Request for Information (RFI)

SANReN Cape Town Metro Dark Fibre Network Solution

RFI No. 7026/05/02/2021

Date of Issue	Monday, 18 January 2021	
Compulsory briefing session	No briefing session	
Closing Date	Friday, 05 February 2021 at 16h30	
Place	**Online only submission at tender@csir.co.za** If the size of the documents exceed 30MB, send multiple emails. Use the RFI number and description as the subject on the email.	
Enquiries	Strategic Procurement Unit	E-mail: tender@csir.co.za
CSIR business hours	08h00 – 16h30	
Category	Computer Equipment	

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Glossary

Abbreviation	Term	Description
B-BBEE	Broad-Based Black Economic Empowerment	A term describing South African Government Policy regarding the economic upliftment of persons previously excluded from involvement in the economy of South Africa
CSIR	Council for Scientific and Industrial Research	A statutory body established in terms of Scientific Research Council Act 46 of 1988, as amended
DSI	Department of Science & Innovation	
NICIS	National Integrated Cyber-Infrastructure System	A Centre of the Department of Science and Innovation hosted by the CSIR. NICIS = SANReN + CHPC + DIRISA
ODF	Optical Distribution Frame	
RFI	Request for Information	
SANReN	South African National Research Network	The South African National Research Network (SANReN) is a high-speed network dedicated to science, research, education and innovation traffic.

List of Institution Acronyms

Acronym	Site Name
ARC	Agricultural Research Council
ASSAf	The Academy of Science of South Africa
CGS	Council for Geoscience
CHE	Council on Higher Education
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DFA	Dark Fibre Africa
HSRC	Human Sciences Research Council
IH	The Innovation Hub
MRC	Medical Research Council
NLSA	National Library of South Africa
NRF	National Research Foundation
NSF	The National Skills Fund
SAASTA	South African Agency for Science and Technology Advancement
SANBI	South African National Biodiversity Institute
SANSA	South African National Space Agency
SAWS	South African Weather Service
SMU	Sefako Makgatho Health Sciences University
TIA	Technology Innovation Agency
TUT	Cape Town University of Technology
UNISA	The University of South Africa
UP	University of Pretoria
USAf	Universities South Africa
Umalusi	Council for Quality Assurance in General and Further Education and Training

SECTION A – TECHNICAL INFORMATION

1   INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) is one of the leading scientific research and technology development organisations in Africa. In partnership with national and international research and technology institutions, CSIR undertakes directed and multidisciplinary research and technology innovation that contributes to the improvement of the quality of life of South Africans. The CSIR's main site is in Pretoria while it is represented in other provinces of South Africa through regional offices.

The National Integrated Cyber-Infrastructure System (NICIS) is responsible to provide integrated Cyber-Infrastructure in the form of a high-speed network, large scale processing capacity and long term data storage system to research and higher education communities in South Africa. NICIS provides these services through the Centre for High Performance Computing (CHPC), South African National Research Network (SANReN) and Data Intensive Research Initiative of South Africa (DIRISA).

2   BACKGROUND

The South African National Research Network (SANReN) is a major research infrastructure initiative of the Department of Science and Innovation with the responsibility to connect all research, higher education and innovation institutions to a high-speed telecommunications network. The SANReN network currently has a number of backbone links with a current capacity of 100Gbps, that is expected to grow in the future. Although a dark fibre-optics network will give SANReN technology and network capacity flexibility, this however, must be balanced with the cost effectiveness of a dark fibre solution.

The CSIR has been issued with a Licence Exemption in terms of the regulations for Licence exemption as defined in the Electronic Communications (EC) Act no 36 of 2005, for the establishment of SANReN. This licence exemption entitles the CSIR to build and acquire its own communications infrastructure, or to lease connectivity and capacity from licensed telecommunications operators holding ECNS licences issued in term of the EC Act.

This document describes the general terms and conditions to which all respondents must comply.

3 REQUEST FOR INFORMATION

SANReN is seeking information on the availability of market players that can provide a dark fibre solution in the Cape Town metropolitan for links listed in section 5 below. Furthermore, interested parties are requested to provide budgetary pricing information on the solution(s). The submitted information is explicitly based on the conditions and specifications herewith. This received budgetary pricing information will assist SANReN to decide on how to proceed going forward in procuring of a Cape Town metropolitan dark fibre network.

