

# Electricity Industry (Network Quality and Reliability of Supply) Code 2005

TEC DESERT AND TEC DESERT 2 TRADING AS

**SOUTHERN CROSS ENERGY**

ANNUAL REPORT ON MONITORING SYSTEMS 2006

- SKM Job No: WP3222
- Revision 2
- 15 November 2006



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## Contents

|   |           |
|---|-----------|
| <b>1. INTRODUCTION</b>  | <b>1</b>  |
| 1.1 Preamble  | 1         |
| 1.2 Commercial Consideration  | 1         |
| <b>2. Distribution System</b>   | <b>3</b>  |
| <b>3. Report – Information to be published</b>  | <b>4</b>  |
| 3.1 Schedule 1 Clause 4 and Clause 10: Compliance with Voltage Fluctuations and Harmonics   | 4         |
| 3.2 Schedule 1 Clause 5: The number of premises of small use customers which has been subject to interrupted supply of electricity  | 4         |
| 3.3 Schedule 1 Clause 6 and Clause 10: The total number of complaints received  | 4         |
| 3.4 Schedule 1 Clause 7 and Clause 10: The number of complaints received from customers in each of the discrete areas   | 5         |
| 3.5 Schedule 1 Clause 8 and Clause 10: The total amount spent by the transmitter or distributor in addressing complaints, other than by way of payment under sections 18 and 19 | 5         |
| 3.6 Schedule 1 Clause 9 and Clause 10: The number and total amount of payments made by the transmitter or distributor under each of sections 18 and 19 <sup>#</sup>             | 5         |
| 3.7 Schedule 1 Clause 11(a), 12 and 13: The average length of interruption of supply to customer premises expressed in minutes*   | 6         |
| 3.8 Schedule 1 Clause 11(b), 12 and 13: The average number of interruptions of supply to customer premises*   | 6         |
| 3.9 Schedule 1 Clause 11(c), 12 and 13: The average percentage of time that electricity has been supplied to customer premises (ASIA)*  | 7         |
| 3.10 Schedule 1 Clause 11(d), 12 and 13: The average total length of all interruptions of supply to customer premises expressed in minutes*                                     | 7         |
| <b>4. Conclusions</b>   | <b>8</b>  |
| <b>Appendix A Terms used in this Report</b>   | <b>9</b>  |
| <b>Appendix B Distribution Philosophy</b>   | <b>10</b> |



|                   |  |           |
|-------------------|--|-----------|
| <b>Appendix C</b> | <b>Geographical Location of Distribution Network</b> | <b>11</b> |
| <b>Appendix D</b> | <b>Distribution Licence Area</b>                     | <b>12</b> |
| <b>Appendix E</b> | <b>Transmission Licence Area</b>                     | <b>13</b> |
| <b>Appendix F</b> | <b>List of References</b>                            | <b>14</b> |

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# 1. INTRODUCTION

## 1.1 Preamble

The Economic Regulation Authority (Authority) granted TEC Desert Pty Ltd and TEC Desert No. 2 trading as Southern Cross Energy Partnership a Distribution Licence in accordance with the *Electricity Industry Act 2004 (WA)* on the 30<sup>th</sup> June 2006. TEC Desert Pty Ltd and TEC Desert No. 2 are subsidiaries of TransAlta Energy Australia.

It is a requirement in terms of Part 4, Division 3 of the Electricity Industry (Network Quality and Reliability of Supply) Code 2005 that Southern Cross Energy Partnership appoint an independent expert to audit and report on the operation of the systems that Southern Cross Energy (SCE) has in place for monitoring compliance with the Quality and Reliability Standards as described in Part 2 of the Code.

Southern Cross Energy Partnership was formed when they purchased the generation and a large majority of the network assets from WMC Resources Limited trading as Nickel West in 1999. Southern Cross Energy was a partnership between TransAlta (through its subsidiary company TEC Desert) and AGL. TransAlta has since purchased AGL's share in the Southern Cross Energy Partnership and replaced AGL's representation in the partnership with TEC Desert 2.

Southern Cross Energy has appointed Sinclair Knight Merz (SKM) as their auditors to report on SCE's compliance with the Code. The professional analysis in this report has been prepared by SKM for the exclusive use of the parties to whom it is addressed. In conducting the analysis in this report, SKM has endeavoured to use what is considered the best information available at the date of publication, including information supplied by SCE.

The Sinclair Knight Merz Group is a leading global professional services firm working with public and private sector clients across several chosen market areas. Services include engineering, scientific studies, planning, economics, logistics, architecture, geotechnical engineering, project management and spatial information.

## 1.2 Commercial Consideration

A bilateral Power Purchase Agreement is in place between Southern Cross Energy Partnership and Nickel West regulating the sale and purchase of electricity between the two parties. A similar Power Purchase Agreement is in place between Southern Cross Energy and Barrick Gold.

