3 Location of Works

3.1 Introduction

DGRs for the Project require an assessment of the following aspects in relation to this chapter:

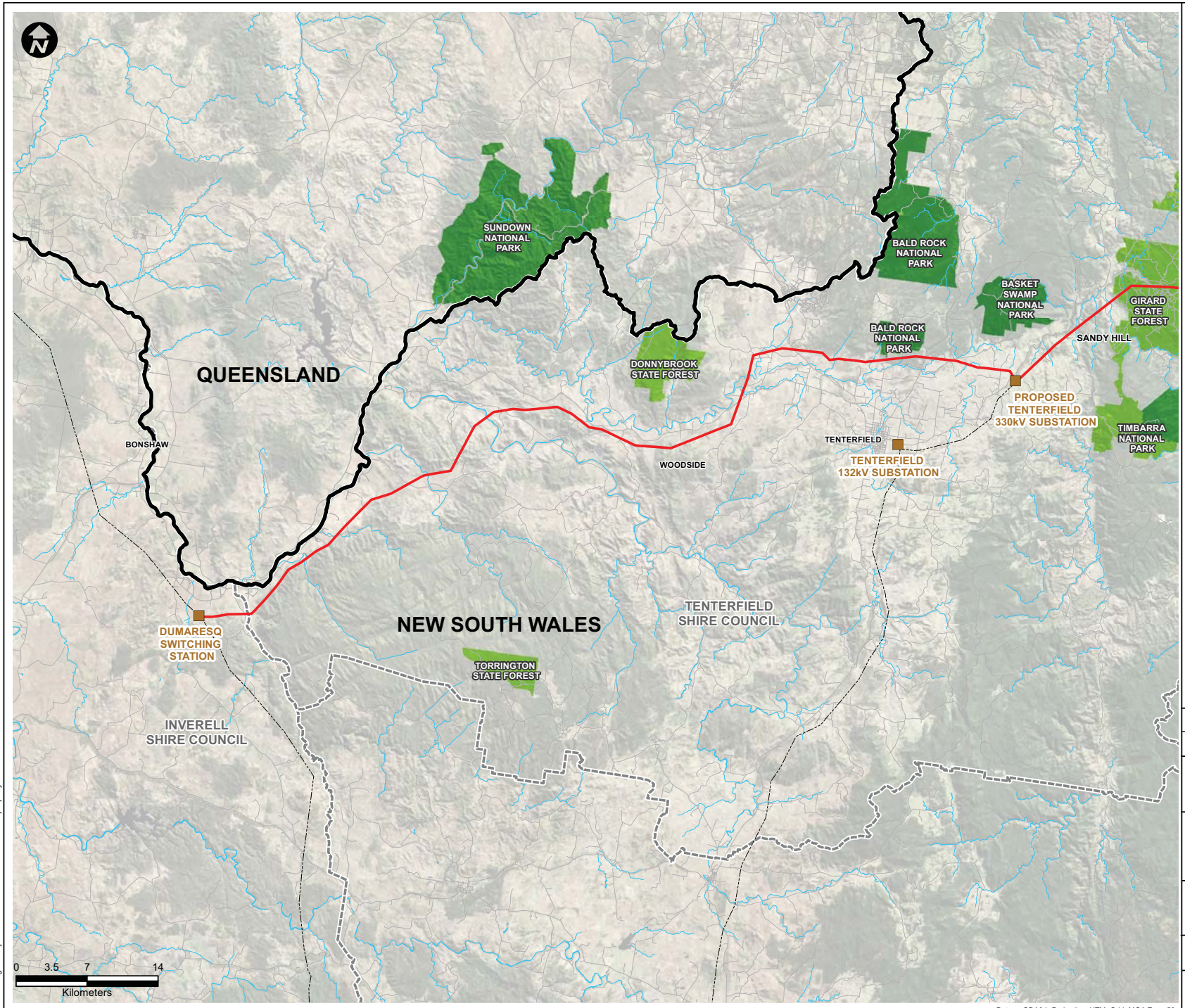
- the precise location and area in hectares of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts, and
- description of the existing environment of the proposal location and the surrounding areas that may be affected by the Project.

