

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



Annexure 2.3:
Particular Technical Requirements
Bellville to Cape Town (via Ysterplaat)

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



Contents

1	GENERAL	3
1.1	Purpose of the Document	3
1.2	Executive Overview	3
1.3	Location and Minimum Extent of the Works	3
2	MINIMUM SYSTEM REQUIREMENTS	5
	Restoration Scope summary. Site Detail below. All quantities to be verified by the bidder	5
2.1	Bellville SER	5
2.2	Bellville AR	6
2.3	Avondale (Interface)	6
2.4	Brackenfell (Interface)	7
2.5	Tygerberg AR	7
2.6	Parow AR	7
2.7	Elsies River AR	8
2.8	Goodwood AR	8
2.9	Mutual AR	9
2.10	Woltemade SER	9
2.11	Kensington AR	10
2.12	Windermere (Interface)	10
2.13	Bay Junction SER	10

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



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 forms part of the minimum Requirements of the Passenger Rail Agency of South Africa (“PRASA”) for the enablement of the PRASA Train Control System (“PTCS”) Phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) Electronic Signalling Interlocking System in PRASA’s Western Cape (“WC”) service region (“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 Western Cape region rail servitude for the section:

- a) Bellville to Brackenfell – Avondale.
- b) Bellville to Mutual.
- c) Mutual to Woltemade – Langa (Excl)
- d) Mutual to Cape Town (via Ysterplaat)
- e) Ysterplaat to Kentemede

1.3.2 The extent of the Site is approximately 25 km and includes at least:

- a) 14 Installations.

1.3.3 The Site(s) includes at least the following installations located in Signal Equipment Rooms (“SER”) and Apparatus Rooms (“AR”).

- a) Bellville SER
- b) Bellville AR
- c) Avondale (TFR interface)
- d) Brackenfell (TFR interface)
- e) Tygerberg
- f) Parow
- g) Elsies River

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



- h) Goodwood
- i) Mutual
- j) Woltemade
- k) Kensington
- l) Windermere (TFR Interface)
- m) Bay Junction
- n) Cape Town

1.3.4 Any other Site(s) and Works, activities and resources required to achieve a fully integrated, functional, complete, and future-proofed RSS and meet any other requirements and specifications as requested throughout the RFP or as otherwise instructed in writing by PRASA.

