

Site Investigation Report Tweed South Substation



Prepared for:
Country Energy

By
Clarence Consultants Pty Ltd and Orogen Pty Ltd

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CLARENCE CONSULTANTS



Clarence Consultants Pty Ltd
53 Victoria Street
Grafton NSW 2460
Tel: 02 6642 7239
Fax: 02 6642 4868
Email: mail@clarenceconsultants.com.au



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|---------------------|-------------------------|
| Reviewed By: | <i>Michael Brennan</i> |
| Position: | <i>Project Director</i> |
| Signed: | |
| Date: | <i>21/5/07</i> |

| | |
|---------------------|------------------------|
| Prepared By: | <i>Dr Justin Meleo</i> |
| Position: | <i>Project Manager</i> |
| Signed: | |
| Date: | <i>21/5/07</i> |

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Study Team

Member Name
Michael Brennan
Justin Meleo

Clarence Consultants
Orogen Pty Ltd

Project Director
Project Manager

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Executive Summary

Investigation has identified six vacant sites located in the Tweed South area that have site characteristics that potentially suit a zone substation. Two of the sites are identified by signage as being "For Sale". In addition, the suitability of a site within the Country Energy Tweed South Field Service Centre has also been investigated.

All vacant sites would have to be connected to the existing 66kV network by underground cable. It is our opinion that this would have to be installed under existing road pavement in all instances which would result in a very significant disruption to the day to day operations of the businesses & residents in the areas.

Six (6) of the sites are either highly or extremely constrained with respect to access to the existing 66kV and 11kV networks.

Investigation of the suitability of the Country Energy Field Service Centre site (site F) has found the site to be the most suitable for the construction of a zone substation. The site is the least constrained overall of all the sites investigated, particularly with respect to issues of proximity to the 66kV and 11kV networks. Further, the site is identified as being within an area set aside for transmission lines and associated infrastructure, in accordance with the provisions of Clause 37 of Tweed Local Environmental Plan 2000.



1 Introduction

The Tweed South area is currently supplied from 66/11kV zone substations at Tweed North and Banora Point. Continued load growth requires augmentation of the 11kV supply into the Tweed South area.

Country Energy proposes to construct a new 66/11kV substation in the Tweed South area to augment the existing supply. (Refer Appendix A).

This report summarises investigations into substation site opportunities in the Tweed South area.



2 Methodology

An initial desktop analysis of the Tweed Local Environmental Plan 2000 was undertaken to determine the location of the land suitable for the location of the zone substation.

An analysis of the Country Energy network requirements (connection to the existing 66kV and 11kV networks, load centres, etc) and the existing network was undertaken to determine technical constraints associated with identified sites.

Following the desktop analysis, an on ground investigation was undertaken to identify suitable vacant land.

2.1 Tweed LEP 2000

All sites investigated in this report are zoned either 3(c) Commerce and Trade, 4(a) Industrial, or 5(a) Special Uses under Tweed LEP 2000. The objectives of each zone are reproduced below:

2.1.1 Zone 3 (c) Commerce and Trade

Zone objectives

Primary objective

- *to provide for commercial, bulky goods retailing, light industrial and trade activities which do not jeopardise the viability or function of the sub-regional or business centres.*

Secondary objectives

- *to provide for those retailing activities which are not suited to, or desirable in, the other business zones or which serve the needs of the other businesses in the zone.*
- *to allow for other development that is compatible with the primary function of the zone.*

Development within the zone

In Zone 3 (c) development for the purpose of the following is:

Item 1 allowed without consent:

- *environmental facilities*

Item 2 allowed only with consent:

- *bed and breakfast*



- *any other buildings, works, places or land uses not included in Item 1, 3 or 4*

Item 3 allowed only with consent and must satisfy the provisions of clause 8 (2):

- *educational establishments*
- *helipads*
- *heliports*
- *institutions*
- *junkyards*
- *liquid fuel depots*
- *places of assembly*
- *places of public worship*
- *shops (other than general stores)*

Item 4 prohibited:

- *abattoirs*
- *agriculture*
- *animal establishments*
- *boarding-houses*
- *brothels*
- *camping grounds*
- *caravan parks*
- *display homes*
- *dwelling houses (unless for caretakers)*
- *extractive industries*
- *forestry*
- *generating works*
- *home businesses*



- *housing for older people or people with disabilities*
- *industries (other than light industries)*
- *integrated housing*
- *manufactured home estates*
- *markets*
- *mines*
- *motels*
- *multi-dwelling housing*
- *offensive or hazardous industries*
- *professional consulting rooms*
- *recreation areas*
- *recreation establishments*
- *recreation vehicle areas*
- *restricted premises*
- *roadside stalls*
- *rural industries*
- *rural tourist facilities*
- *rural workers' dwellings*
- *sawmills*
- *stock and sale yards*
- *tourist accommodation*
- *tourist resorts*
- *transport terminals (other than airline terminals, bus depots or bus stations)*
- *utility installations being gas holders or generating works*



2.1.2 Zone 4 (a) Industrial

Zone objectives

Primary objectives

- *to provide land primarily for industrial development.*
- *to facilitate economic activity and employment generation.*

Secondary objective

- *to allow non-industrial development which either provides a direct service to industrial activities and their work force, or which, due to its type, nature or scale, is inappropriate to be located in another zone.*

Development within the zone

In Zone 4 (a) development for the purpose of the following is:

Item 1 allowed without consent:

- *environmental facilities*

Item 2 allowed only with consent:

- *bed and breakfast*
- *any other buildings, works, places or land uses not included in Item 1, 3 or 4*

Item 3 allowed only with consent and must satisfy the provisions of clause 8(2):

- *animal establishments*
- *bulky goods retailing*
- *helipads*
- *heliports*
- *hospitals*
- *hotels*
- *markets*
- *motor showrooms*



