NATIONAL INFORMATION TECHNOLOGY AUTHORITY

THE NATIONAL BACKBONE INFRASTRUCTURE (NBI) EXTENSION PROJECT

LOT 1: EXTENSION OF THE NBI
&
LOT 2: UPGRADE OF THE NBI.

Procurement Reference Number: NITA-U/UDAP/SUPLS/23-24/00054

ADDENDUM NO. 1 TO THE BIDDING DOCUMENT

AUGUST 2024

Original Text	Amended text
Section II Proposal Data Sheet-ITP 19.1-Bid Validity The Proposal shall be valid for 120 days. The bid should be valid until **9th December, 2024.**	Section II Proposal Data Sheet-ITP 19.1-Bid Validity **Amended:** The Proposal shall be valid for 120 days. The bid should be valid until **23rd December, 2024**
Section II- Proposal Data sheet – ITP 23.1 – Deadline for Proposal Submission For Proposal submission purposes only, the Purchaser's address is: Attention: **The Procurement Specialist, National Information Technology Authority-Uganda** Address: **Palm Courts, Plot 7A, Rotary Avenue (Former Lugogo Bypass)** Floor/ Room number: **Palm Courts**, **1st Floor** City: **Kampala** Country: **Uganda** The deadline for Proposal submission is: Date**: 08th August, 2024** Time: **11:00 a.m.**	Section II- Proposal Data sheet – ITP 23.1 – Deadline for Proposal Submission **Amended:** For Proposal submission purposes only, the Purchaser's address is: Attention: **The Procurement Specialist, National Information Technology Authority-Uganda** Address: **Palm Courts, Plot 7A, Rotary Avenue (Former Lugogo Bypass)** Floor/ Room number: **Palm Courts**, **1st Floor** City: **Kampala** Country: **Uganda** The deadline for Proposal submission is: Date: **23rd August, 2024** Time: **11:00 a.m.**
Section II- Proposal Data sheet – ITP 26.1 Proposal Opening date. The Proposal opening shall take place at: Street Address: **National Information Technology Authority-Uganda (NITA-U)**, **Palm Courts, Plot 7A, Rotary Avenue.** Floor/Room number: **1st Floor** City: **Kampala** Country: **Uganda**	Section II- Proposal Data sheet – ITP 26.1 Proposal Opening date. **Amended:** The Proposal opening shall take place at: Street Address: **National Information Technology Authority-Uganda (NITA-U)**, **Palm Courts, Plot 7A, Rotary Avenue.** Floor/Room number: **1st Floor**

Date**: 08th August, 2024** Time: **11:15 a.m (Local Time)**	City: **Kampala** Country: **Uganda** Date:**23rd August,2024** Time: **11:15 a.m (Local Time)**
Section II- Proposal Data sheet – ITP 20.1 Proposal Security Validity. **"**The Proposal Security shall be valid to a date not earlier than **6th January,2025."**	Section II - Proposal Data sheet – ITP 20.1 Proposal Security Validity **Amended:** **"**The Proposal Security shall be valid to a date not earlier than **20th January, 2025."**
Section III – Evaluation and Qualification Criteria – ITP 49 The proposed Adjudicator is: **Herculs Bizure.** The proposed hourly fee is: **USD 50.**	Section III – Evaluation and Qualification Criteria – ITP 49 **Amended:** The proposed Adjudicator is: **Robert Kirunda** The proposed hourly fee is: **USD 50.**