This chapter addresses these DGRs and describes the physical environment and land uses within which the various Project components would be established. **Figure 3-1a** and **Figure 3-1b** show an overview of the Project location. **Figures 3-2a-3-2ae** (aerial) provided at the end of this chapter, and at A3 scale in **Section 2**, **Volume 3** of this EA show the location of the alignment, the existing and proposed angle positions and intermediate structures, the existing substation and switching station, the proposed substation and the access tracks. The proposed intermediate structures between the angle positions are indicative. These figures (and **Figures 3-3a-3-3ae** (topographic)) are provided at A3 scale within a separate volume (**Section 2**, **Volume 3** of this EA) to facilitate review alongside this Main Report (**Volume 1**). **Chapter 4 Project Description** provides a detailed description of each of the Project components.

The Project is located within five Local Government Areas (Inverell, Tenterfield, Kyogle, Richmond Valley and Lismore) and can be broadly divided into two main sections:

- **Alignment west and associated access tracks**: this section of the alignment would be approximately 96km long and would traverse eastward from the existing Dumaresq Switching Station just south of Bonshaw to a point on the existing 132kV alignment approximately 14km north east of Tenterfield. Within this area, there is no existing transmission line. To maintain the existing 132kV supply to Tenterfield, a substation (Tenterfield 330kV Substation) would be established at this point. Access to each structure for both construction and maintenance during operation would be required. Alignment west, the associated access tracks and the proposed Tenterfield 330kV Substation are shown as an overview on **Figure 3-1a** and in detail on **Figures 3-2a – 3-2p**.
- **Alignment east and associated access tracks:** the proposed alignment runs from the location of the proposed Tenterfield 330kV Substation to the Lismore Substation and would be approximately 109km in length. From the Tenterfield 330kV Substation to the south of Casino, the existing 132kV transmission line would be dismantled and replaced with the new 330kV transmission line. The existing easement would be widened from 45m to 60m. To allow the 330kV line to be built parallel to the existing 132kV transmission line, the easement would be 90m wide from south of Casino to Lismore (14km). This would maintain the existing 132kV supply to Country Energy's Casino Substation from TransGrid's 330/132kV Lismore Substation. The majority of access tracks in alignment east are currently established to provide access to the existing 132kV line. Some upgrade and/or re-alignment would be required in parts. Alignment east and the associated access tracks are shown as an overview on **Figure 3-1b** and in detail on **Figures 3-2p - 3-2ae.**

The total area of works within alignment east, alignment west and associated off-easement access tracks is approximately 1320 ha.



Datum: GDA94, Projection: UTM, Grid: MGA Zone 56

LEGEND:

- Existing Transmission Lines^
- Proposed 330kV Alignment^
- Substation/Switching Station
- Roads
- Waterways
- State Border
- Local Government Area
- National Park
- State Forest

Symbols and lines used in this figure are indicative and are not intended to reflect actual size of represented features.
Symbols and lines have been enhanced to aid visibility.

Source: Aerial Imagery from Microsoft © Bing Maps
^ TransGrid 2010

Map compiled using MapInfo StreetPro and NPWS Data.

Drawn: AO/SB	Approved: WM/TH	Date: 24/05/2011
Job No.: 43177662	File No.: 43177662.124.mxd	