In addition to commercial consideration, these Power Purchase Agreements specify network performance, planned outages, modifications, dispute resolution, power quality and reliability of



electricity supply, reporting and statistical information. The network quality and reliability of supply requirements are in line with the Code.

In addition, the Power Purchase Agreements include provisions for liquidated damages to provide incentive for the supplier to maintain availability and reliability in accordance with the contracts.

## 2. Distribution System

WMC Resources Limited trading as Nickel West originally built, owned and maintained the generation and distribution systems required to operate its mining assets in Western Australia. In 1999 Nickel West sold its generation assets and the majority of its distribution assets to TransAlta Energy Australia trading as Southern Cross Energy. This distribution network has since been extended to service regional independent mining companies.

The Southern Cross Energy distribution system falls within the Goldfields-Esperance and Mid-West Local Government Areas and is associated with the mining operations at Mount Keith, Kambalda, Kalgoorlie and Leinster. Nickel West has retained 72 kms of it's original distribution network and the total length of the Southern Cross Energy distribution system is limited to 187 kms.

The Southern Cross Energy distribution system is divided into what is referred to in the area as the Northern System and Southern System. Southern Cross Energy has only two (2) customers:

Within the Northern System;

- BHPB Nickel West
- Barrick Gold

Within the Southern System;

- BHPB Nickel West

The Northern System is an isolated system owned and operated for the most part by Southern Cross Energy although Nickel West has retained ownership of a portion of this distribution network specifically servicing the Nickel West bore fields and the township of Leinster. Barrick Gold also falls within the Northern System.

Within the Southern System, Nickel West has again retained a portion of the distribution network. The Southern System services Nickel West and is connected to the South West Interconnected System.

At present, Southern Cross Energy has bilateral Power Purchase Agreements with both Nickel West and Barrick Gold. Southern Cross Energy's customers are supplied from many points of supply at different specified voltage levels. See attached Appendix B – Distribution Philosophy.



### 3. Report – Information to be published

#### 3.1 Schedule 1 Clause 4 and Clause 10: Compliance with Voltage Fluctuations and Harmonics

Clause 4(a); the total number of breaches documented for each provision:

| Total Number of Breaches Reported |           |           |           |
|-----------------------------------|-----------|-----------|-----------|
| Quality and Reliability Standards | 2003/2004 | 2004/2005 | 2005/2006 |
| Voltage Fluctuations              | 0         | 0         | 0         |
| Harmonic Limits                   | 0         | 0         | 0         |

Clause 4(b); the remedial action documented in each case:

| Remedial Action Taken             |           |           |           |
|-----------------------------------|-----------|-----------|-----------|
| Quality and Reliability Standards | 2003/2004 | 2004/2005 | 2005/2006 |
| Voltage Fluctuations              | 0         | 0         | 0         |
| Harmonic Limits                   | 0         | 0         | 0         |

No remedial action requested.

#### 3.2 Schedule 1 Clause 5: The number of premises of small use customers which has been subject to interrupted supply of electricity

This section of the Code is not relevant to Southern Cross Energy as Southern Cross Energy supplies only mining operations and has no Small Use Customers.

#### 3.3 Schedule 1 Clause 6 and Clause 10: The total number of complaints received

| Total Number of Complaints Received |           |           |           |
|-------------------------------------|-----------|-----------|-----------|
|                                     | 2003/2004 | 2004/2005 | 2005/2006 |
| All customers                       | 0         | 1         | 0         |



**3.4 Schedule 1 Clause 7 and Clause 10: The number of complaints received from customers in each of the discrete areas**

| Discrete Areas           |           |           |           |
|--------------------------|-----------|-----------|-----------|
| Customers                | 2003/2004 | 2004/2005 | 2005/2006 |
| BHPB Nickel West - North | 0         | 1         | 0         |
| Barrick Gold - North     | 0         | 0         | 0         |
| BHPB Nickel West - South | 0         | 0         | 0         |

**3.5 Schedule 1 Clause 8 and Clause 10: The total amount spent by the transmitter or distributor in addressing complaints, other than by way of payment under sections 18 and 19**

| Total Amount of Time Spent in Addressing Complaints - Hours |           |           |           |
|---|-----------|-----------|-----------|
|   | 2003/2004 | 2004/2005 | 2005/2006 |
| All customers   | 0         | 120       | 0         |

Current records maintained by Southern Cross Energy do not include Dollar values as this has not been historically required by the Power Purchase Agreements.