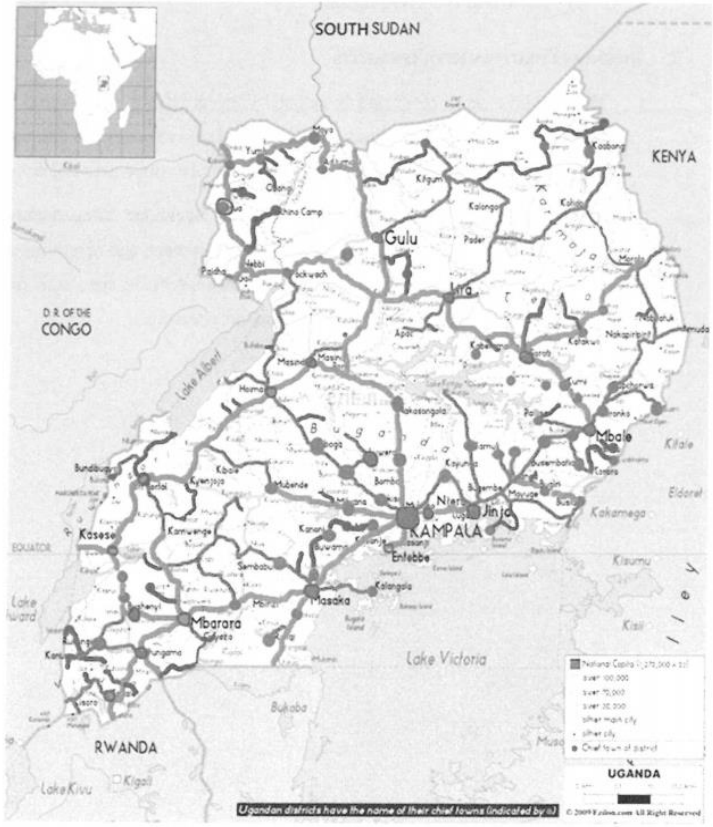
Section VII – Purchaser's Requirements, Pg.163

3. ARCHITECTURAL REQUIREMENTS

LOT 1: NETWORK EXTENSION

3.1. OPTICAL FIBER CABLE CONSTRUCTION

The optical fiber cable network connectivity under the project scope (purple lines) shall be established as follows:



Section VII – Purchaser's Requirements, Pg.163

3. ARCHITECTURAL REQUIREMENTS

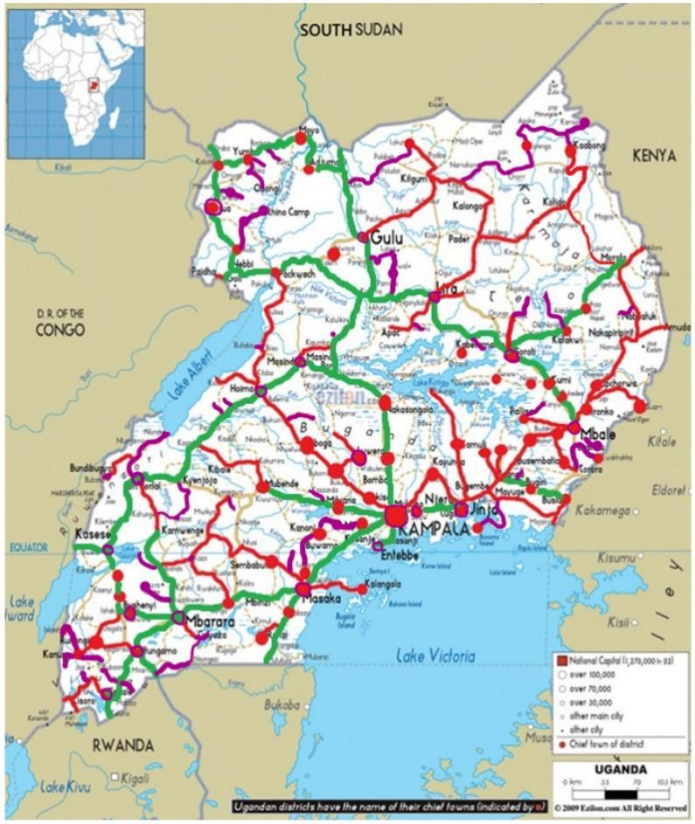
LOT 1: NETWORK EXTENSION

3.1. OPTICAL FIBER CABLE CONSTRUCTION

The optical fiber cable network connectivity under the project scope (purple lines) shall be established as follows:

Replaced:

Gray Map with Colored Map



Section VII – Purchaser's Requirements, Pg.209

2. DWDM Capacity Upgrade

Upgrade capacity according to the table provided:

#	Ring	Current Capacity	Planned Capacity under Phase 5	Planned Capacity under NBI Extension	Total Capacity
1	Main East Ring: Kampala-Jinja-Busia-Tororo-Mbale-Kumi-Soroti-Lira-Karuma-Masindi-Nakasongola-Luwero-Kampala	1*100G	1*100G	2*100G	4*100G
2	Main West Ring: Kampala-Masaka-Mbarara-Bushenyi-Kasese-Fort Portal-Kyenjojo-Hoima-Masindi-Nakasongola-Kampala	4*10G	2*10G	2*100G	(6*10G)+(2*100G)
3	West Nile Ring: Karuma-Pakwach-Nebbi-Arua-Koboko-Moyo-Adjumani-	2*10G	4*10G	1*100G	(6*10G)+(1*100G)

Section VII – Purchaser's Requirements, Pg.209

2. DWDM Capacity Upgrade

Upgrade capacity according to the table provided:

Removed:

Adjumani from #3: West Nile Ring

#	Ring	Current Capacity	Planned Capacity under Phase 5	Planned Capacity under NBI Extension	Total Capacity
1	Main East Ring: Kampala-Jinja-Busia-Tororo-Mbale-Kumi-Soroti-Lira-Karuma-Masindi-Nakasongola-Luwero-Kampala	1*100G	1*100G	2*100G	4*100G
2	Main West Ring: Kampala-Masaka-Mbarara-Bushenyi-Kasese-Fort Portal-Kyenjojo-Hoima-Masindi-Nakasongola-Kampala	4*10G	2*10G	2*100G	(6*10G)+(2*100G)
3	West Nile Ring:	2*10G	4*10G	1*100G	(6*10G)+(1*100G)

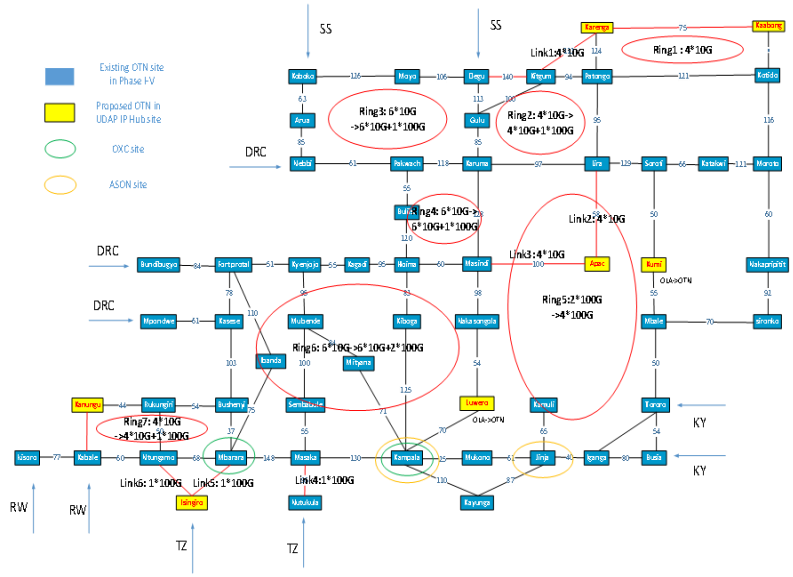
	Elegu-Gulu-Karuma				
4	New Ring: Mbarara-Ntungamo-Isingiro-Mbarara	-	-	1*100G	1*100G
5	New Ring: Patongo-Karenga-Kaabong-Kotido-Patongo	-	-	4*10G	4*10G
6	New Ring: Karuma-Gulu-Elegu-Kitgum-Patongo-Lira-Karuma	-	4*10G	1*100G	(4*10G)+(1*100G)
7	New Ring: Karuma-Pakwach-Buliisa-Hoima-Masindi-Karuma	-	6*10G	1*100G	(6*10G)+(1*100G)

	Karuma-Pakwach-Nebbi-Arua-Koboko-Moyo-Elegu-Gulu-Karuma				
4	New Ring: Mbarara-Ntungamo-Isingiro-Mbarara	-	-	1*100G	1*100G
5	New Ring: Patongo-Karenga-Kaabong-Kotido-Patongo	-	-	4*10G	4*10G
6	New Ring: Karuma-Gulu-Elegu-Kitgum-Patongo-Lira-Karuma	-	4*10G	1*100G	(4*10G)+(1*100G)
7	New Ring: Karuma-Pakwach-Buliisa-Hoima-Masindi-Karuma	-	6*10G	1*100G	(6*10G)+(1*100G)