- *offensive or hazardous industries*
- *places of assembly*
- *places of public worship*
- *refreshment rooms*
- *retail plant nurseries*

Item 4 prohibited:

- *abattoirs*
- *agriculture*
- *airline terminals*
- *boarding-houses*
- *boat showrooms*
- *camping grounds*
- *caravan parks*
- *commercial premises*
- *dwelling houses (unless for caretakers)*
- *educational establishments*
- *forestry*
- *housing for older people or people with disabilities*
- *institutions*
- *integrated housing*
- *manufactured home estates*
- *mines*
- *motels*
- *multi-dwelling housing*
- *outdoor eating areas*



- *professional consulting rooms*
- *recreation establishments*
- *recreation vehicle areas*
- *respite care centres*
- *restricted premises*
- *roadside stalls*
- *rural industries*
- *rural tourist facilities*
- *rural workers' dwellings*
- *shops (other than general stores, takeaway food shops serving the industrial area or shops ancillary or incidental to a lawful use of the land)*
- *tourist accommodation*
- *tourist facilities*
- *tourist resorts*

2.1.3 Zone 5 (a) Special Uses

Zone objectives

Primary objective

- *to identify land which is developed or is proposed to be developed, generally by public bodies, for community facilities and services, roads, railways, utilities and similar things.*

Secondary objective

- *to provide flexibility in the development of the land, particularly if it is not yet or is no longer required for the relevant special use.*

Development within the zone

In Zone 5 (a) development for the purpose of the following is:

Item 1 allowed without consent:

- *environmental facilities*



- *railways if on land indicated by red lettering as "Railway" on the zone map*
- *roads (including road widening)*
- *any use authorised by or under the Forestry Act 1916 for the purpose of State forests if on land indicated by red lettering as "Forestry" on the zone map*

Item 2 allowed only with consent:

- *unless it is allowed without consent under Item 1, the particular use indicated by red lettering on the zone map and any development ordinarily incidental or ancillary to that use*
- *any use which is compatible with adjacent uses and with uses allowed (with or without consent) in adjacent zones*
- *public utility undertakings*
- *utility installations*

Item 3 allowed only with consent and must satisfy the provisions of clause 8(2):

- *nil*

Item 4 prohibited:

- *any buildings, works, places or land uses not included in Item 1, 2 or 3*

Summary

In accordance with the provisions of Item 2 under each zone, a public utility undertaking such as a substation is permitted in each of the zones subject to the consent of Council.

2.1.4 Clause 37

Certain land within the Tweed LGA is identified on the LEP maps as being set aside for future use as corridors for transmission lines. This land and its use are identified in Clause 37, reproduced below.

37 Electricity transmission line corridor

(1) Objective

- *to cater for the alignment of, and development in proximity to, major transmission lines.*



(2) Development, other than exempt development and agriculture, must not be carried out on land within a transmission line corridor shown on the zone map, except with development consent.

(3) The consent authority must not grant consent unless it has:

(a) notified NorthPower of the proposed development, and

(b) considered any representations received from NorthPower within 21 days of such notification.

It is noted that Country Energy's Tweed South Field Service Centre is located within an area of land subject to the provisions of Clause 37.



3 Network Planning Requirements

3.1 66kV Network

The new Tweed South Zone Substation is to be connected into the existing Banora Point to Tweed North 66kV line.

The existing line will be "cut" and fed "into" and "out of" the new substation establishing Tweed South substation on the Terranora - Banora Point - Tweed South - Tweed North - Terranora 66kV ring.

Long term 66kV plans include the option of establishing 2 additional 66kV feeds into Tweed South substation. These would be required to enter the Tweed South from the west.

The following is a summary of the 66kV network requirements for the Tweed South substation.

- Route(s) for connection to the existing Tweed North- Banora Point line; and
- Route(s) for future connection of 66kV line(s) to the west.

Refer Appendix B.

3.2 11kV Network

There are 12 11kV feeders planned for the Tweed South substation. The feeders are planned to generally feed to the following areas:

- 4 feeders to the north of the Tweed South area, including north of the Tweed River;
- 4 feeders to the south of the Tweed South area, generally into the existing Industrial/business and residential areas; and
- 4 feeders to the north east and south east of the Tweed South area to supply the existing residential and commercial areas.

The Tweed South substation is being established principally to reduce the rapidly growing load on the existing heavily loaded Tweed North substation. (Refer Appendix xx).

The following is a summary of the 11kV network requirements for the Tweed South substation:

- Geographically midway between Tweed North substation and Banora Point substation; and
- Suitable routes for 12 feeders.



Refer Appendix B.



4 Sites Identified

4.1 Study Area

Extensive field investigations found there are very few potential vacant sites available in the Tweed South study area. Given the scarcity, the investigation was broadened to include areas north of the nominated study area. (Appendix B).

4.2 Enterprise Avenue – Site A

4.2.1 Site Description

The site is zoned 4(a) *Industrial* pursuant to Tweed LEP 2000. The site is flat and level with an area of approximately 6500 m² (65 m wide x 100 m deep). It is located on Enterprise Ave, near the corner of Greenway Drive.

On the west boundary is a commercial building housing a Skate arena. On the east boundary is a commercial building complex housing various retail traders. The south boundary abuts Enterprise Ave and the northern boundary abuts the Pacific Highway. There is a wetlands/lake/reserve on the opposite side of Enterprise Ave.

4.2.2 Proximity to 66kV Network

The existing Tweed North- Banora Point 66kV line is to the east a distance of approximately 1200 m along Greenway Drive and Machinery Drive. The existing 11kV and low voltage reticulation in Corporation Circuit and Greenway Drive is underground. It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

A preliminary analysis of suitable 66kV cable routes indicates that the site is effectively 'land locked' and that the only cable route to the east would be along Greenway Drive and Machinery Drive.