**3.6 Schedule 1 Clause 9 and Clause 10: The number and total amount of payments made by the transmitter or distributor under each of sections 18 and 19<sup>#</sup>**

| Number and Total Payments Made |           |           |           |
|--------------------------------|-----------|-----------|-----------|
|                                | 2003/2004 | 2004/2005 | 2005/2006 |
| Number of Payments             | 0         | 0         | 0         |
| Cost of Payments               | \$0.00    | \$0.00    | \$0.00    |

<sup>#</sup> Note: The Power Purchase Agreements include provisions for liquidated damages to provide incentive for the supplier to maintain availability and reliability in accordance with the contracts.

**3.7 Schedule 1 Clause 11(a), 12 and 13: The average length of interruption of supply to customer premises expressed in minutes\***

| <b>Average Length of Interruptions of Supply to Customer Premises Expressed in Minutes</b> |                  |                  |                  |                  |                |
|--|------------------|------------------|------------------|------------------|----------------|
| <b>Customers</b>   | <b>2002/2003</b> | <b>2003/2004</b> | <b>2004/2005</b> | <b>2005/2006</b> | <b>Average</b> |
| BHPB Nickel West - North   | -                | 41.37            | 111.66           | 60.81            | 71.28          |
| Barrick Gold - North   | -                | 46.58            | 150.14           | 79.00            | 91.91          |
| BHPB Nickel West - South   | -                | 35.00            | 472.50           | 134.88           | 214.13         |

**3.8 Schedule 1 Clause 11(b), 12 and 13: The average number of interruptions of supply to customer premises\***

| <b>Average Number of Interruptions of Supply to Customer Premises</b> |                  |                  |                  |                  |                |
|---|------------------|------------------|------------------|------------------|----------------|
| <b>Customers</b>  | <b>2002/2003</b> | <b>2003/2004</b> | <b>2004/2005</b> | <b>2005/2006</b> | <b>Average</b> |
| BHPB Nickel West - North  | -                | 19               | 35               | 32               | 28.7           |
| Barrick Gold - North  | -                | 12               | 22               | 11               | 15.0           |
| BHPB Nickel West - South  | -                | 1                | 4                | 8                | 4.3            |

\* Note: The system operated by Southern Cross Energy does not include discrete areas as defined in the code in that all customers are located in non-urban areas outside the Perth CBD. The Southern Cross Distribution System essentially operates as a radial feeder with only two mining customers each receiving supply at multiple metered points. Within the tables of this report, the information included for each customer is the accumulation of all network interruptions for each defined customer and is the nearest figure that Southern Cross Energy has available to satisfy the requirements of the Code.

**3.9 Schedule 1 Clause 11(c), 12 and 13: The average percentage of time that electricity has been supplied to customer premises (ASIA)\***

| <b>Average Percentage of Time Electricity has been Supplied to Customer Premises</b> |                  |                  |                  |                  |                |
|--|------------------|------------------|------------------|------------------|----------------|
| <b>Customers</b>   | <b>2002/2003</b> | <b>2003/2004</b> | <b>2004/2005</b> | <b>2005/2006</b> | <b>Average</b> |
| BHPB Nickel West - North   | -                | 99.85            | 99.26            | 99.63            | 99.58          |
| Barrick Gold - North   | -                | 99.95            | 99.69            | 99.92            | 99.85          |
| BHPB Nickel West - South   | -                | 99.99            | 99.64            | 99.79            | 99.81          |

**3.10 Schedule 1 Clause 11(d), 12 and 13: The average total length of all interruptions of supply to customer premises expressed in minutes\***

| <b>Average Length of Interruptions of Supply to Customer Premises Expressed in Minutes</b> |                  |                  |                  |                  |
|--|------------------|------------------|------------------|------------------|
| <b>Customers</b>   | <b>2002/2003</b> | <b>2003/2004</b> | <b>2004/2005</b> | <b>2005/2006</b> |
| BHPB Nickel West - North   | -                | 41.37            | 111.66           | 60.81            |
| Barrick Gold - North   | -                | 46.58            | 150.14           | 79.00            |
| BHPB Nickel West - South   | -                | 35.00            | 472.50           | 134.88           |
|  |                  |                  |                  |                  |
| <b>Average Total Length</b>  | -                | 40.98            | 244.77           | 91.56            |

\* Note: The system operated by Southern Cross Energy does not include discrete areas as defined in the code in that all customers are located in non-urban areas outside the Perth CBD. The Southern Cross Distribution System essentially operates as a radial feeder with only two mining customers each receiving supply at multiple metered points. Within the tables of this report, the information included for each customer is the accumulation of all network interruptions for each defined customer and is the nearest figure that Southern Cross Energy has available to satisfy the requirements of the Code.



## 4. Conclusions

Southern Cross Energy's generation and distribution assets are situated in remote locations in the Eastern Goldfields District of Western Australia. Southern Cross Energy services two customers and has bilateral Power Purchase Agreements in place with both BHPB Nickel West and Barrick Gold. These bilateral Power Purchase Agreements specify network quality and reliability of supply to similar standards as required within the Electricity Industry Code 2005.

