

Annexure 2.4:
PTR Western Cape

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1 GENERAL

1.1 Purpose of the Document

- 1.1.1 The purpose of this document is to provide the Particular Technical Requirements (“PTR”) which form part of the minimum Requirements of the Passenger Rail Agency of South Africa (“PRASA”) for the Western Cape (“WC”) related Works that form part of the planning, design, supply, construction, installation, testing, commissioning and maintenance of a new fully integrated, functional, complete and future-proofed expanded PRASA OTN in PRASA’s Gauteng (“GP”) and WC service regions (“the Project”) that the Bidder shall meet and deliver at the Bidder’s cost therefore within the Bid Price.

1.2 Executive Overview

- 1.2.1 Notwithstanding any other PRASA Requirements stated throughout the RFP, the Bidder shall uncompromisingly deliver the whole of the Works required to achieve successful delivery of the Project.

1.3 Location and Minimum Extent of the Works

- 1.3.1 The boundaries of the Site are the Western Cape region rail servitude.
- 1.3.2 Figure 1.3.1 below gives a layout of the Western Cape PRASA Network.

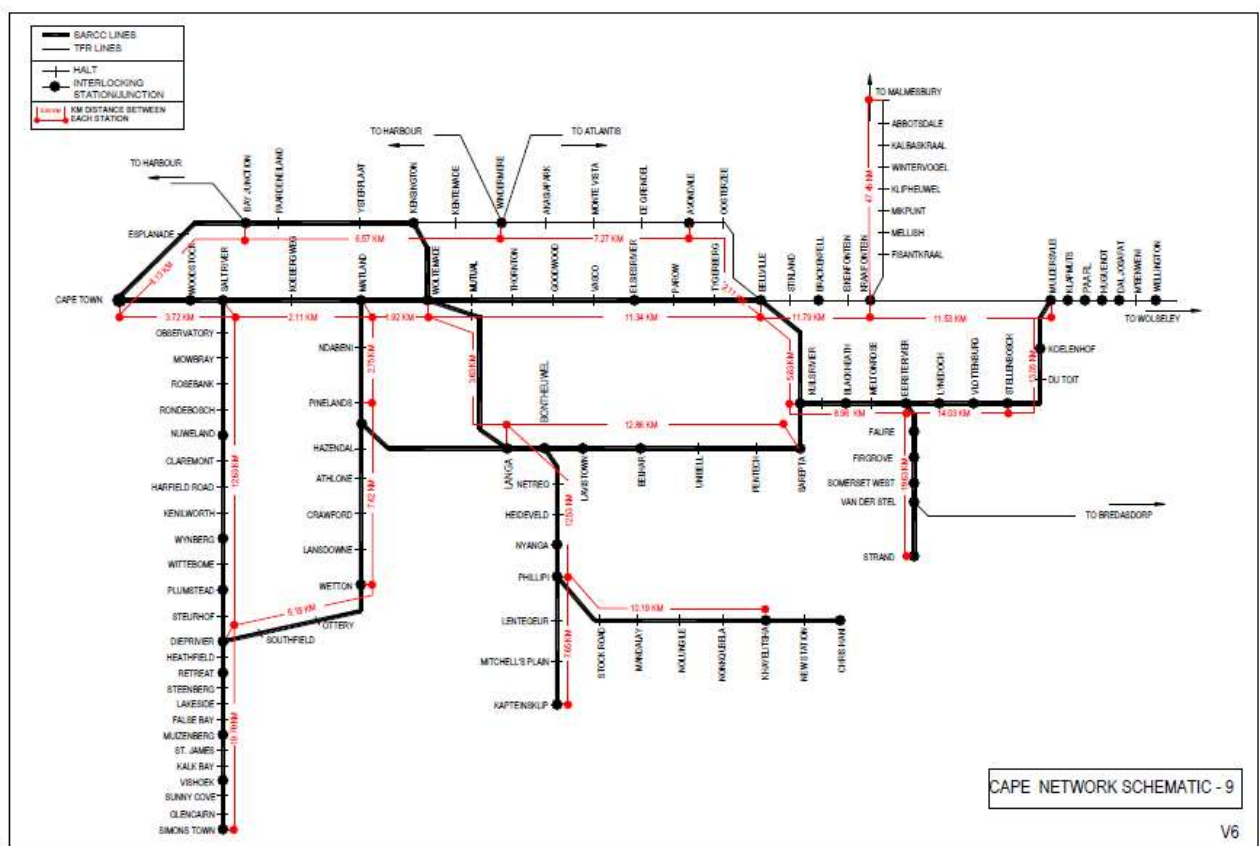


Figure 1.3.1: Western Cape Network

2 MINIMUM REQUIREMENTS

2.1 General

- 2.1.1 The OTN-1 shall at a minimum be connected as illustrated in Figure 2.1.1 below.
- 2.1.2 The OTN-2 shall at a minimum be connected in the Ticket Office (a.k.a. Passenger Station Equipment Room), IT Data Centre, Traction Substation and Security Equipment Room.