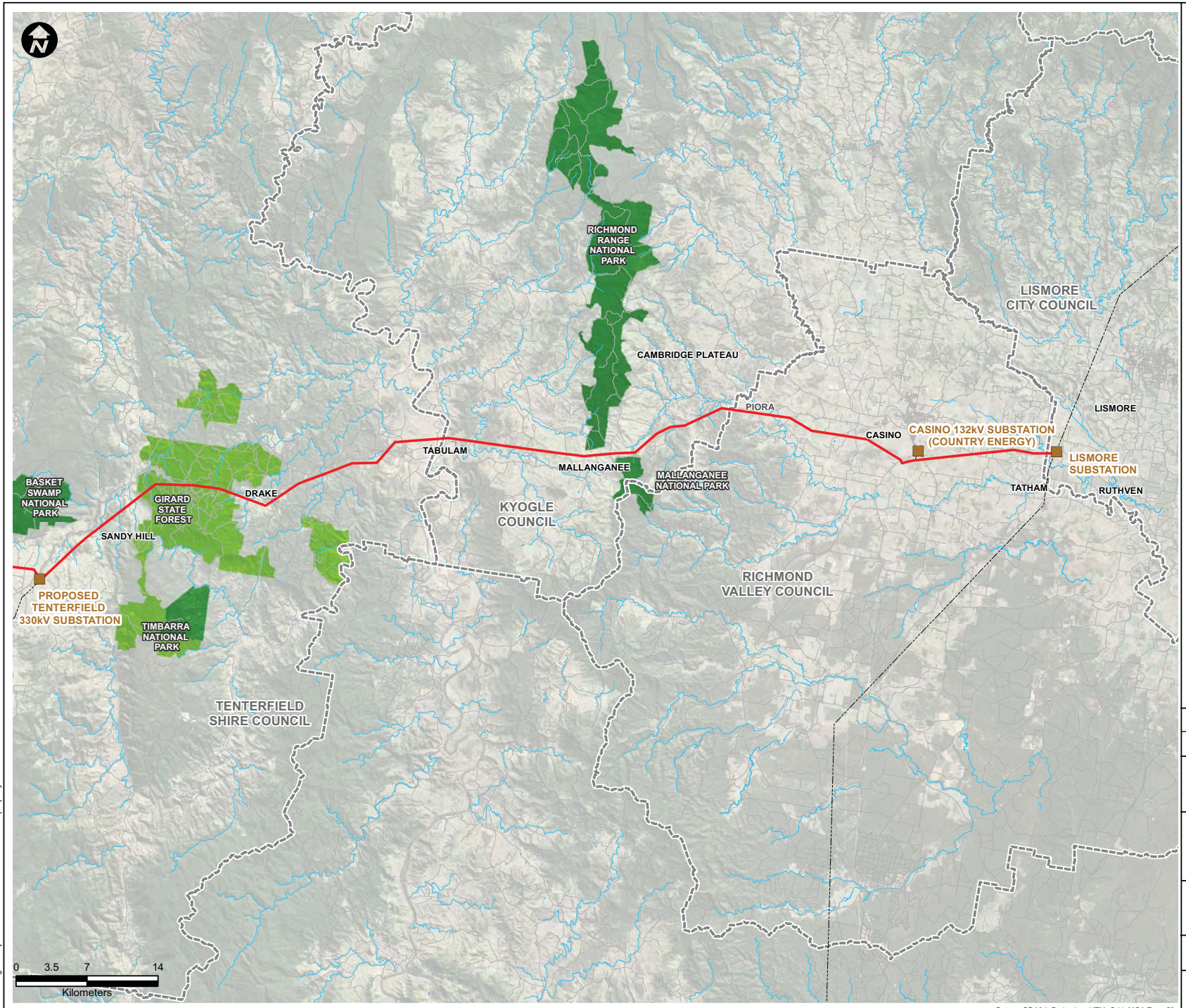
Client: TransGrid

Project: FAR NORTH NSW (DUMARESQ - LISMORE 330kV TRANSMISSION LINE) PROJECT

Title: ALIGNMENT (WEST)

Figure: 3-1a

URS



LEGEND:

- Existing Transmission Lines^
- Proposed 330kV Alignment^
- Substation/Switching Station
- Roads
- Waterways
- State Border
- Local Government Area
- National Park
- State Forest

Symbols and lines used in this figure are indicative and are not intended to reflect actual size of represented features.
Symbols and lines have been enhanced to aid visibility.

Source: Aerial Imagery from Microsoft © Bing Maps
^ TransGrid 2010

Map compiled using MapInfo StreetPro and NPWS Data.

URS Australia, MapInfo Australia, NPWS or PSMA Australia do not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that these companies shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

Drawn: AO/SB	Approved: WM/TH	Date: 24/05/2011
Job No.: 43177662	File No.: 43177662.124.mxd	

Client: TransGrid

Project: FAR NORTH NSW (DUMARESQ - LISMORE 330kV TRANSMISSION LINE) PROJECT

Title: ALIGNMENT (EAST)