It is highly probable that the 66kV cable installation configuration will require the 66kV cable be installed under the road pavement.

It was noted during the site investigations that the Machinery Drive, Greenway Drive and adjacent areas are very busy during the day.



Irrespective of where the cables are installed in the road reserve, (either in the nature strip or under the road pavement), it is our opinion that very significant disruption to traffic and local business operations in the area will occur.

The site is effectively 'landlocked' by residential development for a future route to the west.

4.2.3 11kV Network Issues

The site is restricted in regard to 11kV feeder routes out of the area. It may be possible to take feeders in a northerly direction under the Pacific Highway, however, based on previous Country Energy experience it is highly unlikely that the RTA would agree to the proposal.

The site is a significant 'cable route' distance from the area to be supplied north of the Tweed River, greatly reducing the effectiveness of supplying load in this area.

Given the nature of the industrial/general business area, it is our opinion that there will be very significant constraints in the installation of the 11kV cables.

The installation of up to twelve (12) underground 11kV feeders out of the substation through the industrial/ general business area in our opinion would result in a major disruption to a large number of businesses in the area. Significant local government, local and broader community resistance is anticipated.

4.2.4 Constraints Summary

The constraints associated with this site are as follows:

- very limited opportunities to feed north of the Tweed River;
- site "land locked" from the existing 11kV network;
- disruption to local business activity during construction; and
- little scope for future line(s) to the west.

The site is therefore considered to be very highly constrained.



Enterprise Avenue: Site A



4.3 Enterprise Avenue – Site B

4.3.1 Site Description

The site is zoned *4(a) Industrial* pursuant to Tweed LEP 2000. There is a large flat and level site on the southern side and western end of Enterprise Drive. The large site, levelled for future subdivision/building development is approximately 6 ha in area. A suitable substation site of 6000 to 8000 m² could be located at either end of the larger site. It appears that subdivision or acquisition of a substation site would be required.

4.3.2 Proximity to 66kV network

The existing Tweed North – Banora Point line is to the east a distance of approximately 1500 m along Enterprise Avenue, Greenway Drive & Machinery Drive. The existing 11kV and low voltage reticulation in Corporative Circuit and Greenway Drive is underground.

It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

A preliminary analysis of suitable 66kV cable routes indicates that the site is effectively “land locked” and that the only cable route to the east would be along Greenway Drive & Machinery Drive.

It is highly probable that the 66kV cable installation configuration will require the 66kV cable be installed under the road pavement.

It was noted during the site investigations that the Machinery Drive, Greenway Drive and adjacent areas are very busy during the day.

Irrespective of where the cables are installed in the road reserve, (either in the nature strip or under the road pavement), it is our opinion that very significant disruption to traffic & local business operations in the area will occur.

The site is effectively “landlocked” by residential development for a future line route to the west.

4.3.3 11kV Network Issues

The site is restricted in regard to 11kV feeder routes out of the area. It may be possible to take feeders in a northerly direction under the Pacific Highway, however, based on previous Country Energy experience it is highly unlikely that the RTA would agree to the proposal.



Given the nature of the industrial/ general business area, it is our opinion that there will be very significant cable installation constraints in the installation of the 11kV cables.

The installation of up to twelve (12) underground 11kV feeders out of the substation through the industrial/ general business area in our opinion would result in a major disruption to a large number of businesses in the area. Significant local government, local and broader community resistance is anticipated.

The site is a significant 'cable route' distance from the area to be supplied north of the Tweed River, greatly reducing the effectiveness of supplying load in this area.

4.3.4 Constraints Summary

The constraints associated with this site are as follows:

- Very limited opportunities to feed north of the Tweed River;
- Approaching technical unfeasible for supply to Tweed North area;
- Site 'land locked' from the existing 11kV network;
- Disruption to local business activity during construction; and
- Little scope for future line(s) to the west.

The site is therefore considered to be very highly constrained.



Enterprise Avenue: Site B



4.4 Corporation Circuit – Site C

4.4.1 Site Description

The site is zoned 3(c) *Commerce and Trade* pursuant to Tweed LEP 2000. This is a flat and level site of approximately 5000 m² (100 m wide x 50 m deep) fronting Corporation Circuit.

The northern boundary abuts a child care centre, the southern boundary abuts a school and the northern boundary abuts a mobile home village. There are commercial businesses in Corporation Circuit opposite the site.

4.4.2 Proximity to 66kV Network

The existing Tweed North – Banora Point 66kV line is to the east, a distance of approximately 1700 m along Greenway Drive & Machinery Drive. The existing 11kV and low voltage reticulation in Corporation Circuit & Greenway Drive is underground. It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

A preliminary analysis of suitable 66kV cable routes indicates that the site is effectively “land locked” and that the only cable route to the east would be along Corporation Circuit, Greenway Drive & Machinery Drive.

It is highly probable that the 66kV cable installation configuration will require the 66kV cable be installed under the road pavement.

It was noted during the site investigations that the Corporation Circuit, Machinery Drive & Greenway Avenue and adjacent areas are very busy during the day.

Irrespective of where the cables are installed in the road reserve, (either in the nature strip or under the road pavement), it is our opinion that very significant disruption to traffic & local business operations in the area will occur.

The site is effectively ‘landlocked’ by residential development for a future line route to the west.

4.4.3 11kV Network Issues

The site is highly restricted in regard to 11kV feeder routes out of the area. Very long lengths of multiple cables in common trenches would be required to provide usable feeders from the site.



Given the nature of the industrial/ general business area, it is our opinion that there will be very significant cable installation constraints in the installation of the 11kV cables.

The cable is very long way from the area to be supplied north of the Tweed River. The cable route a distance from the site to the Tweed North area is approaching technically infeasible limits.