Section VII – Purchaser's Requirements, Pg.209

LOT 2: Network Upgrade

3.4. Operational Monitoring, Diagnostics, and Troubleshooting



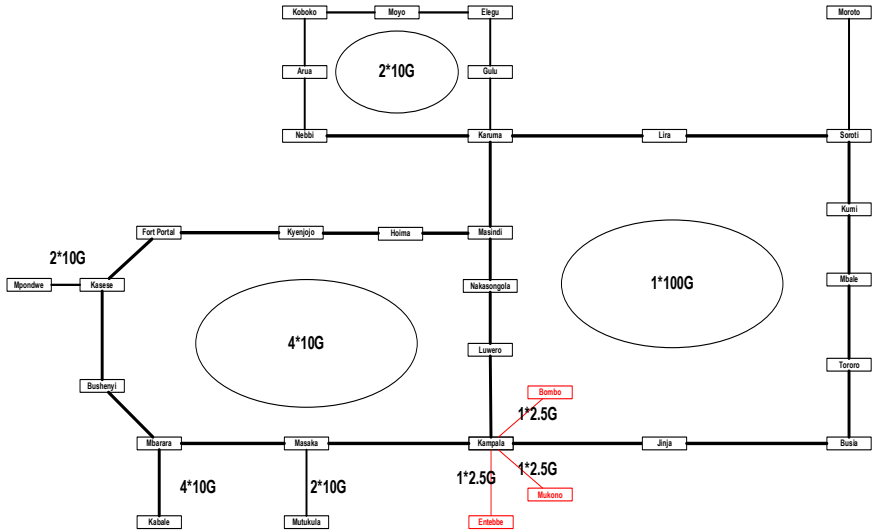
Section VII – Purchaser's Requirements, Pg.209

LOT 2: Network Upgrade

3.4. Operational Monitoring, Diagnostics, and Troubleshooting

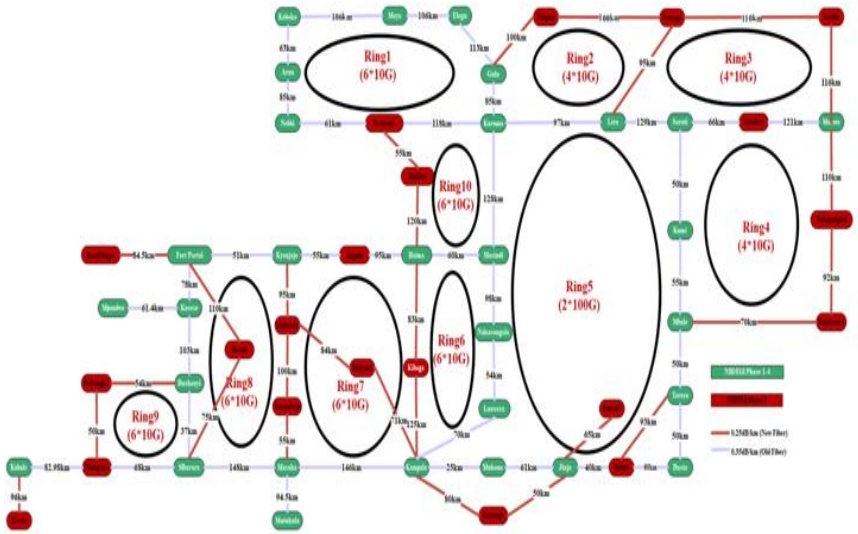
Phase 1 – 4 Existing Transmission Capacity