A .**kml** file with details of the actual routes of the links proposed based on the respondent's infrastructure must be provided as part of the respondent's response.

4 REQUIREMENT LEVEL KEYWORDS

To eliminate ambiguity, respondents are to interpret the meaning of technical requirements using the keywords; "must", "must not", "required", "shall", "shall not", "should", "should not", "recommended", "may", and "optional", as defined by the IETF RFC (Request For Comments) document designated as RFC2119.

5 RFI SPECIFICATIONS

5.1 Functional Specifications

The sites to be connected already have access build infrastructure in the form of ready ducts and the budgetary pricing requested is meant to include fibre from the manhole where said duct starts up to the ODF in the server cabinet. The following diagram provides more clarity on the requirements:
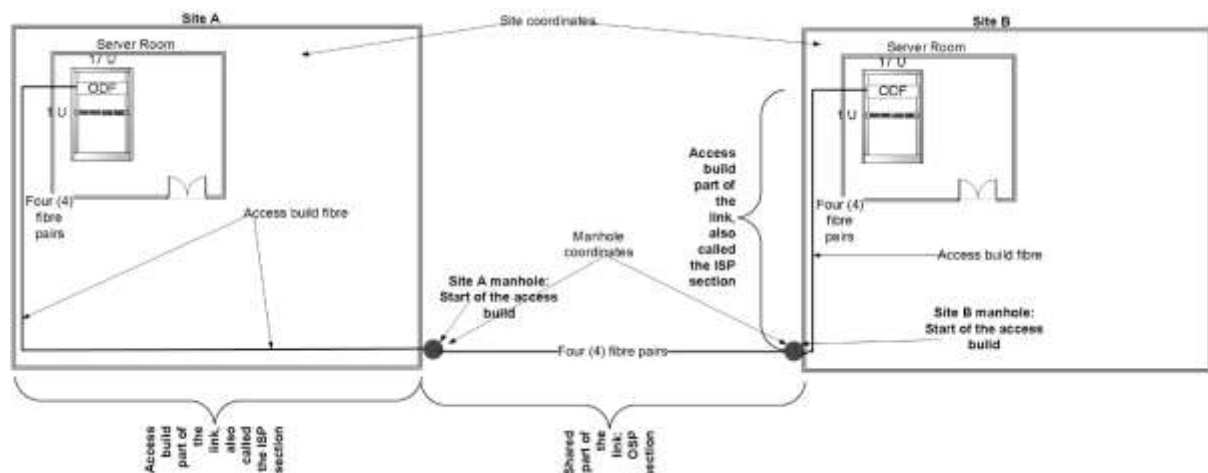

Figure 1: Typical link sections

Respondents must be aware that there are existing access build infrastructure at all the sites that are part of this RFI, meaning that the current access builds have the necessary ducts in place up to the server room where the fibre needs to be terminated. While respondents need not cost for access builds into the server rooms, fibre up to each end point, and the ODF at each end point must be included. In other words, the solutions that is proposed must be end-to-end, i.e from ODF to ODF.

Respondents are requested to provide budgetary pricing for **ALL** of the links identified in **Error! Reference source not found.** based on the following scope:

i) Respondents must provide direct access to the number of physical fibre pairs identified in **Error! Reference source not found.** between Site A and Site B ODFs

ii) Respondents may assume that the site's manhole is located at the edge of the respective site;

iii) Respondents must provide End-to-end (i.e. ODF to ODF) maintenance and support for each link for 10 years; and

iv) Respondents must exclude cross-connect fees at all datacentres (e.g. Teraco) in their provided budgetary pricing.

v) Respondents must provide a solution where links are diverse from one other.

vi) Respondents may propose solutions on yet to be built/planned fibre routes.

vii) 4 fibre pairs must be provided for each link

The respondent must provide dark fibre link budgetary pricing as specified in *Error! Reference source not found.* below.