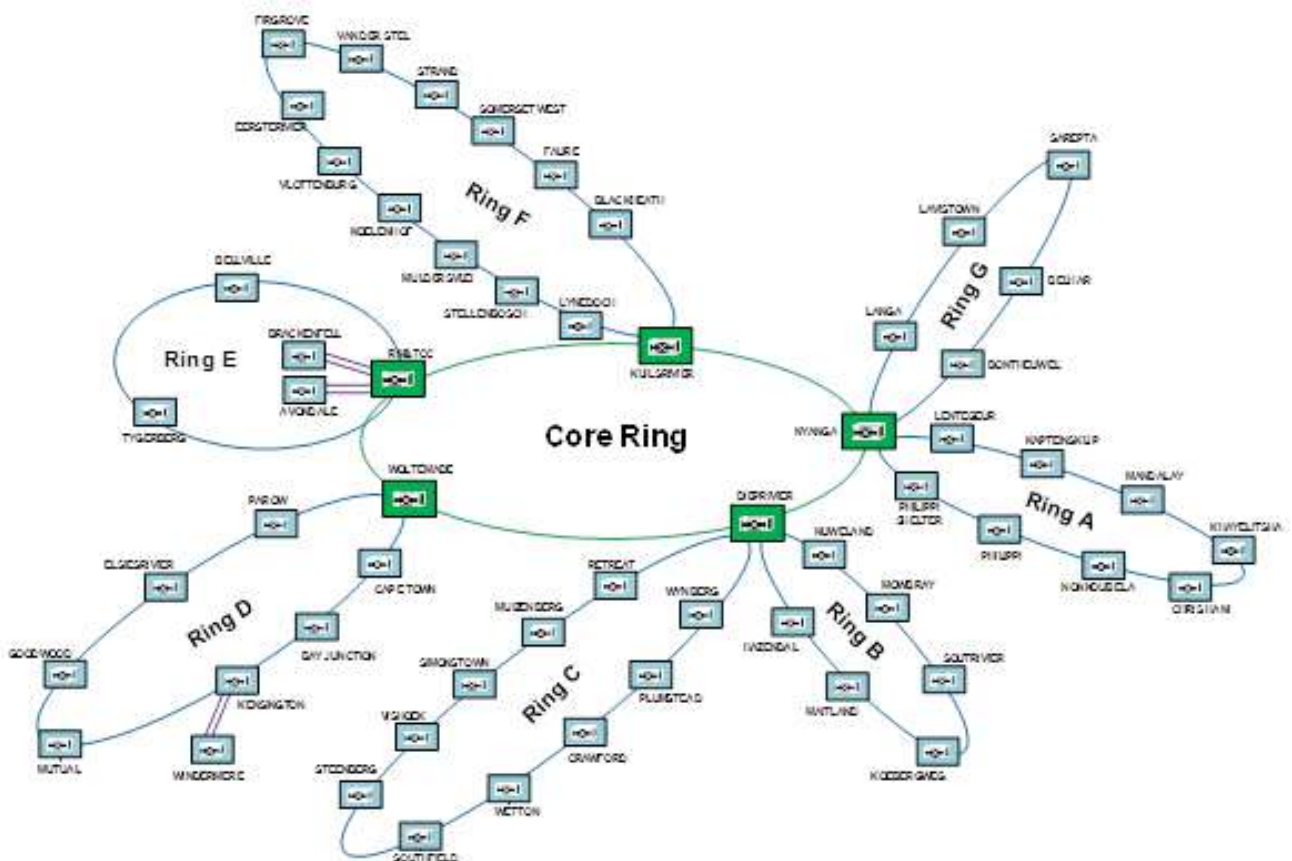


Figure 2.1.1: Concept Western Cape SER Optical Transmission Network Layout

2.2 RM&TCC – Bellville

- 2.2.1 Install new OFC between the RM&TCC and Bellville according to the requirements in the RFP.
- 2.2.2 Terminate all new OFC at the RM&TCC.
- 2.2.3 Terminate the new OFC to the following sites according to the standards described in the RFP:
- a) Bellville SER.
 - a) Bellville Sub Station.
 - b) Bellville GSM-R BTS.

- c) Bellville Ticket Office.

2.3 Woltemade SER – Bellville SER

- 2.3.1 Install new OFC between Woltemade SER and Bellville SER according to the requirements in the RFP.
- 2.3.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Woltemade SER.
 - b) Woltemade Ticket Office.
 - c) Mutual Ticket Office.
 - d) Thornton Ticket Office.
 - e) Goodwood Ticket Office.
 - f) Goodwood Sub-Station.
 - g) Vasco Ticket Office.
 - h) Elsiesrivier SER.
 - i) Elsiesrivier Ticket Office.
 - j) Elsiesrivier GSM-R.
 - k) Parow Ticket Office.
 - l) Tygerberg Ticket Office.
 - m) Bellville SER.

2.4 Woltemade SER – Maitland SER

- 2.4.1 Install new OFC between Woltemade SER and Maitland SER according to the requirements in the RFP.
- 2.4.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Woltemade SER.
 - b) Maitland SER.