Figure: 3-1b

URS

3.2 Alignment West

3.2.1 Dumaresq Switching Station – New England Highway (AP1 – AP29)

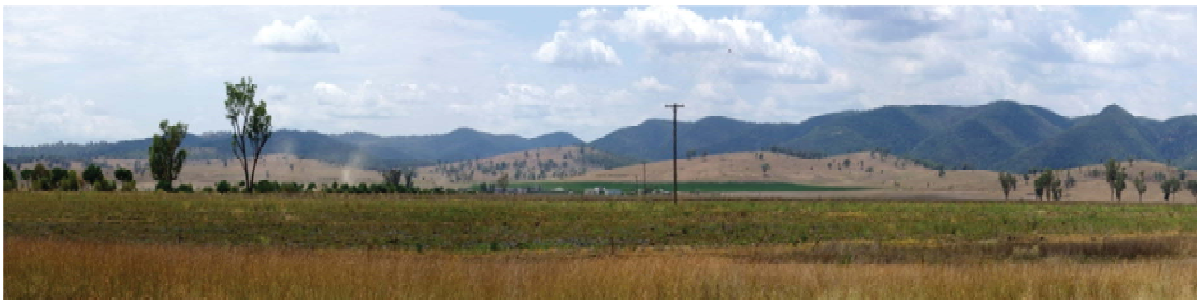
The proposed transmission line extends east from the Dumaresq Switching Station located on the existing 330kV Queensland Interconnector. The line passes through Angle Position 1 (AP1), AP2 and AP3 to span the Beardy River approximately 5km from the existing switching station.

Plate 3-1 Angle Position 1 toward Angle Position 5

From the Beardy River the line extends east to AP4, at which point it turns north east for approximately 7km toward Black Creek through AP5 toward AP8. From AP8 the line spans Black Creek and Gulf Creek and continues north east towards AP12, at which point the line turns east through AP13 for approximately 2km and spans Reedy Creek Road.

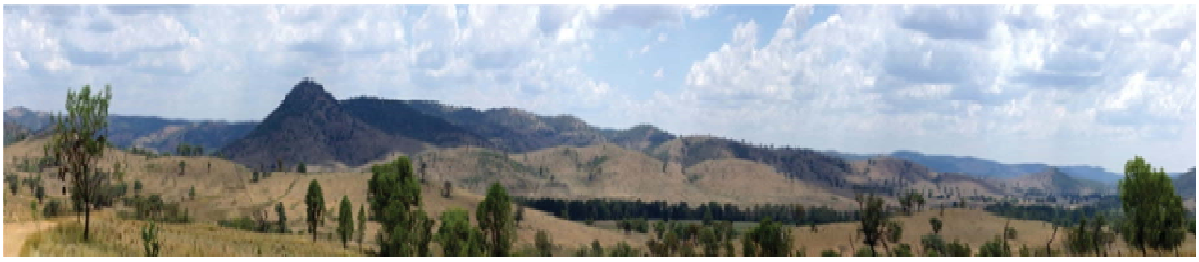
Between AP1 and AP13 the line crosses a combination of land uses including cropping, semi cleared pasture and timbered hillside (**Figures 3-2a – 3-2d**).

Plate 3-2 Angle Position 9 toward Angle Position 12



From Reedy Creek Road the alignment continues north east for approximately 2.5km. It crosses Reedy Creek and extends toward AP16 after which it spans the Mole River, where it turns east from AP17 to span an unsealed track and Mole River Road. The alignment then continues for approximately 2km toward AP18. From AP18 the alignment heads east to AP20 and then south east, south of the Bruxner Highway, and spans the Gibraltar and Mole Station Road toward AP24 (**Figures 3-2d – 3-2h**).

Plate 3-3 Angle Position 15 toward Angle Position 19



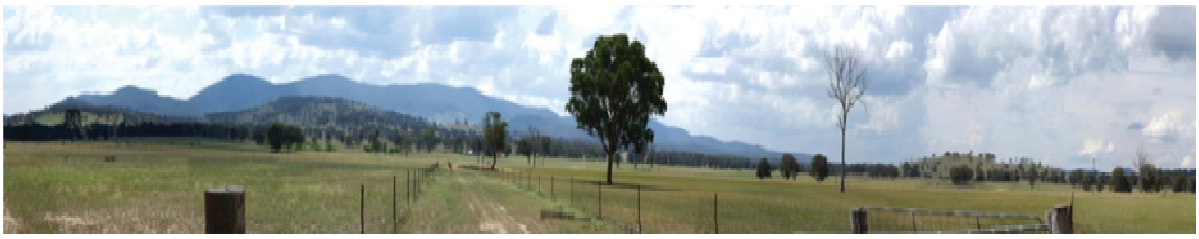
From AP24 the alignment heads east for approximately 10km and spans Five Mile Creek before continuing toward AP25 south of the Bruxner Highway. Once at AP25 the alignment heads north east, south of the Bruxner Highway, for approximately 6.5km then spans Eight Mile Creek and Swamp Creek toward AP26 (**Figures 3-2h – 3-2j**).