Table 1: Links

Link	Fibre pairs	Site	Institution	Description	Site latitude	Site longitude
1	4 pairs (8 cores)	A	UCT	Red Cross Children's Hospital	-33.954200	18.487100
		B	UCT	Sports Science Institute	-33.971900	18.468000
2	4 pairs (8 cores)	A	UCT	Liesbeeck Gardens	-33.949500	18.476300
		B	UCT	Mowbray Cottage Hospital	-33.952800	18.481400
3	4 pairs (8 cores)	A	UCT	Rochester House	-33.936800	18.460500
		B	SAAO	Cape Town Campus	-33.934100	18.477600
4	4 pairs	A	UCT	Rondeberg Residence	-33.957896	18.471346

Link	Fibre pairs (8 cores)	Site	Institution	Description	Site latitude	Site longitude
	(8 cores)	B	CSIR	Centre for High Performance Computing	-33.955200	18.474800
5	4 pairs (8 cores)	A	CSIR	Centre for High Performance Computing	-33.955200	18.474800
		B	UCT	Dullah Omar Residence	-33.952600	18.472500
6	4 pairs (8 cores)	A	UCT	Dullah Omar Residence	-33.952600	18.472500
		B	CPUT	Mowbray Campus	-33.946300	18.471500
7	4 pairs (8 cores)	A	CSIR	Centre for High Performance Computing	-33.955200	18.474800
		B	IS	Breehead Gateway	-33.918400	18.420600
8	4 pairs (8 cores)	A	UCT	Main Campus	-33.956800	18.461100
		B	CSIR	Centre for High Performance Computing	-33.955200	18.474800
9	4 pairs (8 cores)	A	ITHEMBA	Faure Campus	-34.024708	18.717942
		B	SUN	Main Campus	-33.929400	18.865900
10	4 pairs (8 cores)	A	UWC	Main Campus	-33.932900	18.627300
		B	CPUT	Tygerberg Campus	-33.911000	18.616400
11	4 pairs (8 cores)	A	UWC	Main Campus	-33.932900	18.627300
		B	SUN	Main Campus	-33.929400	18.865900
12	4 pairs (8 cores)	A	IS	Breehead Gateway	-33.918400	18.420600
		B	UWC	Main Campus	-33.932900	18.627300
13	4 pairs (8 cores)	A	CPUT	Bellville	-33.931800	18.642200
		B	UWC	Main Campus	-33.932900	18.627300
14	4 pairs (8 cores)	A	SUN	Tygerberg Medical School	-33.908500	18.612700
		B	MRC	Tygerberg Campus	-33.915097	18.610651
15	4 pairs (8 cores)	A	MRC	Main Campus	-33.915100	18.607100
		B	UNISA	Cape Town Campus	-33.907900	18.594700
16	4 pairs (8 cores)	A	UNISA	Cape Town Campus	-33.907900	18.594700
		B	SUN	Business School	-33.884600	18.627100
17	4 pairs (8 cores)	A	CPUT	Groote Schuur Campus	-33.940600	18.461800
		B	CPUT	Groote Schuur Residence (Catsville)	-33.938300	18.459000

Link	Fibre pairs	Site	Institution	Description	Site latitude	Site longitude
18	4 pairs (8 cores)	A	CPUT	Groote Schuur Residence (Catsville)	-33.938300	18.459000
		B	UCT	Rochester House	-33.936800	18.460500
19	4 pairs (8 cores)	A	UCT	Sports Science Institute	-33.971900	18.468000
		B	UCT	Groote Schuur Residence	-33.959434	18.470954
20	4 pairs (8 cores)	A	UCT	Groote Schuur Residence	-33.959434	18.470954
		B	UCT	Rondeberg Residence	-33.957896	18.471346
21	4 pairs (8 cores)	A	CSIR	Centre for High Performance Computing	-33.955200	18.474800
		B	UCT	Liesbeeck Gardens	-33.949500	18.476300
22	4 pairs (8 cores)	A	UCT	Mowbray Cottage Hospital	-33.952800	18.481400
		B	UCT	Red Cross Children's Hospital	-33.954200	18.487100
23	4 pairs (8 cores)	A	UCT	Hiddingh (Arts) Campus	-33.930400	18.413800
		B	IZIKO	SA Museum Main Campus	-33.928800	18.415200
24	4 pairs (8 cores)	A	CPUT	Granger Bay Campus	-33.899700	18.411650
		B	DEAT	SA National Antarctic Programme	-33.902200	18.426300
25	4 pairs (8 cores)	A	CPUT	Cape Town (District Six)	-33.930900	18.429300
		B	CPUT	Optical Clinic (Cape Town campus)	-33.931900	18.426500
26	4 pairs (8 cores)	A	CPUT	Optical Clinic (Cape Town campus)	-33.931900	18.426500
		B	CPUT	Roeland Building (Building Asset Rich Communities)	-33.932600	18.424900
27	4 pairs (8 cores)	A	CPUT	Roeland Building (Building Asset Rich Communities)	-33.932600	18.424900
		B	UCT	Hiddingh (Arts) Campus	-33.930400	18.413800
28	4 pairs (8 cores)	A	DEAT	SA National Antarctic Programme	-33.902200	18.426300
		B	UCT	Breakwater Campus (Graduate School of Business)	-33.907200	18.416000

