

CLARIFICATION 1

Bidder Queries on Powertel_Core network						
System	Reference Document		Pwt Requirement	Bidder Response		Pwt Response
		Page		Clarification sought?	Bidder proposal	
Core Network	ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK	33	2. 5G Core Network Functions: AUSF (Authentication Server Function), NSSF (Network Slice Selection Function), and N3IWF (Non-3GPP Interworking Function).	These logical NEs are exclusive to 5G SA. Does this RFP include the scope of 5G SA?	Remove 5G SA scope due to low market maturity and high cost	<p>Powertel does not have an EPC and therefore intends to deploy a full 5G core network. This 5G network is expected to support access via 5G NR and also via LTE advanced Pro.</p> <p>The AUSF (Authentication Server Function) and NSSF (Network Slice Selection Function) are required as they provide essential capabilities for 5G, such as authentication and network slicing.</p>
	CLOSING DATE			Request for closing date extension		The deadline for submission/closing date has been extended from 10 May 2024 to 10 June 2024 at 1000hrs Local time.

<p>ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK</p>	<p>33</p>	<p>2. 5G Core Network Functions:AUSF (Authentication Server Function), NSSF (Network Slice Selection Function), and N3IWF (Non-3GPP Interworking Function).</p>	<p>The end-to-end commercial ecosystem of the 5G non-3GPP access mode is not mature. The mature solution supports the interaction between VoWiFi and VoNR and uses the CloudePDG instead of the N3IWF.</p>	<p>Deploy CloudePDG instead of N3IWF</p>	<p>Bidders to ensure the system is compatible with N3IWF. This may not be quoted now, but will be required in future.</p>
<p>ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK</p>	<p>34</p>	<p>5. Security:The 5G Core Network must meet standard security features, including firewall protection, IPSec encryption, and authentication protocols.</p>	<p>Does the 5GC need to provide the firewall function? According 3GPP protocol, The 5GC does not provide the firewall function.</p>	<p>Use professional firewall to implement this function.</p>	<p>Bidders to include such firewall, whether inbuilt of 3rd party</p>
<p>ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK</p>	<p>37</p>	<p>Lawful Interception: The system should support seamless lawful interception of any subscriber, regardless of the Radio Access Technology (RAT) they are connected to</p>	<p>Do both the data and voice domains need to provide the lawful interception function?</p>	<p>If need deploy lawful interception function, Powertel need purchase additional LIG as well, CAPEX will increase; Huawei propose no need deploy lawful</p>	<p>Bidders should support integration with Lawful interception gateway. No need to include the equipment</p>

					interception in Phase 1	
	ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK	34	<p>5. Security:</p> <ul style="list-style-type: none"> • The 5G Core Network must meet standard security features, including firewall protection, IPSec encryption, and authentication protocols. • It should implement measures to protect against threats such as rogue connections, resource exhaustion, DoS attacks, malware/spyware, and protocol anomalies. • Robust security mechanisms should be in place to safeguard user data and maintain the confidentiality, integrity, and availability of the network. 	Does the security part of 5GC mean that the SEPP needs to be deployed?		Yes, Bidders to deploy SEPP to meet the security requirements

	ICT PWT 04 2024 SUPPLY DELIVERY INSTALLATION AND COMMISSIONING OF A 5G AND LTE NETWORK	61	Bill of Material: Part 2 STATEMENT OF REQUIREMENTS: Mentioned VolTE Core Network requirement is 1 set	A set of VolTE devices cannot meet the requirements of seamless geographic redundancy	Deploy two sets of each core network NE and distribute them in different DCs.	The second set for geo- redundancy will be required at a later stage. Bidders to quote one set and provide support for deployment of a second set for geo- redundancy.
--	---	----	--	--	--	--