Plate 3-4 Angle Position 24 toward Angle Position 25

Upon reaching AP26 the alignment first heads north to north east, crossing Ten Mile Creek and the Bruxner Highway, before continuing north and spanning Sunnyside Creek and Tenterfield Creek. From AP28 the line turns east for approximately 1km, passing AP29 before spanning the New England Highway (**Figures 3-2j – 3-2l**).

Between AP12 to AP29 the line crosses a number of land uses including cleared and improved pasture, partially cleared grazing with scattered tree cover and timbered areas.

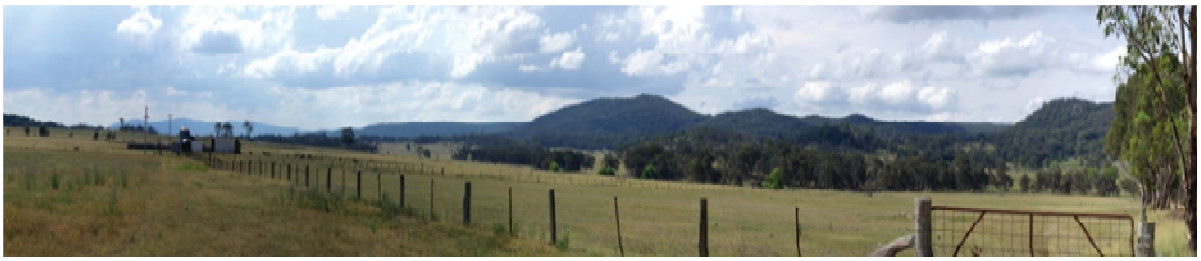
Plate 3-5 Angle Position 24 toward Angle Position 29



3.2.2 New England Highway – Proposed Tenterfield 330kV Substation (AP30 – AP40)

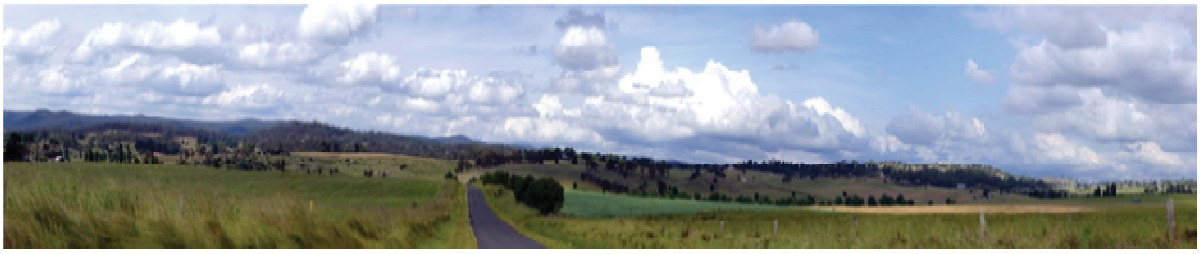
From the New England Highway the alignment continues east, crossing Gosling Swamp Creek, Ram Swamp Creek and Halls Creek (AP31 – AP35) (**Figures 3-2m – 3-2n**).

Plate 3-6 Angle Position 30 toward Angle Position 34



Heading east from AP35 the line first spans the Mount Lindesay Highway before continuing east for approximately 2.7km where it crosses Black Swamp Road, Chinaman's Swamp Creek, the Cataract River and Cataract River Road.

Plate 3-7 Angle Position 35 toward Angle Position 37



From AP39 the alignment turns south east, spans the Bruxner Highway and enters the site of the proposed Tenterfield 330kV Substation. The proposed substation site is located to the east of the Bruxner Highway, adjacent to the existing 132kV transmission line (**Figure 3-2p**). The area is characterised by open forest with evidence of previous clearing for agriculture. Shrubs occur in dense patches across scattered locations, and ground cover is predominately tussock grasses and some weed invasion. The Tenterfield 330kV Substation location predominantly consists of tussock grasses with scattered individual trees nearby.

Between AP30 to AP40 the line passes through a combination of land uses including cleared and improved pasture, partially cleared grazing with scattered tree cover and timbered areas.

Plate 3-8 Angle Position 37 toward Angle Position 40

Access Tracks Associated with Alignment West

Access to structures within alignment west would require the upgrade of existing tracks and the establishment of new tracks (see **Figures 3-2a-3-2p**).