There are no Small Use Customers associated with the Southern Cross Energy Distribution Network.

Southern Cross Energy has made detailed data available to Sinclair Knight Merz relating to network interruptions for the previous three years. This information has been audited by Sinclair Knight Merz for inclusion in this report.

From records maintained by Southern Cross Energy, it is clear that regular performance meetings and correspondence is carried out between SCE and its clients. Correspondence between Southern Cross Energy and Nickel West suggests that the distribution supplier has been successful in maintaining Reliability of Supply in accordance with the Power Purchase Agreements. This observation is supported by a letter of appreciation from BHPB Nickel West.

## Appendix A Terms used in this Report

**“authority”** means the Economic Regulation Authority established by the Economic Regulation Authority Act 2003;

**“code”** means the Electricity Industry (Network Quality and Reliability of Supply) Code 2005;

**“customer”** means a person whose electrical installations are connected to a transmission or distribution system for the purpose of receiving electricity supply;

**“interruption”** means a loss of electricity supply for more than one minute that is due to a cause beyond the control of the customer concerned;

**“network”** means —

(a) transmission works; or

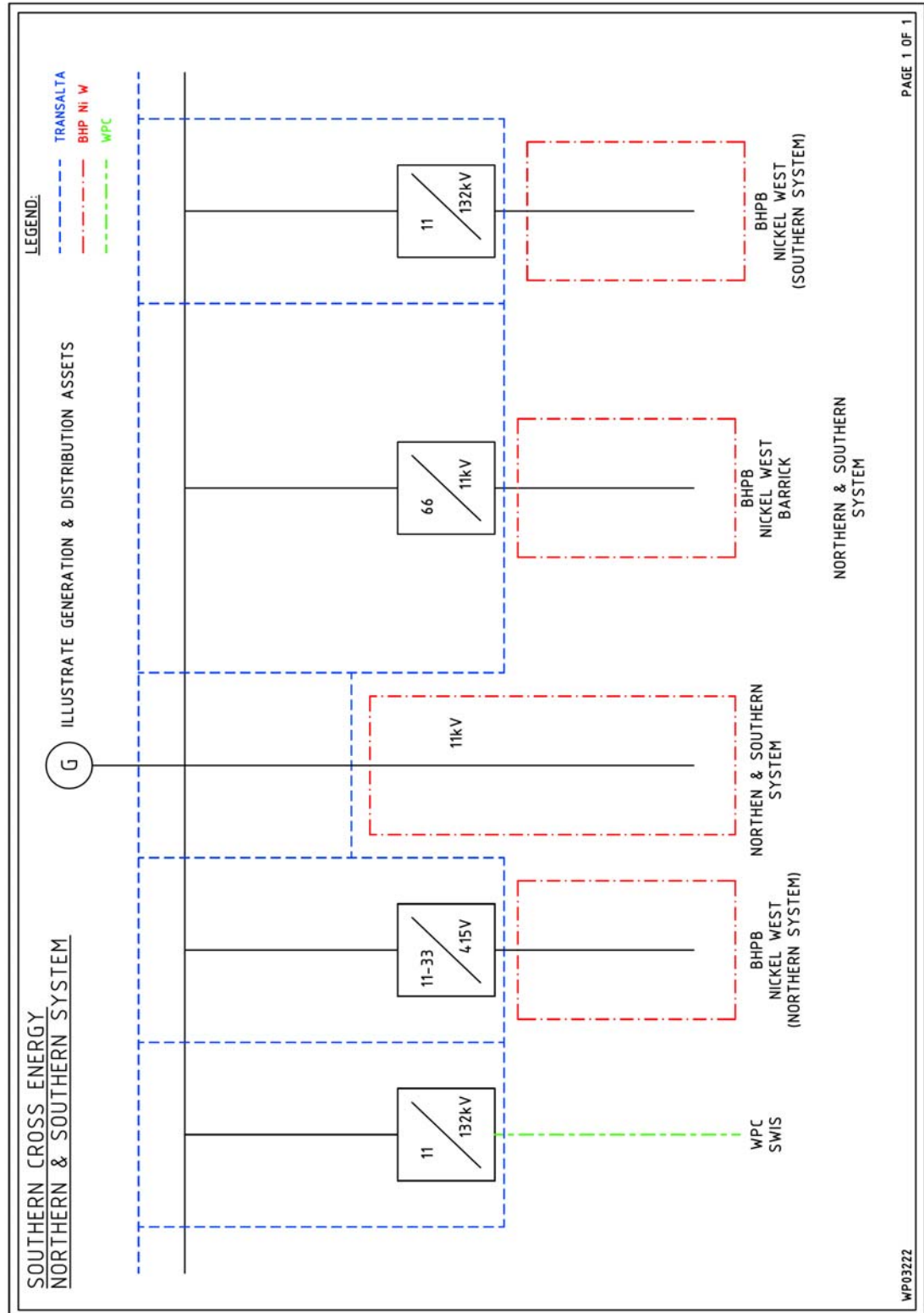
(b) distribution works,

**“planned interruption”** means an interruption that is undertaken in accordance with section 11 of the Code;

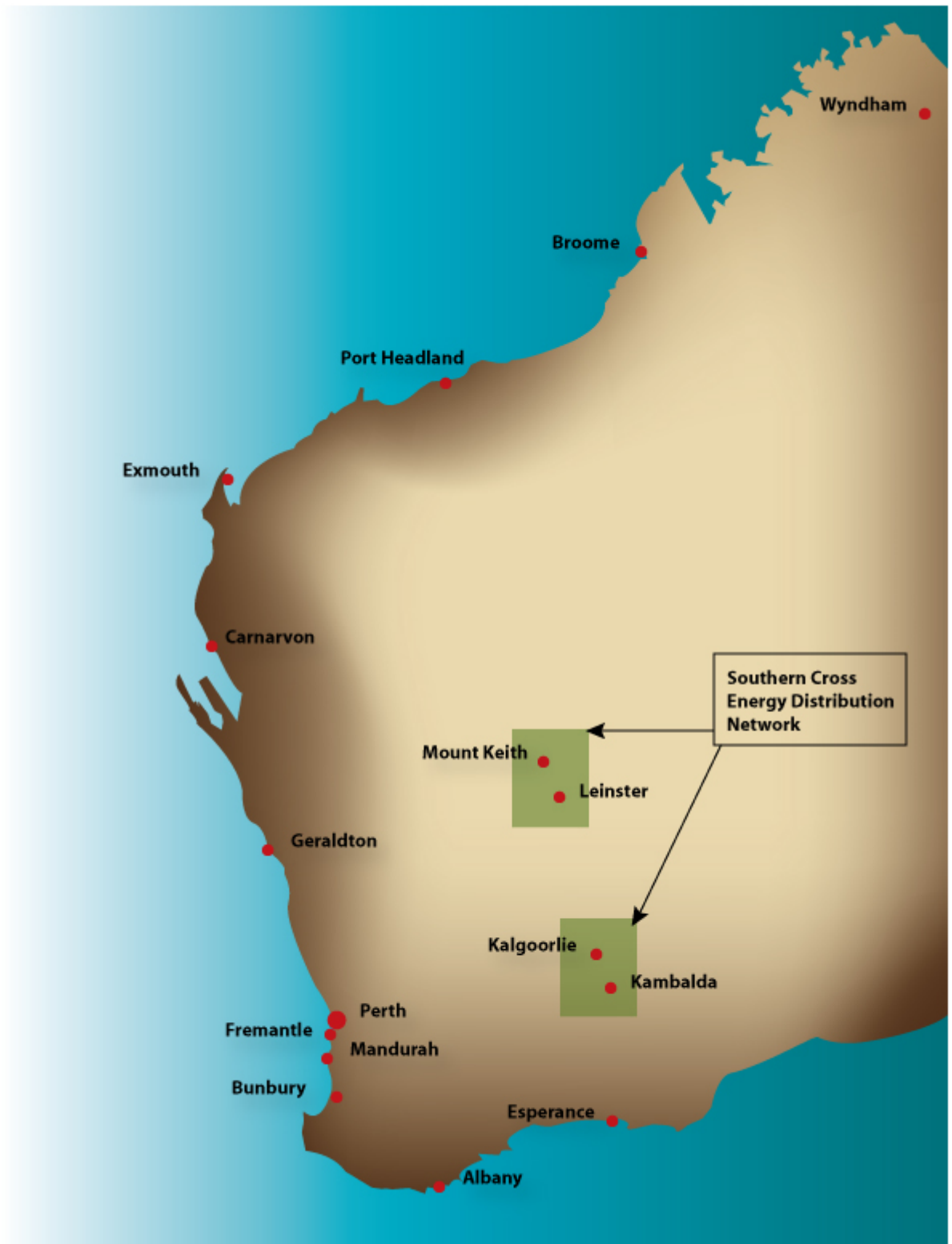
**“small use customer”** means a customer who consumes not more than 160 MWh of electricity per year;