2.5 Soutrivier SER - Maitland SER

- 2.5.1 Install new OFC between Soutrivier SER and Maitland SER according to the requirements in the RFP.
- 2.5.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Soutrivier SER.
 - b) Soutrivier Ticket Office.

- c) Salt River GSM-R.
- d) Soutrivier Sub-Station.
- e) Koeberg Road Ticket Office.
- f) Maitland Ticket Office.
- g) Maitland GSM-R.
- h) Maitland Tie Station.
- i) Maitland SER.

2.6 Soutrivier SER – Cape Town SER

- 2.6.1 Install new OFC between Soutrivier SER and Cape Town SER according to the requirements in the RFP.
- 2.6.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Soutrivier SER.
 - b) Woodstock SER.
 - c) Woodstock Ticket Office.
 - d) Cape Town IT Services room.
 - e) Cape Town GSM-R.
 - f) Cape Town SER.

2.7 Cape Town SER – Woltemade SER (via Kensington)

- 2.7.1 Install new OFC between Cape Town SER and Woltemade SER (via Kensington) according to the requirements in the RFP.
- 2.7.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Cape Town SER.
 - b) Cape Town IT Services room.
 - c) Cape Town Tie Stations.
 - d) Esplanade Ticket Office.
 - e) Bay Junction SER.
 - f) Paardeneiland Ticket Office.
 - g) Paardeneiland Sub-Station.
 - h) Ysterplaat Ticket Office.
 - i) Kensington SER.
 - j) Woltemade SER.