Where possible, existing access roads to properties south of the Bruxner Highway would be utilised to provide access to the easement. In a number of cases, upgrade of these roads would be required to enable construction plant and equipment to access work areas through grading and road widening. Existing tracks in the vicinity of the easement would also be utilised, with on-easement access tracks to be established to link existing tracks.

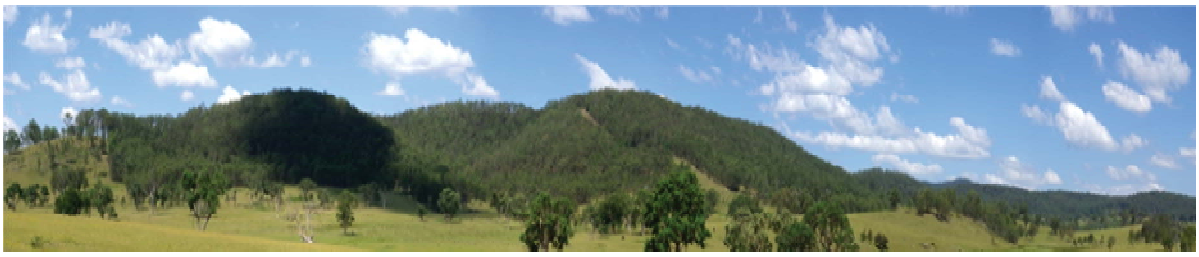
Existing access from public roads would be utilised. Public roads would either connect to off-easement access tracks leading to the alignment or directly on to on-easement access tracks. On-easement access has been proposed wherever possible to minimise track length and overall impact footprint.

3.3 Alignment East

3.3.1 Proposed Tenterfield 330kV Substation – Tabulam (AP40 – AP48)

From AP40 the proposed alignment turns north east to follow the alignment of the existing 132kV transmission line. At this point the existing 132kV transmission line is to be removed and replaced by the 330kV transmission line. The alignment extends for approximately 15km toward AP42 spanning Snake Creek Road, Clear Creek Road and Macleod's Road as well as a number of unnamed creek lines.

Plate 3-9 Angle Position 41 toward Angle Position 42



From AP42 the alignment heads east and spans a small number of unsealed tracks and then crosses the Bruxner Highway towards AP43. The topography in this section includes a number of steep gullies and the vegetation is more dense (**Plate 3-10**).

Plate 3-10 Angle Position 43 toward Angle Position 42

At AP44 the alignment continues east and then south east, spanning White Rock Mine Road, White Rock Gully and Plumbago Creek before heading towards AP45 south of Drake township. From AP45 the alignment extends for approximately 12km toward AP48 spanning a small number of unsealed tracks and creek lines. Changing direction at AP48, the alignment heads north east until it again crosses the Bruxner Highway. From AP40 to AP48 (**Figures 3-2p – 3-2u**) the alignment passes through cleared and improved pasture, partially cleared grazing with scattered tree cover and a number of dense timbered areas.

3.3.2 Tabulam – Lismore Substation (AP49 – AP71)

The change in direction at AP49 results in the line crossing Paddy's Flat Road, Clarence River Road, Clarence River and Bottle Creek Road. From AP50 the alignment continues east to south east, crossing Rogers Road, Tunglebung Creek, Bonalbo Woodenbong Road, Culmaran Creek Road then continuing east through AP54 for approximately 4.6km where it meets and spans the Bruxner Highway (**Figures 3-2u – 3-2y**).

Plate 3-11 Angle Position 49 toward Angle Position 50

At the Bruxner Highway the alignment continues east and north east spanning Mummulgum Creek Road, Mummulgum Creek and continuing across Bulmers Road toward AP59. Land use comprises predominantly open grazing land interspersed with scattered tree cover and a number of small areas of closed canopy forest (**Figures 3-2y – 3-2aa**).

From AP60 the alignment turns south east for approximately 2.5km then heads east to south east, spanning Benns Road and continuing toward AP62. From AP62 the alignment heads south east crossing the North Coast Railway and Summerland Highway to AP64, then heading east to AP65. From AP65 to Lismore Substation the easement is proposed to be 90m wide to allow the 330kV line to be built parallel to the existing 132kV transmission line.

From Ellangowan Road (**Figures 3-2aa – 3-2ac**) the line continues east, crossing Casino Road, the Richmond River and Tomki Tatham Road. Land use here becomes dominated by improved cropping land, particularly in proximity to the Richmond River (**Plate 3-12**). From Walsh's Creek, the line crosses Coopers Lane and connects to the Lismore Substation (**Figures 3-2ac – 3-2ae**).