The installation of underground 11kV feeders out of the substation through the industrial/ general business area in our opinion will result in a major disruption to a large number of businesses in the area. Significant local and local government and broader community resistance is anticipated.

4.4.4 Constraints Summary

The constraints associated with this site are as follows:

- Very limited opportunities to feed north of the Tweed River;
- Approaching technical unfeasible for supply to Tweed North area;
- Site "land locked" from the existing 11kV network;
- Disruption to local business activity during construction; and
- Little scope for future line(s) to the west.

The site is therefore considered to be very highly constrained.



Corporation Circuit Site



4.5 Greenway Drive – Site D

4.5.1 Site Description

The site is zoned 3(c) *Commerce and Trade* pursuant to Tweed LEP 2000. The site is flat and level with an area of approximately 6000 m². It faces Greenway Drive (eastern boundary) and abuts Commercial buildings on the northern, western and southern boundaries.

On the opposite side of the road are commercial buildings and a child care centre.

4.5.2 Proximity to 66kV Network

The existing Tweed North – Banora Point 66kV line is to the east, a distance of approximately 1600m along Greenway Drive and Machinery Drive. The existing 11kV and low voltage reticulation in Corporation Circuit and Greenway Drive is underground. It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

A preliminary analysis of suitable 66kV cable routes indicates that the site is effectively “land locked” and that the only cable route to the east would be along Greenway Drive & Machinery Drive.

It is highly probable that the 66kV cable installation configuration will require the 66kV cable be installed under the road pavement.

It was noted during the site investigations that the Machinery Drive and Greenway Avenue and adjacent areas are very busy during the day.

Irrespective of where the cables are installed in the road reserve, (either in the nature strip or under the road pavement), it is our opinion that very significant disruption to traffic & local business operations in the area will occur.

The site is effectively “landlocked” by residential development for a future line route to the west.

4.5.3 11kV Network Issues

Given the nature of the industrial/ general business area, it is our opinion that there will be very significant cable installation constraints in the installation of the 11kV cables.

The cable is very long way from the area to be supplied north of the Tweed River. The cable route a distance from the site to the Tweed north area is approaching technically infeasible limits.

The installation of underground 11kV feeders out of the substation through the industrial/ general business area in our opinion will result in a major disruption to a large number of

businesses in the area. Significant local and local government and broader community resistance is anticipated.

4.5.4 Constraints Summary

The constraints associated with this site are as follows:

- Very limited opportunities to feed north of the Tweed River;
- Approaching technical unfeasible for supply to Tweed North area;
- Site "land locked" from the existing 11kV network;
- Disruption to local business activity during construction; and
- Little scope for future line(s) to the west.

The site is therefore considered to be very highly constrained.



Greenway Drive



4.6 Tringa Street/ Hakea Drive – Site E

4.6.1 Site Description

The site is zoned 4(a) *Industrial* pursuant to Tweed LEP 2000. The site is an industrial zoned parcel of land north of Kennedy Drive. It is approximately 1.6 ha in area and is bounded by the Tweed Council Depot to the east, residential development to the south, estuary to the west and open space to the north. The site is undeveloped and currently has extensive vegetation cover.

4.6.2 Proximity to 66kV Network

The land is approximately 400 m north of existing 66kV overhead line in Kennedy Drive. It is anticipated that the 66kV interconnection would be via underground cable. Two possible routes are:

- a. Tringa Street, Limosu Road; and
- b. Hakea Drive & Gray Street

Both routes are through residential streets. It is anticipated that community expectation would be for 66kV interconnecting circuits to be underground cable.

This site would require the substation be connected to the existing Terranora – Tweed North 66kV line.

The site is very highly constrained for future 66kV lines.

4.6.3 11kV Network Issues

The site is significantly 'land locked' from the existing 11kV network with very limited routes for 11kV feeders to connect to the existing network. In addition, it is a considerable distance from the Tweed South load centre.



Tringa Street/Hakea Drive Site

4.6.4 Constraints Summary

The constraints associated with this site are as follows:

- Very limited opportunities to connect to the existing 11kV network feeding the Tweed South area

The site is therefore considered to be extremely constrained.



4.7 Sunshine Avenue Country Energy Tweed South Field Service Centre – Site F

4.7.1 Site Description

The site is zoned *5(a) Special Uses* pursuant to Tweed LEP 2000. It is also subject to the provisions of Clause 37 of the LEP (Section 2.1.3). The site is located on Sunshine Avenue and bounded by an unformed road reserve to the south, residential dwellings on Holden St and Flora Ave to the north and Tweed Billabong Holiday Park to the west. It is currently occupied by industrial and office buildings that service Country Energy's field and administration staff. An unoccupied area of the site (approx. 0.5. ha) is located in the southwest portion of the site. This area of the site is vegetated with a highly disturbed (weed infested) woodland. A small area of land adjacent to the site (unformed road reserve) would also need to be incorporated into the site to achieve sufficient area for a zone substation. This could be negotiated with Council as a land swap for an unused strip of land in the western portion of the site.

4.7.2 Proximity to 66kV Network

The existing Tweed North – Banora Point 66kV line is to the east, approximately 1100 m along Kirkwood Road.

The Tweed Local Environmental Plan 2000 (Clause 37) nominates a corridor for Transmission line purposes between the site and Minjungbal Road, providing a suitable route for the 66kV interconnection cables.

The Tweed Local Environmental Plan 2000 (Clause 37) also provides a corridor for Transmission line purposes to the west of the site, effectively providing a secure route for future 66kV interconnections to the west.

4.7.3 11kV Network Issues

The site is centrally located between the Tweed North and Banora Point substations.

A preliminary analysis indicates that the location is suitable for effective feeders into the area north of the Tweed River. There appears to be an adequate number of route options for 11kV feeders out of the substation.