2.8 Soutrivier SER – Dieprivier SER

- 2.8.1 Install new OFC between Soutrivier SER and Dieprivier SER according to the requirements in the RFP.
- 2.8.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
- a) Soutrivier SER.
 - b) Observatory Ticket Office.
 - c) Mowbray Ticket Office.
 - d) Rosebank Ticket Office.
 - e) Rondebosch Ticket Office.
 - f) Nuweland SER.
 - g) Nuweland Ticket Office.
 - h) Newlands GSM-R.
 - i) Claremont Ticket Office.
 - j) Claremont Sub-Station.
 - k) Harfield Road Ticket Office.
 - l) Kenilworth Ticket Office.
 - m) Wynberg SER.
 - n) Wynberg Ticket Office.
 - o) Wynberg GSM-R.
 - p) Wittebome Ticket Office.
 - q) Plumstead SER.
 - r) Plumstead Ticket Office.
 - s) Steurhof Ticket Office.
 - t) Dieprivier SER.

2.9 Dieprivier SER – Simons Town SER

- 2.9.1 Install new OFC between Dieprivier SER and Simons Town SER according to the requirements in the RFP.
- 2.9.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
- a) Dieprivier SER.
 - b) Dieprivier Ticket Office.
 - c) Dieprivier GSM-R.

- d) Dieprivier Sub-Station.
- e) Heathfield Ticket Office.
- f) Retreat SER.
- g) Retreat Ticket Office.
- h) Retreat GSM-R.
- i) Steenberg Ticket Office.
- j) Lakeside Ticket Office.
- k) Valsbaai Ticket Office.
- l) Valsbaai Sub-Station.
- m) Muizenberg SER.
- n) Muizenberg Ticket Office.
- o) Muizenberg GSM-R.
- p) St. James Ticket Office.
- q) Kalkbaai Ticket Office.
- r) Kalkbay GSM-R BTS.
- s) Clovelly Ticket Office.
- t) Vishoek SER.
- u) Vishoek Ticket Office.
- v) Vishoek GSM-R.
- w) Vishoek Sub-Station.
- x) Sunny Cove Ticket Office.
- y) Glencairn Ticket Office.
- z) Glencairn GSM-R BTS.
- aa) Simons Town Ticket Office.
- bb) Simons Town GSM-R.
- cc) Simons Town SER.

2.10 Maitland SER – Hazendal SER

- 2.10.1 Install new OFC between Maitland SER and Hazendal SER according to the requirements in the RFP.
- 2.10.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Maitland SER.
 - b) Ndabeni Ticket Office.

- c) Pinelands Ticket Office.
- d) Rapenburg Ticket Office.
- e) Rapenburg Tie Station.
- f) Hazendal SER.

2.11 Hazendal SER – Dieprivier SER

- 2.11.1 Install new OFC between Hazendal SER and Dieprivier SER according to the requirements in the RFP.
- 2.11.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Hazendal SER.
 - b) Hazendal Ticket Office.
 - c) Hazendal GSM-R.
 - d) Athlone Ticket Office.
 - e) Crawford Ticket Office.
 - f) Crawford Sub-Station.
 - g) Lansdowne Ticket Office.
 - h) Wetton Ticket Office.
 - i) Wetton GSM-R.
 - j) Ottery Ticket Office.
 - k) Southfield Ticket Office.
 - l) Dieprivier SER.

2.12 Woltemade SER – Langa SER

- 2.12.1 Install new OFC between Woltemade SER and Langa SER according to the requirements in the RFP.
- 2.12.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Woltemade SER.
 - b) Langa SER.

2.13 Hazendal SER – Langa SER

- 2.13.1 Install new OFC between Hazendal SER and Langa SER according to the requirements in the RFP.
- 2.13.2 Terminate the new OFC to the following sites according to the standards described in the RFP:

- a) Hazendal SER.
- b) Langa SER.

2.14 Bellville SER – Kuilsrivier SER

- 2.14.1 Install new OFC between Bellville SER and Kuilsrivier SER according to the requirements in the RFP.
- 2.14.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Bellville SER.
 - b) Kasselsvlei SER.
 - c) Kasselsvlei Ticket Office.
 - d) Kasselsvlei Tie Station.
 - e) Kuilsrivier SER.