1.3.5 Below shows the section Bellville to Cape Town via Ysterplaat:

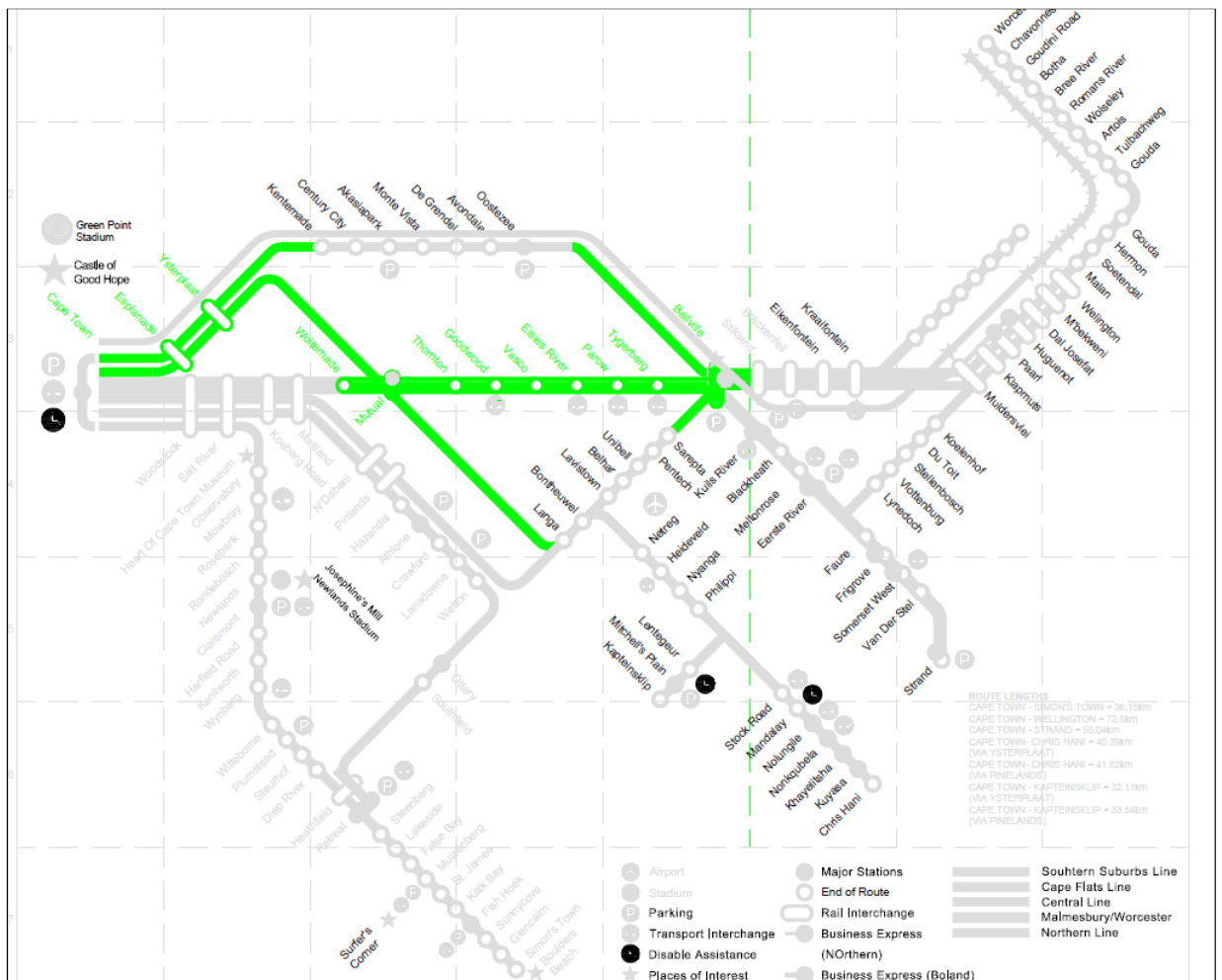


Figure 1 – Bellville to Cape Town

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2 MINIMUM SYSTEM REQUIREMENTS

Restoration Scope summary. Site Detail below.

All quantities to be verified by the bidder

- Railway Signalling Systems
 - Restore the PRASA Railway Signalling System according to the approved As-built drawings provided by PRASA.
 - Restore OEM Axle counter systems with detection heads.
 - Free issue of OEM axle counter detection heads
 - Restore BSG9i Point machines.
 - Restore Lineside Signals with LED clusters.
 - Restore Cable infrastructure inclusive of SCCA4, SCCA5 and signalling cables and the Underground Signalling 48 Core Fibre Cable (OFC 2) between CTC, SERs and ARs to enable a fully functional RSS.
 - Replace UPS with battery back-up with Lithium type solution
 - All quantities to be verified by Bidders.
- Telecommunication
 - Restore the optical transmission network to achieve the full redundancy and functionality of the RSS to the required reliability and availability specifications.
 - Install / Replace, where required, the Telecommunication 24 or 48 Core Aerial Optic Fibre Cable (OFC 1), where applicable, as per regional Fibre Optic Link Plans to enable a fully functional Transmission and Telephone System for operational applications and backup for RSS.
 - All quantities to be verified by Bidders.
- Electrical
 - Install Electrical 11kV manual operated link switches.
 - Install connection point for mobile Generators at SERs/ArS
 - Restore, test and commission the alternative supply and associated feeder cable

2.1 Bellville SER

2.1.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Bellville - Tygerberg interface junction point, Bellville – Avondale interface junction point and up to Bellville AR
- (c) Replace UPS and battery back-up system with Lithium type solution.

2.1.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Bellville to Tygerberg and 24 Core Aerial Optic Fibre Cable (OFC 1) from Bellville to Kuilsrivier.

2.1.3 Electrical

- (a) Install connection point for mobile Generator at Bellville SER.

2.2 Bellville AR

2.2.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Bellville AR - Kuilsrivier interface junction point and between Bellville AR - Sarepta interface junction point and between Bellville AR - Brackenfell interface junction point.
- (c) Replace UPS and battery back-up system with Lithium type solution.

2.2.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Bellville AR to Bellville SER.