4.7.4 Constraints Summary

The constraints associated with this site are as follows:



- Proximity to caravan park

4.8 Other Industrial/ Commercial Areas – Site G

There is one other Industrial zoned area in the Tweed area but outside the study area. It is located on the northern extremity of the Tweed Heads area, adjacent to the NSW/QLD Border (identified as Area 4 on Appendix B). The site is zoned *4(a) Industrial* pursuant to Tweed LEP 2000.

The area is identified as too far to the north of the South Tweed Heads area to be technically feasible. In addition, there was no identified vacant land in the area.

4.9 Observation

On the days of site investigation it was observed that the Tweed South commercial/general business area is a vibrant and busy precinct. There appeared to be little in the way of vacant premises or "For Sale" or "To Let" signs on properties.

It is our opinion that Country Energy would have difficulty in finding an available land and building parcel suitable for redevelopment.

4.10 Disclaimer

The sites described in this report have been identified by desktop audit of available documents and by site investigation.

No enquiries have been made with respect to available services, or whether the sites are available for purchase.

Comments made on cable routes are based on site observation only. No enquiries or detailed investigation have been made in regard to existing services, practicality of cable installation, or local council position in regard to cable installation.



5 Site Options Summary

5.1 Rating of Options

Table 5.1 provides a comparison of each substation site option, by providing a rating for each of the main constraints listed in Table 5.1.

The rating was determined by assigning a value of between 1 and 4 for each constraint issue, for each option. Equal weighting was applied to each constraint. The value score was derived based on the following level of constraint described in Table 5.1:

1. **High** - Significant constraints. Unlikely to receive either Government Authority and/or Landholder support and/or is technically poor.
2. **Medium** - Significant constraints may be able to be mitigated. Authority and/or Landholder support difficult, and/or technically feasible though not preferable.
3. **Low** - Less significant constraints able to be mitigated. Authority and/or Landholder support likely and/or is technically feasible.
4. **Negligible** - Minimal to no constraints. Likely to be supported by either Government Authorities and/or Landholders and/or is technically robust.

Scores for each constraint were added for each site option to provide a comparative score and ranking. The site option with the highest score was determined to be the least constrained. Where a constraint was split (eg. medium/high), an average score was applied.

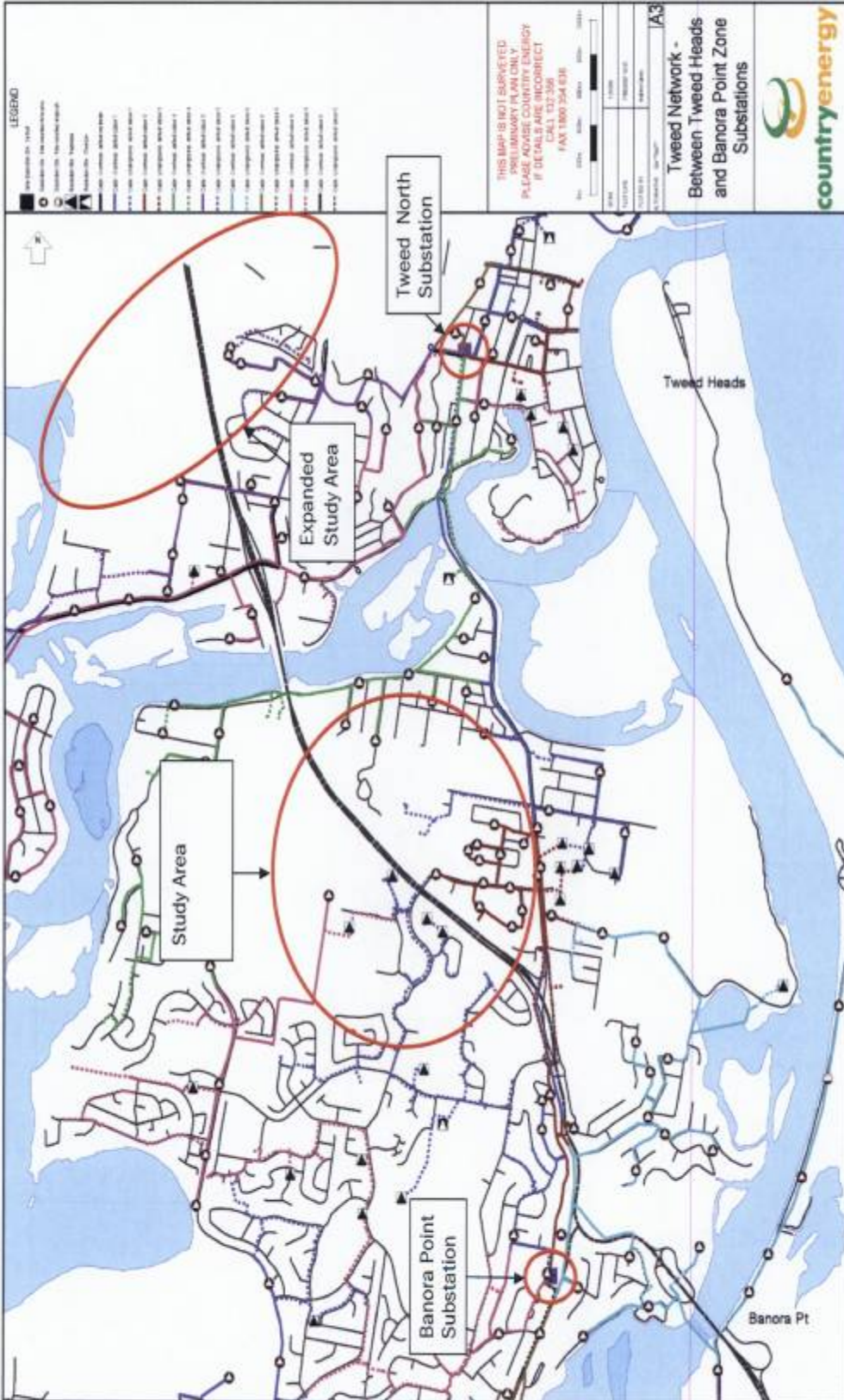
The comparison indicated that site option E (Sunshine Avenue Country Energy Tweed South Field Service Centre) was the least constrained overall of the seven (7) site options analysed.