**“unplanned interruption”** means an interruption that is not undertaken in accordance with section 11 of the Code.

## Appendix B Distribution Philosophy



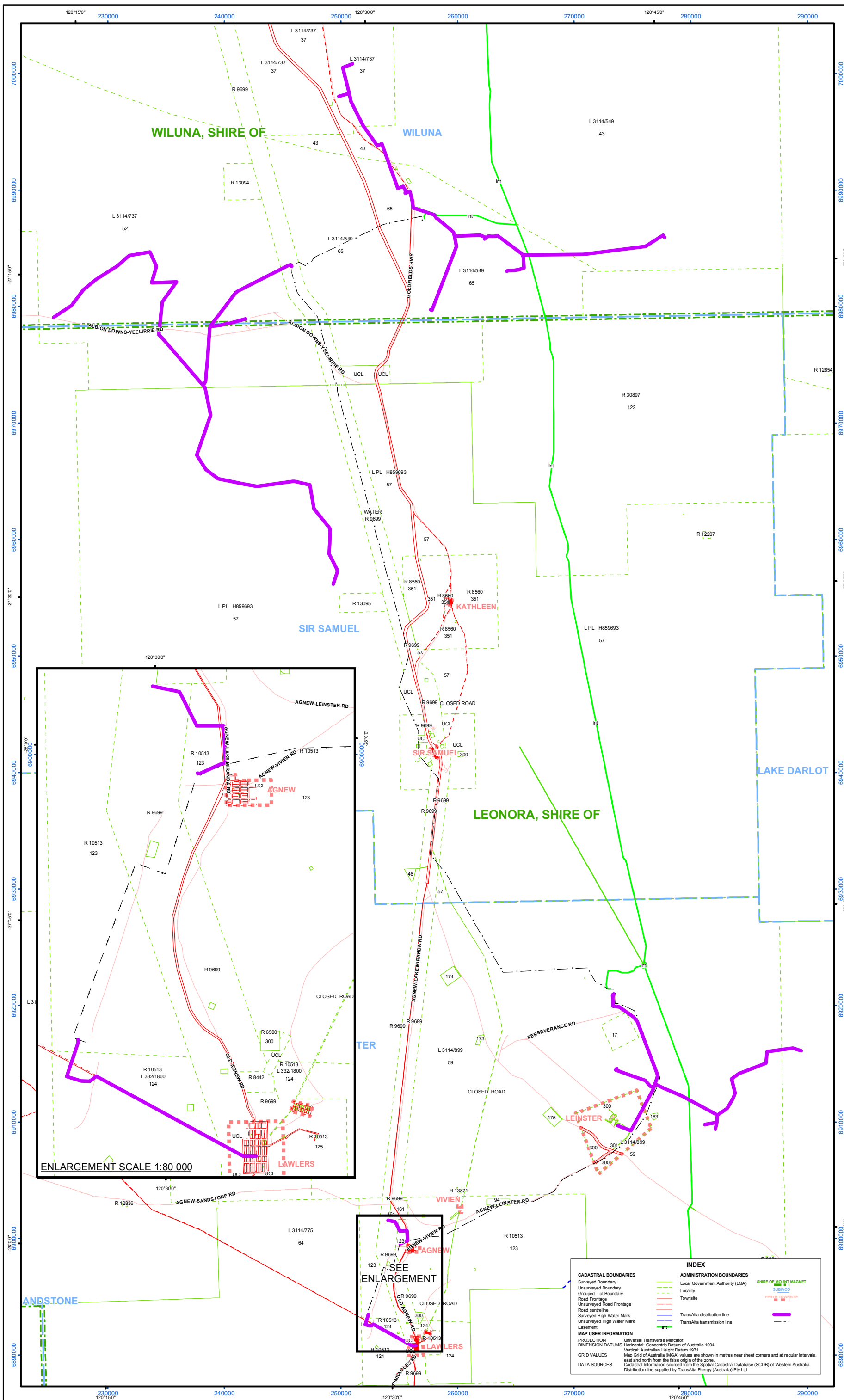
## Appendix C Geographical Location of Distribution Network