Link	Fibre pairs	Site	Institution	Description	Site latitude	Site longitude
29	4 pairs (8 cores)	A	CPUT	Tygerberg Campus	-33.911000	18.616400
		B	UWC	Tygerberg Campus (Dentistry)	-33.909200	18.612400
30	4 pairs (8 cores)	A	UWC	Tygerberg Campus (Dentistry)	-33.909200	18.612400
		B	SUN	Tygerberg Medical School	-33.908500	18.612700
31	4 pairs (8 cores)	A	SUN	Main Campus	-33.929400	18.865900
		B	ARC	Infruitec-Nietvoorbij	-33.925100	18.874000
32	4 pairs (8 cores)	A	DAFF	Marine and Coastal Management (Fisheries)	-33.919989	18.433283
		B	CPUT	Cape Town (District Six)	-33.930900	18.429300
33	4 pairs (8 cores)	A	CPUT	Media City Building	-33.918485	18.428055
		B	DAFF	Marine and Coastal Management (Fisheries)	-33.919989	18.433283
34	4 pairs (8 cores)	A	CPUT	Bellville	-33.931800	18.642200
		B	CGS	Cape Town Site	-33.904730	18.639416
35	4 pairs (8 cores)	A	UCT	Main Campus	-33.956800	18.461100
		B	TRCO	Teraco Rondebosch	-33.970355	18.464655
36	4 pairs (8 cores)	A	TRCO	Teraco Rondebosch	-33.970355	18.464655
		B	ITHEMBA	Faure Campus	-34.024708	18.717942
37	4 pairs (8 cores)	A	DFA	Pinelands Aggregation Point	-33.936100	18.508800
		B	CSIR	Centre for High Performance Computing	-33.955200	18.474800
38	4 pairs (8 cores)	A	DFA	Pinelands Aggregation Point	-33.936100	18.508800
		B	UCT	Valkenberg Psyc Hospital	-33.939225	18.480994
39	4 pairs (8 cores)	A	UCT	Valkenberg Psyc Hospital	-33.939225	18.480994
		B	SAAO	Cape Town Campus	-33.934100	18.477600
40	4 pairs (8 cores)	A	CPUT	Groote Schuur Campus	-33.940600	18.461800
		B	CPUT	St Peter	-33.941852	18.465889
41	4 pairs (8 cores)	A	CPUT	St Peter	-33.941852	18.465889
		B	CPUT	Mowbray Campus	-33.946300	18.471500