Table 5.1 - Ratings for each substation Sub Option

| Substation Sub Option | Description | Enviro/ Ecology/access | Landholder/ Stakeholder acceptance | Proximity to 66kV network | 11kV network issues | Total | Rank |
|-----------------------|--|---------------------------|--|------------------------------|------------------------|-------|------|
| A | Enterprise Avenue | 4 | 3 | 2 | 1 | 10 | 2 |
| B | Enterprise Avenue | 4 | 3 | 2 | 1 | 10 | 2 |
| C | Corporation Circuit | 4 | 3 | 1 | 1 | 9 | 3 |
| D | Greenway Drive | 4 | 3 | 1 | 1 | 9 | 3 |
| E | Tringa Street/Hakaea Drive | 2 | 3 | 1 | 1 | 7 | 4 |
| F | Sunshine Avenue Country Energy Tweed South Field Service Centre | 3 | 3 | 4 | 4 | 14 | 1 |
| G | Other Industrial/Commercial Areas | 4 | 3 | 1 | 1 | 9 | 3 |

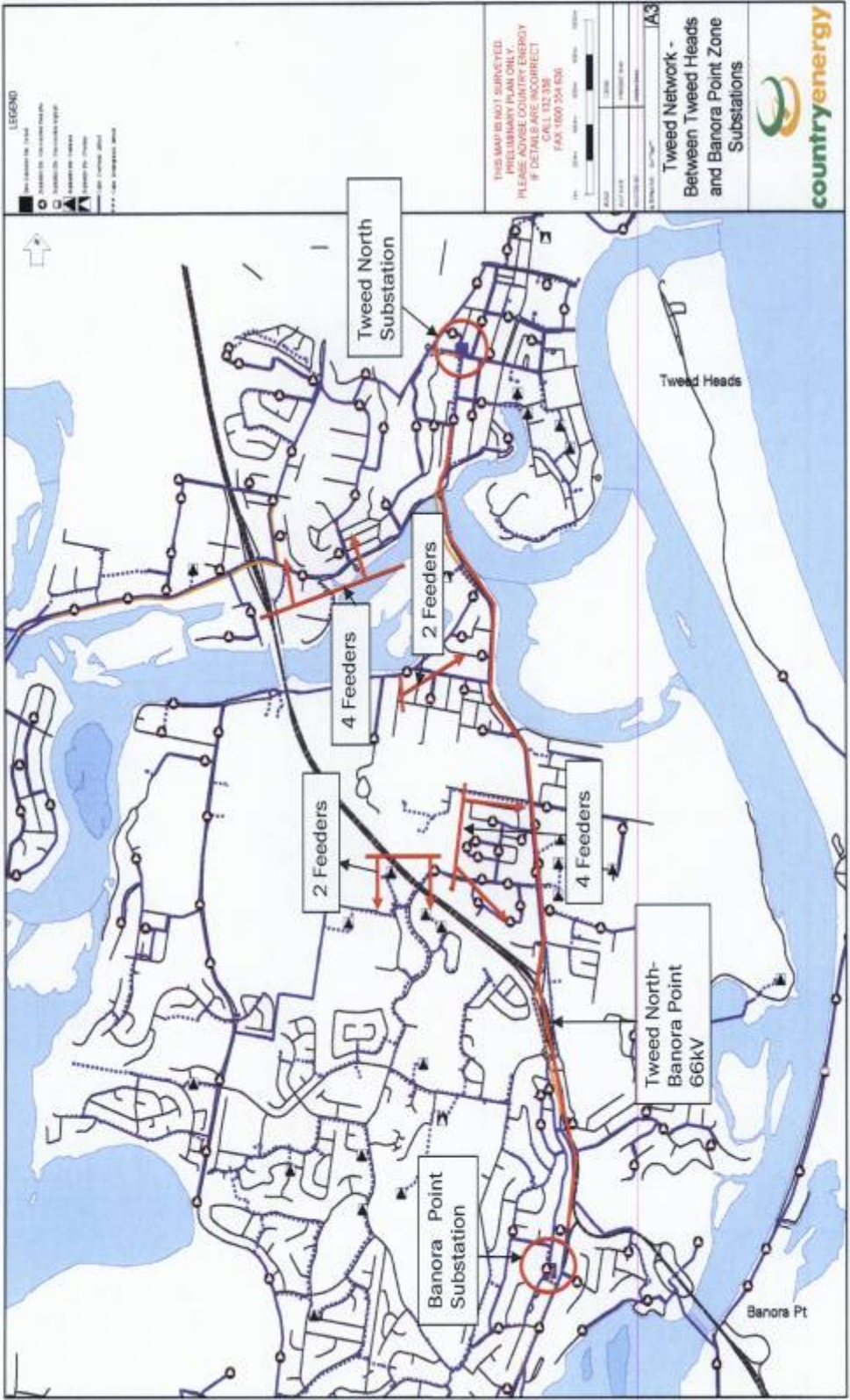
Appendix A

STUDY AREA



Appendix B

EXISTING NETWORKS & 11KV AUGMENTATION



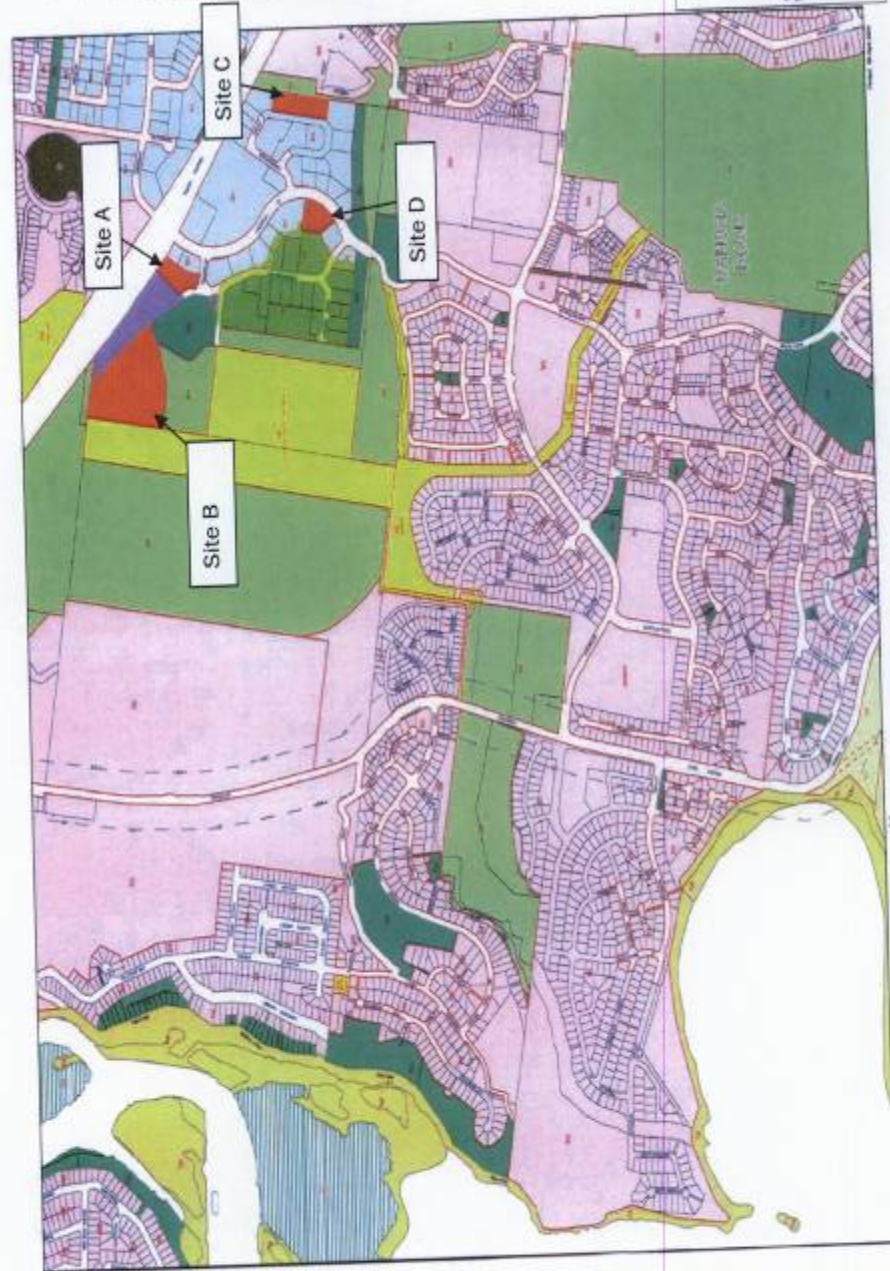
Appendix C

SITES A - D

TWEEED
 LOCAL ENVIRONMENTAL PLAN 2000
 Approved by Council on 10/11/00
 Approved by Environment NZ on 10/11/00

R.R. 1:5000
 April 1999

- LEGEND**
- 1. RURAL**
 - 1.1 RURAL RESERVE
 - 1.2 RURAL LAND