CLARIFICATION 2

Bidder Queries on Powertel_ Core network 20240425						
System	Reference Document		Pwt Requirement	Bidder Response		Pwt Response
		Page		Clarification sought?	Bidder proposal	
	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	47	The following software license requirements apply	The percentage of 4G/VOLTE subscribers/5G MBB subscribers/5G FWA/WTTH subscribers more than 100%, is it correct?	propose revise the percentage of 5G FWA/WTTH subscribers from 20% to 10%, for details, please check the below sheet.	<i>Noted, Please refer to updated table below (we have further divided the WTTH subscribers to 4G and 5G WTTH) Bidders should note and use the below figures for quotation purposes. Furthermore, it should be noted that depending on demand the licence upgrades may be requested earlier or later than the timelines indicated on the schedule</i>


	Capacity	Year 1(2024)	Year 2(2025)	Year 3(2026)	Year 4(2027)	Year 5(2028)
	Hardware Capacity	1,000,000	N/A	N/A	N/A	N/A
	Software License Total	100,000	170,000	300,000	550,000	1,000,000
	Prepaid Subscriber	80,000	136,000	240,000	440,000	800,000
	Postpaid Subscriber	20,000	34,000	60,000	110,000	200,000
	4G/VOLTE subscribers	70,000	119,000	210,000	385,000	700,000
	5G MBB subscribers	20,000	34,000	60,000	110,000	200,000
	4G FWA/WTTH subscribers	5,000	8,500	15,000	27,500	50,000
	5G FWA/WTTH subscribers	5,000	8,500	15,000	27,500	50,000
	FTTH Fiber Subscribers <i>(for Billing System only)</i>	5,000	8,500	15,000	27,500	50,000
	IoT Subscribers <i>(for Billing System only)</i>	5,000	8,500	15,000	27,500	50,000

CLARIFICATION 3

Document Section	Original Statement	Question Description	PowerTel Communications Response
-------------------------	---------------------------	-----------------------------	---

<p>Scope Of Work 5) Backhauling Equipment</p>	<p>b)Leveraging Powertel's existing DWDM, SD-WAN, Metro-ethernet, and fiber infrastructure for efficient and reliable backhauling.</p>	<p>Please share regions that have existing backhaul infrastructure so we can optimize or determine additional MW link requirements. E.g Bulawayo, Manicaland.</p>	<p>All sites will have fibre backhaul</p>
<p>5G and LTE Technical Requirements</p>	<ul style="list-style-type: none"> •5G NR: Bands n77 (3.3 GHz - 3.4 GHz) and additional bands allocated by the regulator (600 MHz up to 6 GHz). 	<p>Can you confirm Bandwidth for 5G, 3.3Ghz-3.4Ghz Spectrum, is it 100MHz? and what is the minimum Channel Size?</p>	<p>3.3GHz to 3.4GHz is only for pilots. It is 100MHz</p> <p>The equipment should support the whole n78 band, The actual allocation is yet to be finalized.</p>
<p>5G and LTE Technical Requirements Radio Design Parameters</p>	<ul style="list-style-type: none"> •Frequency Band of Operation: <ul style="list-style-type: none"> oLTE Advanced: 10 MHz in the 800 MHz band •BTS Antenna Gain: 20 dBi. 	<p>For 65 deg HPBW typical gain is between 14-17dBi dependent on Antenna length, to Achieve 20dBi Antenna gain it would require narrow beamwidth Antenna 27-33 deg. To give the best balance between coverage and Antenna gain can we use 65 deg Beamwidth with 16-17dBi Gain?</p>	<p>Use BTS Antenna Gain: $\geq 15\text{dBi}$. Our previous antennas are 2m long</p>

