CURRYS GAP

MOUNT MACKENZIE

TENTERFIELD CREEK

MOLE RIVER

GIBRALTAR

MOLE RIVER

THE SCRUB

BLUFF ROCK

BLUFF RIVER

DUMARESQ SUBSTATION

TORRINGTON

Legend

- Local Government Area
- Study Area (West)
- Existing Substation
- Transmission Lines
- Roads
- Railway
- Creeks/Rivers
- Wilderness
- State Forest
- National Parks, Nature Reserve, State Government Area

0 3.5 7 14

Kilometres

Source:TransGrid

Drawn: AJW	Approved: CB	Date: 23/09/2009
Job No.: 43177662	File No.: 43177662.022.mxd	

Client

TransGrid

Project

DUMARESQ SUBSTATION TO LISMORE
330 kV TRANSMISSION LINE

Title

STUDY AREA (WEST)

Figure: 1-2b

URS

Table 1-1 Terminology Summary

Terminology	Refers To
Existing 132kV easement	The existing 45 metre wide easement between Lismore Substation and Tenterfield Substation.
The 330kV easement	The 60 metre wide easement that will be established upon finalisation of the alignment.
Project Area	The broader area within which the 330kV transmission line is proposed.
Study Area	The area in which environmental and design studies have been undertaken to assist in determining the preferred corridor for the 330kV 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 preliminary environmental and design studies have been undertaken to assist in determining the preferred corridor for the 330kV 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 132kV transmission line and easement and adjacent areas to allow expansion to a 60 m easement.
Components (C1-C9)	C1 to C9 divide the Study Area into a number of components for the purposes of assisting in the analysis of corridor options. Components are described in **Section 2**.
Preferred Corridor West	500m – 1.6km wide corridor joining Dumaresq Substation to the existing 132kV transmission line east of Tenterfield identified following preliminary constraints identification (presented in **Section 6**).
Preferred Corridor East	60m wide corridor identified along the existing 132kV easement following preliminary constraints identification (presented in **Section 6**).

2

Methodology

2.1 Approach

Figure 2.1 illustrates the key project steps. This Report utilises the information already gathered by the 2006 Feasibility Study that identified the potential corridor typically of a width of 1-2 km between Dumaresq Substation and Tenterfield. The key constraints that determined the identification of this corridor comprised the position of the respective substations, the extent of steep rocky terrain, existing habitation, Torrington State Conservation Area, National Parks, State Forests, the NSW/QLD state border, heritage listed properties, Dumaresq River and a number of minor airstrips.

This Constraints Identification and Preferred Corridor Report supplements the 2006 data and focuses on presenting the results of the desktop studies, preliminary fieldwork and consultation activities which have been undertaken since 2006 to assist in expanding the knowledge of constraints located within the Study Area. Further detailed environmental studies will be undertaken as part of the environmental assessment process. It is deemed likely that no deviations from the existing 132kV alignment will occur during the upgrade unless significant constraints are identified during detailed field surveys.

It should be noted that identification of the preferred corridor does not preclude locating parts of the 60m easement outside of this corridor should this be required as part of the detailed route analysis and associated environmental and engineering studies.

2.2 Previous Studies

A line route feasibility study (Connell Wagner, 2006) was prepared on behalf of TransGrid to develop options for connecting Tenterfield (and the existing 132kV transmission line) to Dumaresq Substation (**Appendix A**).