 - 1.3 RURAL LAND - PROTECTED
 - 1.4 RURAL LAND - PROTECTED (RENEWABLE RESOURCES ACT 1986)
 - 1.5 RURAL LAND - PROTECTED (RANGIATUA TREATY)
 - 1.6 RURAL LAND - PROTECTED (RANGIATUA TREATY - SOUTH ISLAND)
 - 2. RESIDENTIAL**
 - 2.1 RESIDENTIAL ZONE
 - 2.2 RESIDENTIAL ZONE - PROTECTED
 - 2.3 RESIDENTIAL ZONE - PROTECTED (RANGIATUA TREATY)
 - 2.4 RESIDENTIAL ZONE - PROTECTED (RANGIATUA TREATY - SOUTH ISLAND)
 - 3. BUSINESS**
 - 3.1 BUSINESS ZONE
 - 3.2 BUSINESS ZONE - PROTECTED
 - 4. INDUSTRIAL**
 - 4.1 INDUSTRIAL ZONE
 - 4.2 INDUSTRIAL ZONE - PROTECTED
 - 5. SPECIAL UNITS**
 - 5.1 SPECIAL UNIT
 - 5.2 SPECIAL UNIT - PROTECTED
 - 6. OPEN SPACE**
 - 6.1 OPEN SPACE
 - 6.2 OPEN SPACE - PROTECTED
 - 6.3 OPEN SPACE - PROTECTED (RANGIATUA TREATY)
 - 6.4 OPEN SPACE - PROTECTED (RANGIATUA TREATY - SOUTH ISLAND)
 - 7. ENVIRONMENTAL PROTECTION**
 - 7.1 ENVIRONMENTAL PROTECTION ZONE
 - 7.2 ENVIRONMENTAL PROTECTION ZONE - PROTECTED
 - 7.3 ENVIRONMENTAL PROTECTION ZONE - PROTECTED (RANGIATUA TREATY)
 - 7.4 ENVIRONMENTAL PROTECTION ZONE - PROTECTED (RANGIATUA TREATY - SOUTH ISLAND)
 - 8. NATIONAL PARKS / NATURAL RESERVES**
 - 8.1 NATIONAL PARKS / NATURAL RESERVES