<p>5G and LTE Technical Requirements MIMO Configuration</p>	<p>LTE Advanced Pro: 50% of sites with 8x8 MIMO</p>	<p>For B20 (800MHz) Maximum available ports on the antenna are 4 ports, to deploy 8x8 MIMO we would need 2 Antennas per sector causing deployment challenges and interference. There are no devices in the Market that support 8x8 MIMO for 800MHz. Can we rather deploy 2T4R and cell optimizing features to improve capacity on the cell edge?</p>	<p>2T4R (65 of sites) and 4T4R MIMO (15 of LTE Advanced Pro sites). 64x64 MIMO for 12 sites and 32x32 for 8 sites.</p>
<p>5G and LTE Technical Requirements MIMO Configuration</p>	<p>LTE Advanced : 50% of sites with 4x4 MIMO</p>	<p>There are no mobile devices in the Market that support 4T4R MIMO for 800MHz. Can we rather deploy 2T4R and cell optimizing features to improve capacity on the cell edge?</p>	<p>2T4R (65 of sites) and 4T4R MIMO (15 of LTE Advanced Pro sites). 64x64 MIMO for 12 sites and 32x32 for 8 sites.</p>
<p>5G and LTE Technical Requirements MIMO Configuration</p>	<p>5G NR: All sites with 64x64 MIMO.</p>	<p>The real benefit for 64Trx is the vertical Beamforming gain, which is mainly effective in areas with High rise buildings. Can we offer 32TRx for all 5G Sites outside Harare? (15- 32Trx Sites and 5-64Trx sites)</p>	<p>2T4R (65 of sites) and 4T4R MIMO (15 of LTE Advanced Pro sites). 64x64 MIMO for 12 sites and 32x32 for 8 sites.</p>
<p>5G and LTE Technical Requirements 5G NR (New Radio) Requirements</p>	<p>•Support for FR2 bands (mmWave) as allocated by the regulator.</p>	<p>Please specify the licenced and available FR2 band requirements in Zimbabwe as this quite a broad spectrum range.</p>	<p>24.25 to 27GHz, 37.5-43.5GHz, 61-66GHz</p>

<p>5G and LTE Technical Requirements Table 1 Site distribution</p>	 <table border="1"> <thead> <tr> <th>Province</th> <th>Macro sites (5G)</th> <th>No. of NodesB</th> </tr> </thead> <tbody> <tr> <td>Bulawayo</td> <td>18</td> <td>5</td> </tr> <tr> <td>Harare</td> <td>30</td> <td>7</td> </tr> <tr> <td>Masvingo</td> <td>4</td> <td>1</td> </tr> <tr> <td>Matabeleland Central</td> <td>4</td> <td>1</td> </tr> <tr> <td>Matabeleland East</td> <td>4</td> <td>1</td> </tr> <tr> <td>Matabeleland West</td> <td>4</td> <td>1</td> </tr> <tr> <td>Masvingo</td> <td>4</td> <td>1</td> </tr> <tr> <td>Matabeleland North</td> <td>4</td> <td>1</td> </tr> <tr> <td>Matabeleland South</td> <td>4</td> <td>1</td> </tr> <tr> <td>Midlands</td> <td>4</td> <td>1</td> </tr> <tr> <td>Total</td> <td>80</td> <td>20</td> </tr> </tbody> </table> <p>Table 1. Site distribution</p>	Province	Macro sites (5G)	No. of NodesB	Bulawayo	18	5	Harare	30	7	Masvingo	4	1	Matabeleland Central	4	1	Matabeleland East	4	1	Matabeleland West	4	1	Masvingo	4	1	Matabeleland North	4	1	Matabeleland South	4	1	Midlands	4	1	Total	80	20	<p>Please confirm that 5G and LTE System sites will be co-located meaning on the same tower or same site infrastructure?</p>	<p>Yes they will be co-located</p>
Province	Macro sites (5G)	No. of NodesB																																					
Bulawayo	18	5																																					
Harare	30	7																																					
Masvingo	4	1																																					
Matabeleland Central	4	1																																					
Matabeleland East	4	1																																					
Matabeleland West	4	1																																					
Masvingo	4	1																																					
Matabeleland North	4	1																																					
Matabeleland South	4	1																																					
Midlands	4	1																																					
Total	80	20																																					
<p>Engineering Designs, Plans, and Solution Roadmap</p>	<ul style="list-style-type: none"> Clearly present the solution roadmap and evolution over a period of ten (10) years or more. The roadmap should clearly show how the system will evolve to a 6th generation network. 	<p>The Framework for 6G has not been defined by 3GPP as yet, 5G Advanced Release 18 standards were just frozen end of March 2024. Can we rather consider at 5 year plan, looking at the current 5G Advanced R18, R19 standards?</p>	<p>Yes</p>																																				