Plate 3-12 Angle Position 67 toward Angle Position 68

Access Tracks Associated with Alignment East

Access to structures within alignment east would predominantly be via existing tracks currently used for the maintenance of the existing 132kV transmission line (**Figures 3-2q-3-2ae**). Many of the proposed access tracks in alignment east require no upgrade works. On easement access would continue to be used wherever possible.

Existing access would be utilised (and upgraded in some instances) from public roads and numerous fire trails located within Girard State Forest.

For the Casino to Lismore section of the line, no defined access tracks have been proposed as part of this Project, however a number of roads run close to the existing alignment. Access to this part of the alignment would be from existing roads where required The precise route from the road to the proposed structure would depend on specific weather and soil conditions and the use of the land for that particular growing season.

3.4 Property Ownership

The alignment and access tracks would predominantly cross privately owned property used for grazing and cropping, along with forest land owned by NSW State Forests. The alignment would pass through approximately 185 private holdings and a number of road corridors owned by the Crown. No National Parks or Conservation Areas would be crossed by the alignment or the access tracks.

TransGrid has been engaged in ongoing discussions with each of the affected lot holders since April 2009. A summary of this consultation including key issues raised and associated responses is provided in **Chapter 6 Consultation**.

The proposed Tenterfield 330kV Substation would have a 150m x 130m compound footprint (**Chapter 4 Project Description**) and the site would be owned by TransGrid. The preferred location is close to AP40, within DP 751541, Lot 86. Current land use of the proposed location comprises cleared agricultural land dominated by Dry Sclerophyll forest (shrub/grass formation).

3.5 Residential Properties

Table 3-1 and **Table 3-2** provide a summary of identified residential properties that would be in proximity to the proposed 330kV transmission line and access tracks (see also **Figures 3-3a-3-3ae** (**Section 2, Volume 3** of this EA)). It should be noted that properties have been identified from aerial photography and publicly accessible locations only and are subject to confirmation via ground-truthing. Should additional issues be raised during exhibition of the EA they would be duly addressed in accordance with Part 3A process.

A total of 19 dwellings are currently located within 200m of the existing 132kV transmission line (alignment east). The closest residential receptor is approximately 50m from the existing 132kV transmission line (close to AP50), however this is a caravan. The closest permanent residential receptor is located approximately 85m from the existing 132kV line.

Between the Tenterfield 330kV Substation and structure 395 to the south of Casino, the distances to receptors from the proposed 330kV transmission line have been maintained. Between structure 395 and Lismore Substation, the new 330kV transmission line would run adjacent to, and south of the existing 132kV transmission line, within the newly established 90m easement. This would mean that approximately 10 residential receptors to the south of the existing 132kV transmission line would be closer to the proposed 330kV transmission line as a result of the Project.

Two dwellings are within 200m of alignment west. However, only one of these is a permanent residential receptor (and is 160m from the proposed alignment). This demonstrates the route selection process undertaken for this Project has avoided dwellings wherever possible.

A total of 31 dwellings would be located within 200m of proposed access tracks. Proximity of receptors are measured from the centre of the identified building to the closest point on the track.

The residential receptors identified are discussed in detail within **Chapter 12 Visual Assessment** and **Appendix H Visual Assessment Report**.

Table 3-1 Residences Located Within 200m of Proposed Line

Distance from Alignment (m)*	Number of Residences
0-25	0
26-50	1
51-75	0
76-100	6
101-125	2
126-150	6
151-175	3
176-200	4

*Distance from line accuracy +/- 10m

Table 3-2 Residences Located Within 200m of Proposed Access Tracks

Distance from Proposed Access Track (m)*	Number of Residences
0-25	4
26-50	5
51-75	1
76-100	5
101-125	5
126-150	4
151-175	4
176-200	3

*Distance from line accuracy +/- 10m

3.6 Ancillary Sites

A site storage facility with sufficient room for storage of crossarms, insulators, fittings and an area for welding/fabricating and storage of waste materials would be established. The site storage facility is likely to be an existing site that would be leased for the duration of the Project. The storage facility would be organised by the contractor.

A site office with amenities would also be established. The site office would be in Tenterfield and would be leased.

Concrete would be sourced from existing batching plants. No mobile batching plants would be required.

All works to Dumaresq Switching Station and Lismore Substation would take place within their existing footprints.