This feasibility study essentially identified two broad transmission line corridor options from Dumaresq to Tenterfield, referred to as the Northern and Southern Corridors. The Northern Corridor was also further broken up into two corridors (Corridors 1 and 2) and three options (Options A, B and C) that linked and provided an overlap of the two broad paths of Northern Corridors 1 and 2. As a result the Southern corridor was given the designation of Corridor 3. In summary the following comparisons were made between the Northern and Southern Corridors:

Northern Corridor/s	Southern Corridor
Approximate range of lengths of the Northern Corridor/s (including all options) is 82-90km.	The Southern Corridor is approximately 105km in length.
The Northern Corridor provided a shorter and more direct path to the existing Tenterfield to Lismore line route.	The Southern Corridor assumed the use of two existing line routes (i.e. QNI from Dumaresq towards Armidale and the Glen Innes to Tenterfield lines) to establish a path back towards the existing Tenterfield to Lismore line route.
Northern Corridor would like to follow the path of the Bruxner Highway from Dumaresq to Tenterfield remaining on the southern side of the highway while minimising visual impact and looking to maximise the traversing of areas with sparsely populated vegetation.	Southern Corridor would have to traverse significant areas of densely populated vegetation, including known EEC's south east of Dumaresq and south to south west of Tenterfield.
Northern Corridor 2 including Options B and C did encounter significant steep terrain. Corridor 1 with Option A had significantly less steep terrain.	Southern Corridor had extensive and significant amounts of steep terrain, including granite rock formations directly south east of Dumaresq and south to south west of Tenterfield.
Northern Corridor had one registered airstrips identified within 1km of the proposed route study area	Southern Corridor had five registered airstrips identified within 1km of the proposed route study area
Both Corridors had clusters of registered Indigenous and European heritage sites within proximity of the proposed route study areas.	

The overall advantages of the Northern Corridor option included:

- generally good access and proximity to Bruxner Highway;
- extensive areas of cleared or partially cleared land;
- generally favourable terrain and minimal rocky outcrops;
- smaller number of identified EEC's; and
- shortest length out of the corridor options.

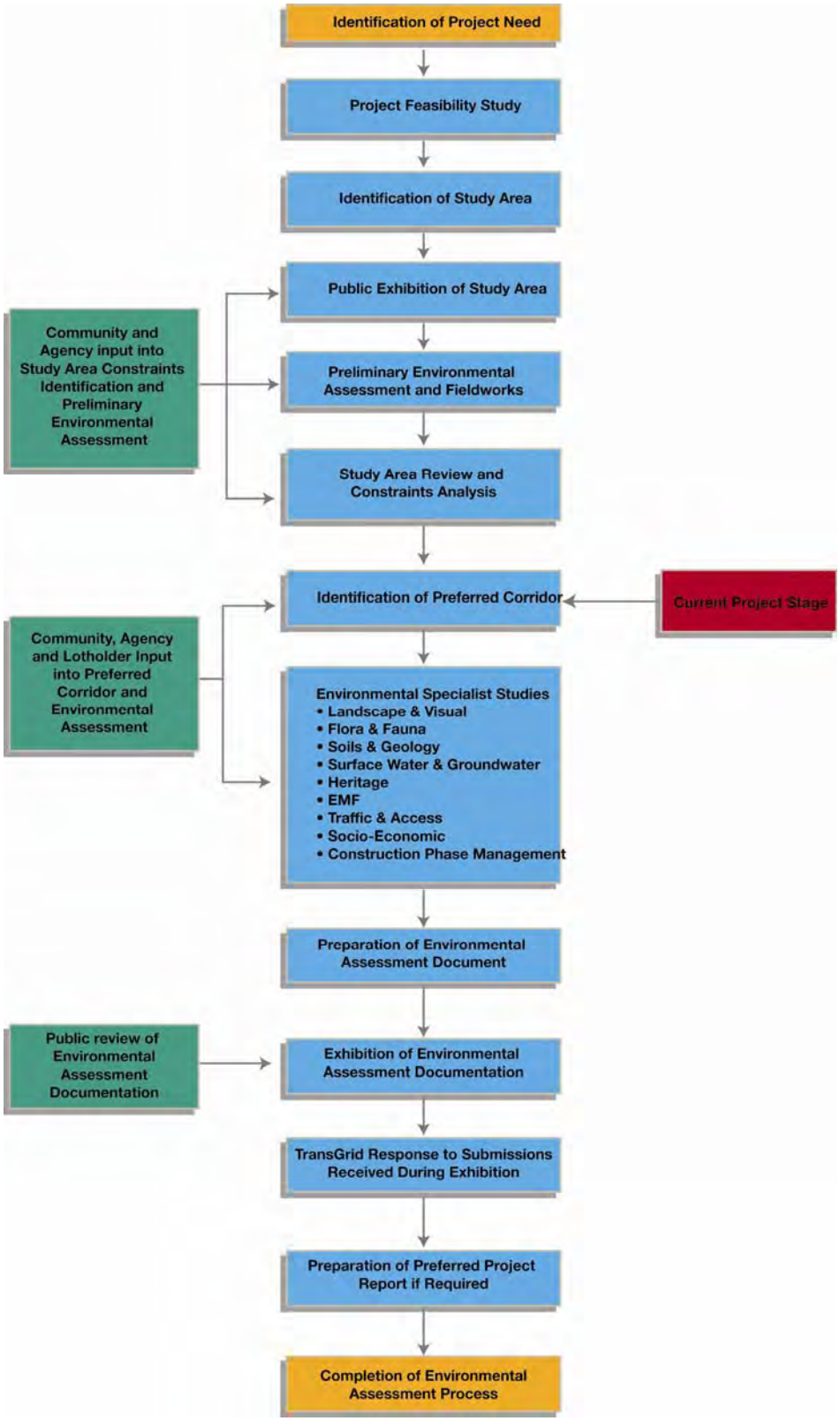
The overall disadvantages of the Southern Corridor option included:

- steeper terrain and significant rocky outcrops;
- more landing strips;
- larger number of identified EEC's along with denser vegetation; and
- longer overall length.

Based on this analysis, the corridor selected for further environmental studies was the Northern Corridor 1. Corridor 1 is within the vicinity of the Bruxner Highway for the majority of its length. The corridor boundary is often constricted to the south by steep terrain.

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 the existing line east of the substation takes advantage of the topography 3km east of Tenterfield to conceal some of the line and hence reduce the visual effects of the transmission line on the Tenterfield township.

Figure 2-1 Study Approach and Key Steps



2.3 Desktop Studies

As part of the desk-based assessment, the following data has been obtained and reviewed:

- cadastral information;
- soils maps (1:250,000 where available);
- topographic maps;
- geology maps;
- National Parks locations;
- State Forest locations;
- vegetation maps;
- threatened species records;
- Aboriginal and Non-Aboriginal heritage records;
- relevant planning instruments (SEPPs, REPs and LEPs);
- flood and groundwater studies;
- aerial photography;
- airport exclusion zones;
- proximity of residences to the Study Area; and
- LEP zoning and subdivision data.

Relevant reports including:

- Connell Wagner (2006) Dumaresq to Tenterfield 330kV Transmission Line Route Feasibility Study, July 2006, prepared for TransGrid; and
- TransGrid and Country Energy (2009) Development of Electricity Supply to the NSW Far North Coast, prepared by TransGrid and Country Energy.

Results from these investigations are presented in **Section 5**.

2.4 Fieldwork

Preliminary field investigations were undertaken to identify key constraints and confirm the findings of desktop studies.

A three day field reconnaissance was undertaken by URS staff. The length of the study area was traversed with access constrained by road availability. This allowed for confirmation of desktop mapping of residences and identification of potential constraints and areas that may need to be revisited as a result of limited access.

A five day field assessment of the Study Area was undertaken by URS ecologists. The assessment focused on mapping of vegetation and potential EECs with access constrained by road availability.

2.5 Study Area

Desktop assessment, preliminary environmental studies, aerial surveys and consultation was undertaken from March 2009 - August 2009. To assist in the analysis and comparison of corridor options, the Study Area was divided into a number of components. Study Area components are shown in **Figure 2-2a** and **Figure 2-2b**.