CLARIFICATION 4

RFP Section	RFx Requirement	Bidder Question	Powertel Responses
-------------	-----------------	-----------------	--------------------

Contract	General Terms and Conditions	Kindly confirm whether the SCC need to be completed in this stage or not.	Please refer to Part 3 of the bidding documents entitled "CONTRACT". These are standard Contract terms and conditions for your information only, and bidders need not complete this section at this stage. These will be discussed and negotiated with the winning bidder.
----------	------------------------------	---	--

Clarifications 5

Bidders Queries on Powertel_ WDM network 20240425				
No.		Chapter/Section	Bidder Query	Customer Response
1	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	Special Conditions of Contract Form	Kindly confirm whether the SCC need to be completed in this stage or not.	Please refer to Part 3 of the bidding documents entitled "CONTRACT". These are standard Contract terms and conditions for your information only, and bidders need not complete this section at this stage. These will be discussed and negotiated with the winning bidder.
2	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	LTE FINANCIAL TABLES - ammended LTE	FAT will lead to increase the cost which will may impact the total TCO, suggest to remove this requirement as all the proposed equipment already have the	FATs are required

			related certifications and qualifications.	
3	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	"LTE Advanced Pro - 2T4R (65 of sites) and 4T4R MIMO (15 sites). 5G NR - 64x64 MIMO for 12 sites and 32x32 for 8 sites	Kindly specify the specific configurations for each site as the different configurations and different site loads will affect the subsequent energy configuration.	Please refer to site list
4	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	General	Could you please provide the list of site locations? This information is essential to determine the specific requirements for each site, ensuring accurate design and planning.	provided
5	RFP for Powertel 5G and LTE Network 16 April 2024 Addendum	Microwave Radio Requirements	Please confirm if MW is still part of the scope or all transmission is through fibre?	All transmission through fibre at this stage

Preliminary Site List

This is just a preliminary site list to guide bidders in generating quotations. The exact site list will be agreed upon at contract stage. Bidders can use the below sample sites and the site distribution table to estimate the remaining number of sites