2.15 Bonteheuwel SER – Kuilsrivier SER

- 2.15.1 Install new OFC between Bonteheuwel SER and Kuilsrivier SER according to the requirements in the RFP.
- 2.15.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Bonteheuwel SER.
 - b) Lavistown SER.
 - c) Lavistown Ticket Office.
 - d) Modderdam Sub-Station.
 - e) Belhar SER.
 - f) Belhar Ticket Office.
 - g) Belhar GSM-R BTS.
 - h) Unibell Ticket Office.
 - i) Pentech Ticket Office.
 - j) Sarepta SER.
 - k) Sarepta Ticket Office.
 - l) Kuilsrivier SER.

2.16 Bonteheuwel SER – Langa SER

- 2.16.1 Install new OFC between Bonteheuwel SER and Langa SER according to the requirements in the RFP.

2.16.2 Terminate the new OFC to the following sites according to the standards described in the RFP:

- a) Bonteheuwel SER.
- b) Bonteheuwel Ticket Office.
- c) Bonteheuwel GSM-R BTS.
- d) Langa Ticket Office.
- e) Langa SER.

2.17 Bonteheuwel SER – Phillipi SER

2.17.1 Install new OFC between the Bonteheuwel SER and Phillipi SER according to the requirements in the RFP.

2.17.2 Terminate the new OFC to the following sites according to the standards described in the RFP:

- a) Bonteheuwel SER.
- b) Netreg Ticket Office.
- c) Heideveld Ticket Office.
- d) Nyanga Ticket Office.
- e) Nyanga SER.
- f) Nyanga GSM-R BTS.
- g) Nyanga Sub-Station.
- h) Phillipi Ticket Office.
- i) Phillipi GSM-R BTS.
- j) Phillipi SER.

2.18 Phillipi SER – Kapteinsklip SER

2.18.1 Install new OFC between Phillipi SER and Kapteinsklip SER according to the requirements in the RFP.

2.18.2 Terminate the new OFC to the following sites according to the standards described in the RFP:

- a) Phillipi SER.
- b) Lentegour Ticket Office.
- c) Lentegour Sub-Station.
- d) Mitchell's Plain Ticket Office.
- e) Kapteinsklip Ticket Office.
- f) Kapteinsklip GSM-R BTS.

- g) Kapteinsklip Tie Station.
- h) Kapteinsklip SER.

2.19 Phillipi SER – Chris Hani SER

- 2.19.1 Install new OFC between the Phillipi SER and Chris Hani SER according to the requirements in the RFP.
- 2.19.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Phillipi SER.
 - b) Stockroad Ticket Office.
 - c) Mandalay Ticket Office.
 - d) Nolungile Ticket Office.
 - e) Nolungile Sub-Station.
 - f) Nonqubela Ticket Office.
 - g) Khayelitsha SER.
 - h) Khayelitsha Ticket Office.
 - i) Khayelitsha GSM-R BTS.
 - j) Khayelitsha Tie Station.
 - k) Kuyasa Ticket Office.
 - l) Chris Hani Ticket Office.
 - m) Chris Hani Tie Station.
 - n) Chris Hani SER.

2.20 Kuilsrivier SER – Eersterivier SER

- 2.20.1 Install new OFC between Kuilsrivier SER and Eersterivier SER according to the requirements in the RFP.
- 2.20.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Kuilsrivier SER.
 - b) Kuilsrivier Ticket Office.
 - c) Kuilsrivier GSM-R.
 - d) Blackheath SER.
 - e) Blackheath Ticket Office.
 - f) Blackheath GSM-R.
 - g) Melton Rose Ticket Office.

- h) Eersterivier Ticket Office.
- i) Eersterivier GSM-R BTS.
- j) Eersterivier Sub-Station.
- k) Eersterivier SER.