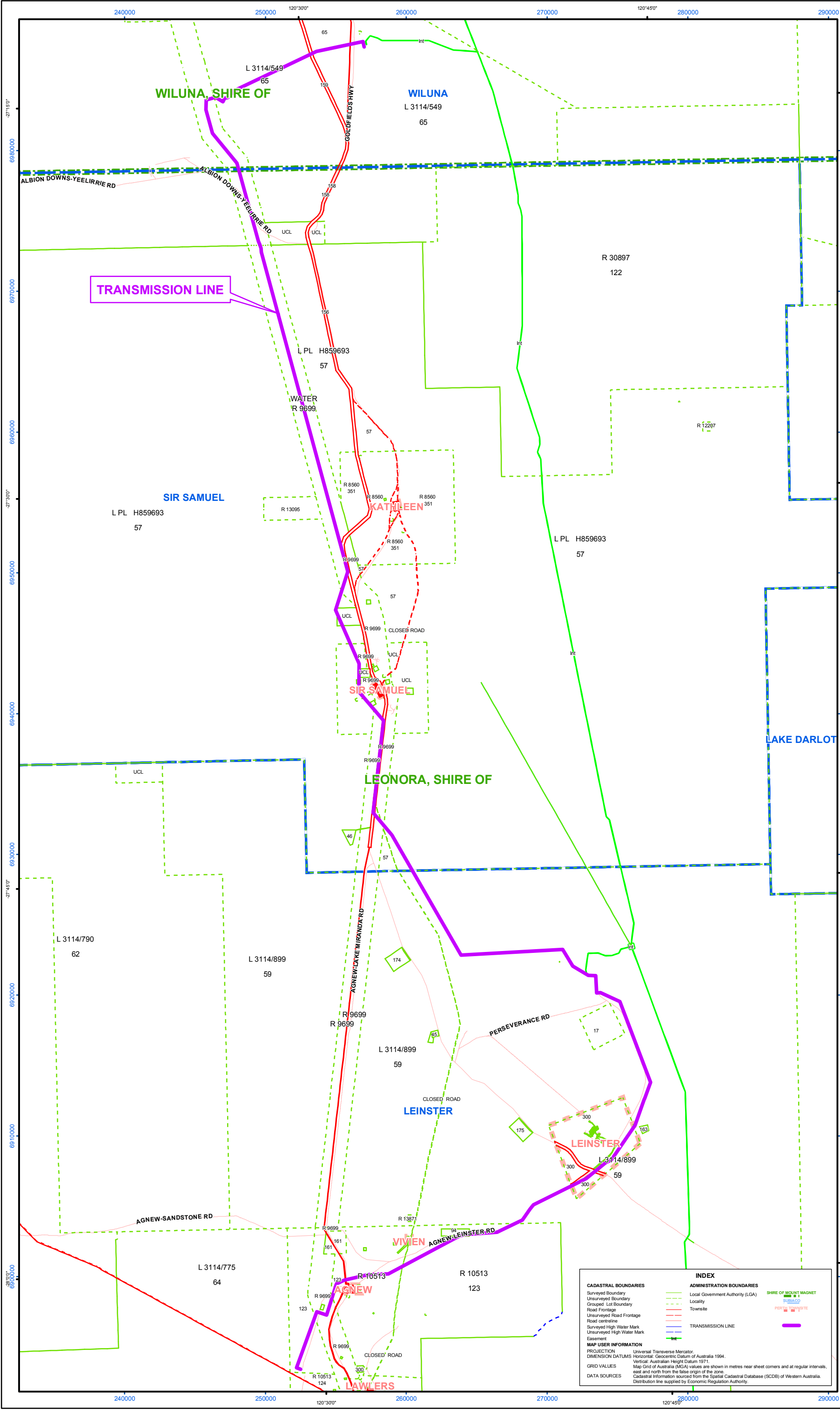


## **Appendix D   Distribution Licence Area**

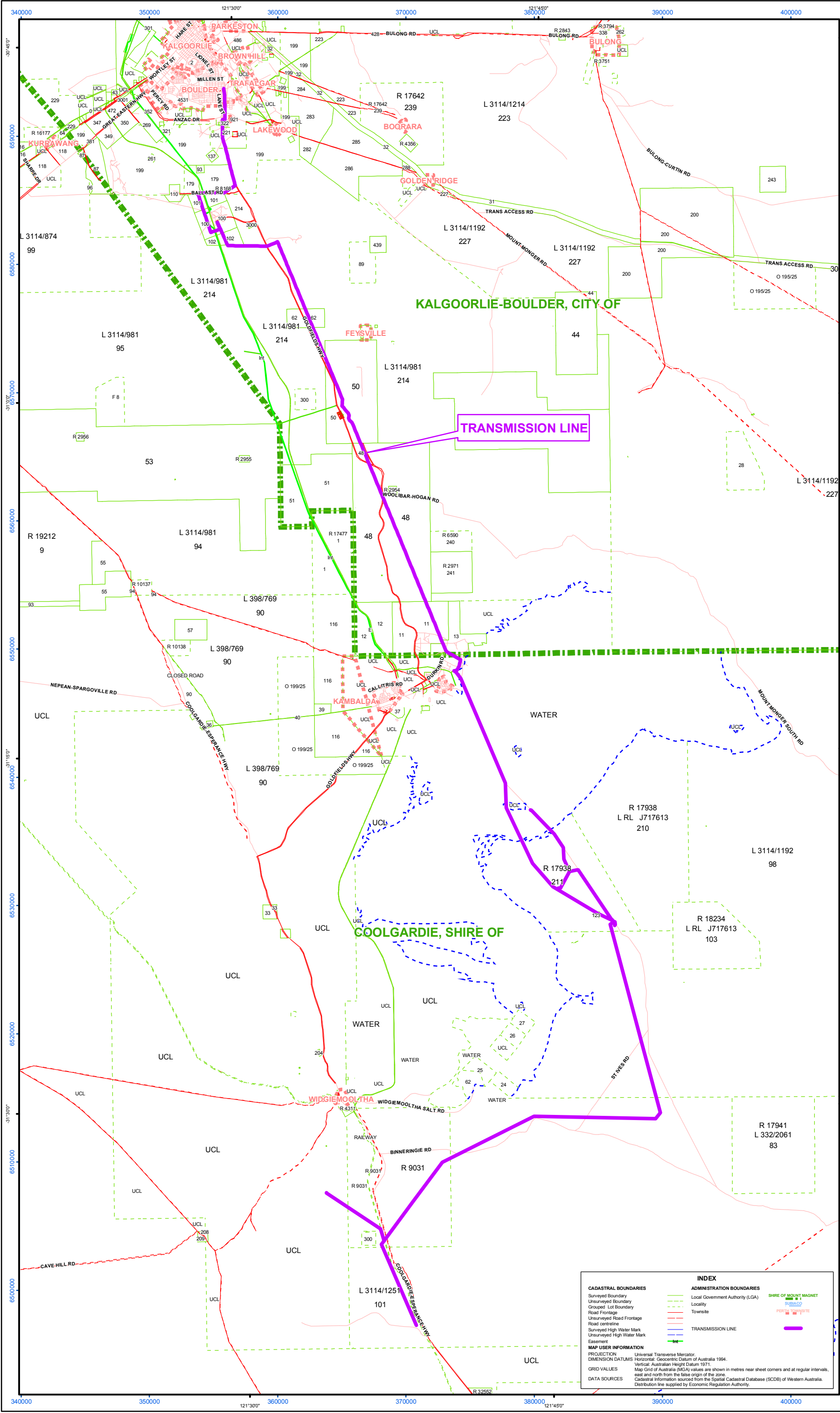
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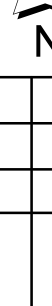
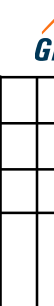