Map 11 - Proposed / Existing Sites - Application / Land Allocation / Land Use / Land Use - Proposed Sites / Proposed Sites / Proposed Sites / Proposed Sites

Appendix D

SITES E - G

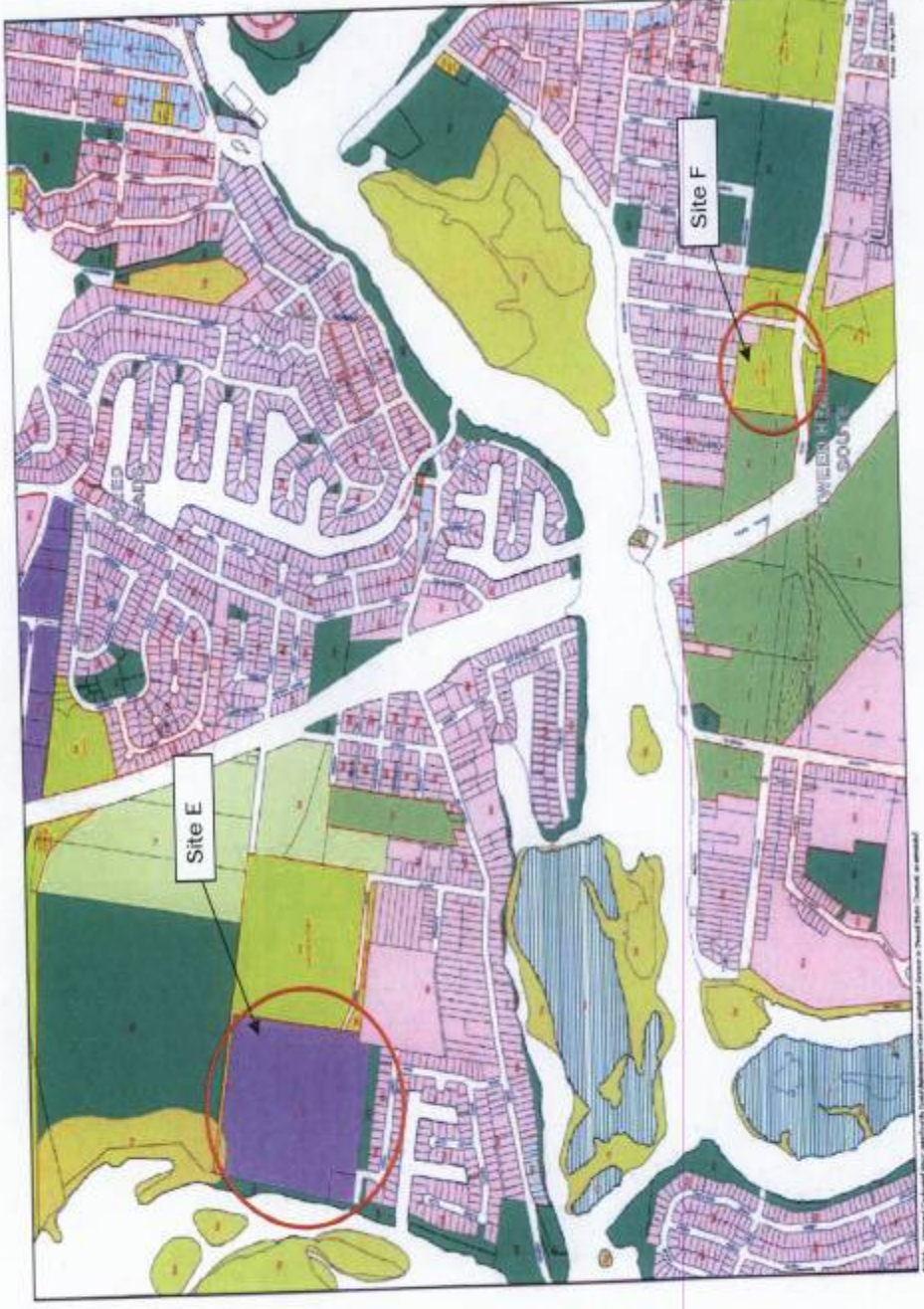
TWEED
LOCAL ENVIRONMENTAL PLAN 2006

PLANNING AND ENVIRONMENTAL SERVICES
CITY OF TWEED
100 SOUTH BRISBANE QUAY, TWEED HEADS, NSW 2486
PH (07) 4277 2000 FAX (07) 4277 2001
WWW.TWEEDCITY.CNSW.GOV.AU

P.L.R. 1 50000
S.T.S. 1000
April 7th 2004

LEGEND

- 1. RURAL**
 - 1.1 AGRICULTURAL PROTECTION
 - 1.2 PASTORAL PRODUCTION
 - 1.3 RURAL RESIDENTIAL
- 2. RESIDENTIAL**
 - 2.1 LOW DENSITY RESIDENTIAL
 - 2.2 MEDIUM DENSITY RESIDENTIAL
 - 2.3 HIGH DENSITY RESIDENTIAL
- 3. BUSINESS**
 - 3.1 COMMERCIAL
 - 3.2 INDUSTRIAL
- 4. INDUSTRIAL**
 - 4.1 MANUFACTURING
 - 4.2 PROCESSING
- 5. SPECIAL USES**
 - 5.1 SPECIAL USES
- 6. OPEN SPACE**
 - 6.1 OPEN SPACE
 - 6.2 SPORTS/RECREATION
- 7. ENVIRONMENTAL PROTECTION**
 - 7.1 ENVIRONMENTAL PROTECTION
- 8. NATURAL PARKS / NATURE RESERVES**
 - 8.1 NATURAL PARKS / NATURE RESERVES
- ADDITIONAL CONTROLS**
 - ADDITIONAL CONTROLS



Site E

Site F

Map prepared by Planning and Environmental Services, City of Tweed, 2004.