2.21 Eersterivier SER – Strand SER

- 2.21.1 Install new OFC between Eersterivier SER and Strand SER according to the requirements in the RFP.
- 2.21.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Eersterivier SER.
 - b) Faure SER.
 - c) Faure Ticket Office.
 - d) Firgrove SER.
 - e) Firgrove Ticket Office.
 - f) Firgrove GSM-R BTS.
 - g) Somerset West SER.
 - h) Somerset Ticket Office.
 - i) Van Der Stel SER.
 - j) Van Der Stel Ticket Office.
 - k) Van Der Stel GSM-R BTS.
 - l) Sir Lowry's Pass Ticket Office.
 - m) Strand Ticket Office.
 - n) Strand Sub-Station.
 - o) Strand SER.

2.22 Muldersvlei SER – Eersterivier SER

- 2.22.1 Install new OFC between the Eersterivier SER and Muldersvlei SER according to the requirements in the RFP.
- 2.22.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Muldersvlei SER.
 - b) Koelenhof SER.
 - c) Koelenhof Ticket Office.
 - d) Koelenhof GSM-R.

- e) Du Toit Ticket Office.
- f) Du Toit GSM-R BTS.
- g) Stellenbosch SER.
- h) Stellenbosch Ticket Office.
- i) Stellenbosch GSM-R BTS.
- j) Stellenbosch Tie Station.
- k) Vlottenberg SER.
- l) Vlottenberg Ticket Office.
- m) Lynedoch SER.
- n) Lynedoch Ticket Office.
- o) Lynedoch GSM-R.
- p) Eersterivier SER.

2.23 Bellville SER – Muldersvlei SER

- 2.23.1 Install new OFC between Bellville SER and Muldersvlei SER according to the requirements in the RFP.
- 2.23.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Bellville SER.
 - b) Stikland Ticket Office.
 - c) Brackenfell Ticket Office.
 - d) Brackenfell GSM-R BTS.
 - e) Brackenfell Station (Termination point to be advised).
 - f) Eikenfontein Ticket Office.
 - g) Kraaifontein Ticket Office.
 - h) Kraaifontein GSM-R BTS.
 - i) Muldersvlei Ticket Office.
 - j) Muldersvlei GSM-R.
 - k) Muldersvlei SER.

2.24 Muldersvlei SER – Wellington Station

- 2.24.1 Install new OFC between Muldersvlei SER and Wellington Station according to the requirements in the RFP.
- 2.24.2 Terminate the new OFC to the following sites according to the standards described in the RFP:

- a) Muldersvlei SER.
- b) Klapmuts Ticket Office.
- c) Klapmuts GSM-R BTS.
- d) Site 09 GSM-R BTS.
- e) Paarl Ticket Office.
- f) Paarl GSM-R BTS.
- g) Huguenot Ticket Office.
- h) Huguenot GSM-R BTS.
- i) Dal Josefats Ticket Office.
- j) M'Bekweni Ticket Office.
- k) M'Bekweni GSM-R BTS.
- l) Wellington Ticket Office.
- m) Wellington GSM-R BTS.
- n) Malan Ticket Office.
- o) Soetendal Ticket Office.
- p) Hermon Ticket Office.
- q) Voelvlei Ticket Office.
- r) Gouda Ticket Office.
- s) Tulbachweg Ticket Office.
- t) Artois Ticket Office.
- u) Wolseley Ticket Office.
- v) Wellington Station (Termination point to be advised).

2.25 Kensington SER – Bellville SER

- 2.25.1 Install new OFC between Kensington SER and Bellville SER according to the requirements in the RFP.
- 2.25.2 Terminate the new OFC to the following sites according to the standards described in the RFP:
 - a) Kensington SER.
 - b) Kensington Tie Station.
 - c) Kentemade Ticket Office.
 - d) Windermere CTC.
 - e) Atlantis Ticket Office.
 - f) Akasiapark Ticket Office.

- g) Monte Vista Ticket Office.
- h) Monte Vista GSM-R BTS.
- i) De Grendel Ticket Office.
- j) Avondale Ticket Office.
- k) Avondale Station (Termination point to be advised).
- l) Oosterzee Ticket Office.
- m) Bellville SER.