## **Appendix E   Transmission Licence Area**



| DATE |  | No. | DESCRIPTION |  |  |  |  | DRN | CHK | APR | APPROVED: |  | ELECTRICITY INDUSTRY ACT 2004<br>MIDWEST - GOLDFIELD LICENCE AREA<br>TRANSMISSION<br>LICENSEE : TEC Desert Pty Ltd and TEC Desert No. 2 Pty Ltd<br>t/a Southern Cross Energy Partnership |  |  |  | DRAWN Geospatial Products DLI |  | CHECKED           |  | APPROVED |  | PLAN No.     |  | ISSUE | ORG SIZE |
|------|--|-----|-------------|--|--|--|--|-----|-----|-----|-----------|--|--|--|--|--|-------------------------------|--|-------------------|--|----------|--|--------------|--|-------|----------|
|      |  |     |             |  |  |  |  |     |     |     | CHAIRMAN  |  |  |  |  |  | FILE No.                      |  | SCALE 1 : 250 000 |  | DATE     |  | ERA-EL-110/1 |  | A     | A3       |



|  |  |  |  |  |  |  |  |  |  |  |  |             |  |            |  |                  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|-------------|--|------------|--|------------------|--|
| ELECTRICITY INDUSTRY ACT 2004<br>MIDWEST - GOLDFIELD LICENCE AREA<br>TRANSMISSION<br>LICENSEE : TEC Desert Pty Ltd and TEC Desert No. 2 Pty Ltd<br>t/a Southern Cross Energy Partnership |  |  |  |  |  |  |  |  |  | ORG<br>SIZE<br>A3  |  |             |  |            |  |                  |  |
| DRAWN Geospatial Products DLI  |  |  |  |  |  |  |  |  |  | APPROVED   |  | PLAN No.    |  | ISSUE<br>A |  | ERA-EL-110/2     |  |
|  |  |  |  |  |  |  |  |  |  | CHECKED  |  | DATE        |  | FILE No.   |  | SCALE 1 :275 000 |  |
| APPROVED:<br><br>CHAIRMAN<br>ECONOMIC REGULATION AUTHORITY<br><br>DATE:  |  |  |  |  |  |  |  |  |  |  |  |             |  |            |  |                  |  |
|   |  |  |  |  |  |  |  |  |  | <br>Department of<br>Land Information |  |             |  |            |  |                  |  |
|   |  |  |  |  |  |  |  |  |  |  |  |             |  |            |  |                  |  |
|  |  |  |  |  |  |  |  |  |  | DRN  |  | CHK         |  | APR        |  |                  |  |
| DATE   |  |  |  |  |  |  |  |  |  | No.  |  | DESCRIPTION |  |            |  |                  |  |



## Appendix F List of References

IEEE Power Engineering Society, 2003, *IEEE 1366 Guide for Electric Power Distribution Reliability Indices*, 1edn, The Institute of Electrical and Electronic Engineers, Inc, New York, U.S.A.