2.2.3 Electrical

- (a) Install connection point for mobile Generator at Bellville AR.
- (b) Install Electrical 11kV manual operated link switch.

2.3 Avondale (Interface)

2.3.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Avondale interface junction point to Avondale.

2.3.2 Telecommunication

- (a) N/A.

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



2.3.3 Electrical

(a) N/A.

2.4 Brackenfell (Interface)

2.4.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, as per as-built cable plans.

2.4.2 Telecommunication

(a) N/A.

2.4.3 Electrical

(a) N/A.

2.5 Tygerberg AR

2.5.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Tygerberg interface junction point, through Tygerberg, up to the Parow interface junction point.

2.5.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Tygerberg to Parow.

2.5.3 Electrical

- (a) Install connection point at AR for mobile Generator.
- (b) Install 2 x Electrical 11kV manual operated link switches.
- (c) Restore, test and commission the alternative supply and associated feeder cable.

2.6 Parow AR

2.6.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Parow AR interface junction point, through Parow AR, up to the Elsie River AR interface junction point.

2.6.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Parow to Elsie River.

2.6.3 Electrical

- (a) Install connection point at AR for mobile Generator.
- (b) Install 2x Electrical 11kV manual operated link switches.
- (c) Restore, test and commission the alternative supply and associated feeder cable.

2.7 Elsie River AR

2.7.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Elsie River AR interface junction point, through Elsie River AR, up to the Goodwood AR interface junction point.

2.7.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Elsie River to Goodwood.

2.7.3 Electrical

- (a) Install connection point at AR for mobile Generator.

2.8 Goodwood AR

2.8.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Goodwood AR interface junction point, through Goodwood AR, up to the Mutual AR interface junction point.

2.8.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Goodwood to Mutual.

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



2.8.3 Electrical

- (a) Install connection point at AR for mobile Generator.
- (b) Install 2 x Electrical 11kV manual operated link switches.
- (c) Restore, test and commission the alternative supply and associated feeder cable.

2.9 Mutual AR

2.9.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Mutual AR interface junction point, through Mutual AR, up to the Woltemade SER interface junction point.

2.9.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Mutual to Woltemade.

2.9.3 Electrical

- (a) Install connection point at AR for mobile Generator.
- (b) Install 2 x Electrical 11kV manual operated link switches.

2.10 Woltemade SER

2.10.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Woltemade SER interface junction point, through Woltemade SER, up to the Kensington AR interface junction point.
- (c) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Woltemade SER to the Maitland AR interface junction point.
- (d) Replace UPS and battery back-up system with Lithium type solution.

2.10.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Woltemade to Kensington.

2.10.3 Electrical

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



- (a) Install 2 x Electrical 11kV manual operated link switches.
- (b) Install connection point at SER for mobile Generator.

2.11 Kensington AR

2.11.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Kensington AR interface junction point, through Kensington AR up to the Bay Junction SER interface junction point, Kensington AR up to the interface junction point towards Windermere.

2.11.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Kensington to Bay Junction and to Windermere (TFR interface).

2.11.3 Electrical

- (a) Install connection point at AR for mobile Generator.
- (b) Restore, test and commission the alternative supply and associated feeder cable.

2.12 Windermere (Interface)

2.12.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.
- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Kensington AR interface junction point to Windermere Equipment Room

2.12.2 Telecommunication

- (a) N/A.

2.12.3 Electrical

- (a) N/A.

2.13 Bay Junction SER

2.13.1 Signalling

- (a) Restoration/Replacement of Lineside signalling equipment inclusive of SCCA4, SCCA5 signalling cables as per as-built cable plans.

RFP for the enablement of the PRASA Train Control System (“PTCS”) phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



- (b) Replace the Underground Signalling 48 Core Fibre Cable (OFC 2), including patch panels, between Bay Junction SER interface junction point, through Bay Junction SER, up to the Cape Town SER.
- (c) Replace UPS and battery back-up system with Lithium type solution.

2.13.2 Telecommunication

- (a) Install / Replace the Telecommunication 48 Core Aerial Optic Fibre Cable (OFC 1), including patch panels, between Bay Junction to Cape Town.

2.13.3 Electrical

- (a) Install connection point at SER for mobile Generator.
- (b) Restore, test and commission the alternative supply and associated feeder cable