Link	Fibre pairs	Site	Institution	Description	Site latitude	Site longitude
42	4 pairs (8 cores)	A	HSRC	Cape Town Campus	-33.921066	18.416471
		B	CPUT	Granger Bay Campus	-33.899700	18.411650
43	4 pairs (8 cores)	A	IS	Breehead Gateway	-33.918400	18.420600
		B	HSRC	Cape Town Campus	-33.921066	18.416471
44	4 pairs (8 cores)	A	NLSA	Cape Town	-33.925500	18.418600
		B	IS	Breehead Gateway	-33.918400	18.420600
45	4 pairs (8 cores)	A	CPUT	Media City Building	-33.918485	18.428055
		B	NRF	SAEON uLwazi Node	-33.920125	18.427663
46	4 pairs (8 cores)	A	IS	Breehead Gateway	-33.918400	18.420600
		B	NRF	SAEON uLwazi Node	-33.920125	18.427663
47	4 pairs (8 cores)	A	IS	Breehead Gateway	-33.918400	18.420600
		B	UCT	Breakwater Campus (Graduate School of Business)	-33.907200	18.416000
48	4 pairs (8 cores)	A	NLSA	Center for the Book	-33.926973	18.415732
		B	IZIKO	SA Museum Main Campus	-33.928800	18.415200
49	4 pairs (8 cores)	A	NLSA	Cape Town	-33.925500	18.418600
		B	NLSA	Center for the Book	-33.926973	18.415732
50	4 pairs (8 cores)	A	UWC	Bellville Medical Centre	-33.902477	18.629585
		B	SUN	Business School	-33.884600	18.627100
51	4 pairs (8 cores)	A	UWC	Bellville Medical Centre	-33.902477	18.629585
		B	CGS	Cape Town Site	-33.904730	18.639416

5.1.1 Logical Network Diagram

The network diagram below illustrates the envisioned network. This diagram illustrates the logical network for the Cape Town metropolitan network. Respondents will provide budgetary quotations on the actual fibre routing and distances as per their own existing and planned infrastructure. There should be no more than a 5% overlap between the routes provided per link. This should be clearly identified in a KML file that the respondent submits as part of their response. Respondents are requested to indicate with a different colour where overlaps between routes occur.

Figure 2: Logical network diagram

5.1.2 Fibre specifications

Respondents shall provide either G.652D, or G.657 fibre in compliance to the cable specifications (including chromatic and polarization mode dispersion) specified by the ITU. Over and above the requirements detailed in the ITU specifications, the CSIR expects the provided fibre to be on par with current industry norms regarding long haul dark fibre. In particular, total attenuation for a fibre span should not exceed 0.25db/km at 1550nm.

Table 2: Attenuation

Wavelength	Expected Value (dB/km)
1310 nm	<0.34
1550 nm	<0.20
1625 nm	<0.22

Table 3: Chromatic Dispersion

Wavelength	Expected Value (ps/(nm.km))
1550 nm	4 - 10
1625 nm	7.5 - 13

Table 4: Polarization mode dispersion

Expected Value (ps / $\sqrt{km}$)	<0.06

5.1.3   Build Specifications

SANReN expects respondents to conduct a desktop study to plan for the required solution. SANReN is not prescriptive about whether fibre infrastructure is new or existing. Respondents may propose solutions on yet to be built/planned fibre routes. However, budgetary pricing must be provided for **ALL LINKS** regardless of whether the respondent's pricing will be based on existing or yet to build/planned fibre routes.

5.2 Maintenance and Support

Respondents must comply to the maintenance and support requirements detailed in this section. Maintenance and Support must be provided for the proposed solution for a period of 10 years. All fibre must be maintained end-to-end to a level that it is usable for the duration of the contract.

The respondents are not expected to supply any information substantiating any of the information below. It is expected that the budgetary pricing to be provided by the respondent includes support and maintenance that complies to the following minimum specifications:

Incident severity	Restoration from the time the link is discovered and logged by CSIR that it is down		
	Temporary fix		**Permanent fix**
	Business Hours	After Hours	
Low	8 Hrs	8 Hrs	30 Business days
Medium	6 Hrs	6 Hrs	15 Business days
High	4 Hrs	4 Hrs	5 Business days

Incident severity descriptions
- Low: Intermittent link errors. Link usable with minimal service degradation.
- Medium: Continuous link errors. Link still usable but service severely degraded.
- High: Complete link shutdown, e.g. -fibre is cut.
- Business Hours: 08h00 to 17h00 on weekdays (excluding public holidays)
- After hours: 17h01 to 07h59

5.3 Additional Information (Optional)

Respondents are strongly encouraged to submit any additional information they think could aid SANReN in the evaluation of the RFI submissions and in deciding the way forward in the renewal of the Cape Town metro network.