Site Code	Province	Site Name	Proposed Latitude	Proposed Longitude	Tower Height (m)	Service	4G LTE - MIMO	5G NR - MIMO
XXXX	Bulawayo	Byo Cowdry Park	-20.0762	28.5176	25	4G-LTE and 5G	4T4R	32x32
XXXX	Bulawayo	Byo Highlanders	-17.8352	31.19056	45	4G-LTE	4T4R	
XXXX	Bulawayo	Byo Lobengula	-20.1309	28.5141	25	4G-LTE	2T4R	
XXXX	Bulawayo	Byo Montrose	-20.1971	28.5728	40	4G-LTE and 5G	2T4R	64x64
XXXX	Bulawayo	Byo Nkulumane	-20.1653	28.5135	25	4G-LTE	2T4R	
XXXX	Bulawayo	Byo NRZ	-20.1575	28.5845	Rooftop	4G-LTE and 5G	4T4R	64x64
XXXX	Bulawayo	Byo Pumula	-20.1356	28.4832	25	4G-LTE	2T4R	
XXXX	Bulawayo	Khami Prison	-18.9585	32.67833	25	4G-LTE	4T4R	
XXXX	Bulawayo	Byo Entumbane	-18.9585	32.67833	25	4G-LTE	2T4R	
XXXX	Bulawayo	Byo Power Station	-18.9585	32.67833	Rooftop	4G-LTE	4T4R	
XXXX	Bulawayo	Byo Sizinda	-20.1727	28.54661	25	4G-LTE	2T4R	
XXXX	Bulawayo	Bulawayo Airport	TBA			4G-LTE and 5G	2T4R	32x32
XXXX	Bulawayo	National University of Science and Technology	TBA			4G-LTE and 5G	2T4R	64x64
XXXX	Bulawayo	Burnside	TBA			4G-LTE	2T4R	
XXXX	Bulawayo	Richmond	TBA			4G-LTE	2T4R	
XXXX	Bulawayo	Newton West	TBA			4G-LTE	2T4R	
XXXX	Bulawayo	Belmont	TBA			4G-LTE	2T4R	
XXXX	Bulawayo	Marvel	TBA			4G-LTE	2T4R	
XXXX	Harare	Hre Ardbennie	-17.8637	31.20833	30	4G-LTE	2T4R	
XXXX	Harare	Hre Borrowdale Brooke	TBA	TBA		4G-LTE	4T4R	
XXXX	Harare	Hre Kuwadzana	-17.8234	30.9374	25	4G-LTE and 5G	2T4R	32x32
XXXX	Harare	Hre Newlands	-17.8078	31.0753	25	4G-LTE	2T4R	
XXXX	Harare	Hre Warren Control	-17.8751	30.6922	25	4G-LTE	2T4R	
XXXX	Harare	Hre ZESA	-17.8284	31.0442	Rooftop	4G-LTE and 5G	2T4R	64x64
XXXX	Harare	Hre Hatfield			25	4G-LTE	2T4R	

XXXX	Harare	Hre Arundel	-17.7653	31.04976	30	4G-LTE and 5G	4T4R	32x32
XXXX	Harare	Hre Aspidale	-17.8553	30.95097	Rooftop	4G-LTE	2T4R	
XXXX	Harare	Hre Belgravia	-17.7971	31.0451	25	4G-LTE and 5G	2T4R	64x64
XXXX	Harare	Hre Causeway	-17.8241	31.0525	Rooftop	4G-LTE	2T4R	
XXXX	Harare	Hre Century House	-17.914	30.97992	Rooftop	4G-LTE	4T4R	
XXXX	Harare	Hre Kopje	-17.8411	31.0379	30	4G-LTE and 5G	4T4R	64x64
XXXX	Harare	Hre Moffat Heights	-17.8821	30.96	Rooftop	4G-LTE	2T4R	
XXXX	Harare	Hre NRZ	-17.8373	31.0489	35	4G-LTE	2T4R	
XXXX	Harare	Hre Pockets Hill	-17.79	31.09	35	4G-LTE	4T4R	
XXXX	Harare	Hre Sports Club	-17.8751	30.6922	25	4G-LTE	2T4R	
XXXX	Harare	Hre Warren Park	-17.3825	30.1901	30	4G-LTE	2T4R	
XXXX	Harare	Hre Waterfalls	-17.3825	30.1901	30	4G-LTE	2T4R	
XXXX	Harare	Ruwa	-17.896	31.2372	30	4G-LTE	2T4R	
XXXX	Harare	Hre Helensvale	-17.3825	30.1901	25	4G-LTE	2T4R	
XXXX	Harare	Hre Kamfinsa	-17.8055	31.1224	25	4G-LTE	2T4R	
XXXX	Harare	Hre Msasa NRZ	-17.8417	31.1047	20	4G-LTE	2T4R	
XXXX	Harare	Hre Westgate	-17.7631	30.9884	20	4G-LTE	2T4R	
XXXX	Harare	Chit C-Junction	-18.3379	29.9157	25	4G-LTE	2T4R	
XXXX	Harare	Chit Makoni	-17.3825	30.1901	25	4G-LTE	2T4R	
XXXX	Harare	Chit Zengeza	-18.0181	31.0556	25	4G-LTE	2T4R	
XXXX	Harare	Hre Airport	-17.9152	31.09544	Rooftop	4G-LTE and 5G	2T4R	64x64
XXXX	Harare	Hre Kopje Plaza	-17.3825	30.1901	Rooftop	4G-LTE	4T4R	
XXXX	Harare	New Parliament	TBA			4G-LTE and 5G	2T4R	32x32
XXXX	Manicaland	Mutare Cecil Kopje	-18.9377	32.6612	40	4G-LTE and 5G	2T4R	
XXXX	Manicaland	Mutare Dangamvura	-18.9585	32.67833	30	4G-LTE	2T4R	
XXXX	Manicaland	Mutare Fidelity	-18.9585	32.67833	Rooftop	4G-LTE and 5G	2T4R	64x64
XXXX	Manicaland	Rusape	-18.5302	32.1221	25	4G-LTE	2T4R	
XXXX	Mashonaland Central	Bindura	-17.3825	30.1901	30	4G-LTE and 5G	2T4R	32x32

XXXX	Mashonaland Central	Mazowe	TBA			4G-LTE	2T4R	
XXXX	Mashonaland Central	Glendale	TBA			4G-LTE	2T4R	
XXXX	Mashonaland Central	Zimbabwe National University	TBA			4G-LTE	2T4R	
XXXX	Mashonaland East	Marondera	-18.1873	31.5437	25	4G-LTE and 5G	2T4R	64x64
XXXX	Mashonaland East	Dema	TBA			4G-LTE	2T4R	
XXXX	Mashonaland East	Chivhu	TBA			4G-LTE	2T4R	
XXXX	Mashonaland East	Beatrice	TBA			4G-LTE	4T4R	
XXXX	Mashonaland West	Norton ZESA	-17.896	31.2372	30	4G-LTE	2T4R	
XXXX	Mashonaland West	Norton GMB	-17.8909	30.65623	Rooftop	4G-LTE	2T4R	
XXXX	Mashonaland West	Chinhoyi ZESA	-17.3573	30.191	Rooftop	4G-LTE and 5G	2T4R	64x64
XXXX	Mashonaland West	Chinhoyi	-17.359	30.19294	30	4G-LTE	2T4R	
XXXX	Masvingo	Masvingo CBD	-20.071111	30.834167	Rooftop	4G-LTE	4T4R	
XXXX	Masvingo	Masvingo RDN	-17.3825	30.1901	30	4G-LTE	2T4R	
XXXX	Masvingo	GZU	TBA			4G-LTE and 5G	2T4R	32x32
XXXX	Masvingo	Masvingo Poly	TBA			4G-LTE	2T4R	
XXXX	Matebeleland North	Hwange	-17.3825	30.1901	25	4G-LTE	2T4R	
XXXX	Matebeleland North	Vic Falls	-17.914	30.97992	20	4G-LTE and 5G	4T4R	64x64
XXXX	Matebeleland North	ZPC Hwange	TBA			4G-LTE	2T4R	
XXXX	Matebeleland North	Vic Falls	TBA			4G-LTE	2T4R	
XXXX	Matebeleland South	BeitBridge	-17.8821	30.96	25	4G-LTE	4T4R	
XXXX	Matebeleland South	Plumtree	TBA			4G-LTE	2T4R	
XXXX	Matebeleland South	Mtshabezi	TBA			4G-LTE	2T4R	
XXXX	Matebeleland South	Gwanda	TBA			4G-LTE and 5G	2T4R	32x32
XXXX	Midlands	Kwekwe 1	-18.9585	32.67833	30	4G-LTE	2T4R	
XXXX	Midlands	Gweru	-19.4718	29.8144	30	4G-LTE	2T4R	
XXXX	Midlands	Gweru CBD	-19.5008	29.84101	Rooftop	4G-LTE and 5G	2T4R	64x64
XXXX	Midlands	Gweru Mkoba	-19.4342	29.82747	25	4G-LTE	2T4R	