SECTION B – TERMS AND CONDITIONS

6   VENUE FOR SUBMISSIONS

All submissions must be submitted to: tender@csir.co.za

The CSIR requires that all RFI submissions be submitted electronically to tender@csir.co.za. Should the submission file size exceed 30 MB, respondents can submit in multiple emails. Use the RFI number 7026/05/02/2021 and description of the RFI as the subject on your email.

7   RFI PROGRAMME

The RFI programme, as currently envisaged, incorporates the following key dates:

Table 2: RFI Programme

● Issue of RFI documents:	Monday, 18 January 2021
● Briefing session:	No briefing session
● Closing / submission Date:	Friday, 05 February 2021 @ 16h30
● Estimated contract duration	Not applicable

8   SUBMISSION OF RFI RESPONSE

Respondents are to submit at least the following (3) documents as part of their response:
1. Completed Pricing Schedule (Annexure 1) – response to be submitted in XLSX format
2. Completed Technical Checklist (Annexure 2) – response to be submitted in DOCX format
3. KML file of their proposed solution.

Additional Supporting documentation may be submitted as needed. (e.g. BBBEE Certificate)

RFI submissions must be submitted at: tender@csir.co.za

All RFI submissions are to be clearly marked with the RFI number in the subject line of the email submission.

9   DEADLINE FOR SUBMISSION

RFI submissions shall be submitted to tender@csir.co.za no later than the closing date of **Friday, 05 February 2021** during the CSIR's business hours. The CSIR business hours are between 08h00 and 16h30.

10   REVIEW PROCESS

10.1   Review of RFI submissions

All submissions will be reviewed by a review team. Respondents are also encouraged to provide their B-BBEE status and certification.

11   BUDGETARY PRICING PROPOSAL

Respondents are requested to provide budgetary pricing by completing the "Price Schedule Matrix" document.

12   ENQUIRIES AND CONTACT WITH THE CSIR

Any enquiry regarding this RFI shall be submitted in writing to CSIR at tender@csir.co.za with "R*FI No. 7026/05/02/2021 - SANReN Cape Town Metro Dark Fibre Network*" as the subject.

Any other contact with CSIR personnel involved in this RFI is not permitted during the RFI process other than as required through existing service arrangements or as requested by the CSIR as part of the RFI process.

13   MEDIUM OF COMMUNICATION

All documentation submitted in response to this RFI must be in English.

14   COST OF SUBMISSION

Respondents are expected to fully acquaint themselves with the conditions, requirements and specifications of this RFI before submitting proposals. Each respondent assumes all risks for resource commitment and expenses, direct or indirect, of their submission preparation and participation throughout the RFI process. **The CSIR is not responsible directly or indirectly for any costs incurred by respondents.**

15 CORRECTNESS OF RESPONSES

15.1   The respondents must confirm satisfaction regarding the correctness and validity of their submission and that all prices and rates quoted cover all the work/items specified in the RFI.

15.2   The respondents accepts that any mistakes regarding the solution and budgetary pricing and calculations will be at their own risk.

16 VERIFICATION OF DOCUMENTS

16.1   Respondents should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the CSIR in regard to anything arising from the fact that pages are missing or duplicated.

17 ADDITIONAL TERMS AND CONDITIONS

17.1   A respondent shall not assume that information and/or documents supplied to CSIR, at any time prior to this request, are still available to CSIR, and shall consequently not make any reference to such information document in its response to this request.

17.2   Copies of any affiliations, memberships and/or accreditations that support your submission can be included at the respondent's discretion.

18 CSIR RESERVES THE RIGHT TO

18.1   Extend the closing date;

18.2   Verify any information contained in a submission;

19 DISCLAIMER

This RFI is a request for information only and not an offer document. Submissions to this RFI must not be construed as an acceptance of an offer or imply the existence of a contract between the parties. By submission of its information, respondents shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this RFI. The CSIR makes no representation, warranty, assurance, guarantee or endorsements to respondents concerning the RFI, whether with regard to its accuracy, completeness or otherwise and the CSIR shall have no liability towards the respondent or any other party in connection therewith.