Inserted



Phase 5 Planned Transmission Capacity

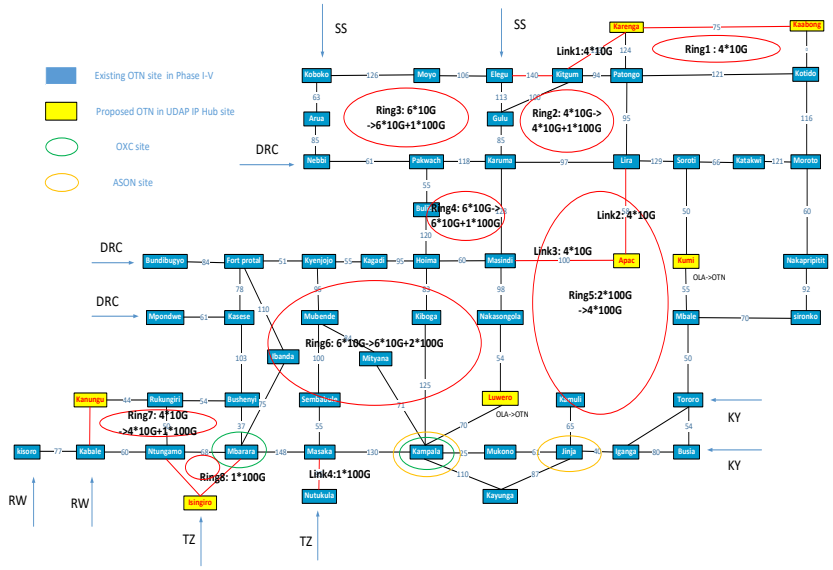
Insert



Phase 6 Planned Transmission Capacity (UDAP Lot 2: NBI Upgrade)

Amended and Inserted

Ring 8: 1*100G



Section VII – Purchaser's Requirements, Pg.211 **LOT 1: Network Extension** **2. Optical Fiber Cable Construction** **2.1. Aerial Optical Fibre Cable Specification [ADSS-12~288B1.3]**	Section VII – Purchaser's Requirements, Pg.211 **LOT 1: Network Extension** **2. Optical Fiber Cable Construction** **Inserted:** **Note:** For the Optical Fiber Cable Construction, it is mandatory that all specified cable types, including those used for aerial, underground, and underwater forms of connectivity, be manufactured with a standard capacity of 96 optical fibers (cores). The 96-core standard is established to meet the current and anticipated fiber capacity requirements, providing sufficient capacity for future upgrades on the backbone network. This specification uniformly applies across all project segments, ensuring that every cable installation within the scope of this project conforms to the stated core count requirement. **2.1. Aerial Optical Fibre Cable Specification [ADSS-12~288B1.3]**

Section VII – Purchaser's Requirements, Pg.246

5. ACCEPTANCE TEST PLAN: ACTIVE EQUIPMENT (IP & OTN DEPLOYMENT)

#	Sub-component	Requirements	Pass/Fail	Remarks
11.1.	**IP Equipment Supply and Deployment**			
11.1.1.	**IP Backbone Router Specifications**			
	Hardware Architecture	- Switching capacity: ≥ 4.8 Tbps - Forwarding performance: ≥ 450Mpps - Compact form factor - High port capacity - 6*100GE ports* - *60*10GE ports - Redundancy features - Independent heat dissipation channel - Global market share top 5 for last 5 years		

Section VII – Purchaser's Requirements, Pg.246

5. ACCEPTANCE TEST PLAN: ACTIVE EQUIPMENT (IP & OTN DEPLOYMENT)

Amended:

-Switching Capacity: ≥ 3 Tbps

#	Sub-component	Requirements	Pass/Fail	Remarks
11.1.	**IP Equipment Supply and Deployment**			
11.1.1.	**IP Backbone Router Specifications**			
	Hardware Architecture	- Switching capacity: ≥ 3 Tbps - Forwarding performance: ≥ 450Mpps - Compact form factor - High port capacity - 6*100GE ports* - *60*10GE ports - Redundancy features - Independent heat dissipation channel - Global market share top 5 for last 5 years		

Section VII – Purchaser's Requirements, Pg.233 2.4.2. IP Access Router Specifications a) Router Hardware Requirements Interfaces: At least 8 GE RJ45 LAN, at least 2*10GE SPE+/2.5GE Copper WAN and 4*GE electrical +4*GE optical LAN	Section VII – Purchaser's Requirements, Pg.233 2.4.2. IP Access Router Specifications **Amended:** a) Router Hardware Requirements Interfaces: At least 2*10GE SPE+/2.5GE Copper WAN and 4*GE electrical + 4*GE optical LAN
Section VII – Purchaser's Requirements, Pg.235 **LOT 2: NETWORK UPGRADE** **2.5. DWDM PLATFORM SUPPLY & DEPLOYMENT REQUIREMENTS** **2.5.1. MULTI-SERVICE OPTICAL TRANSMISSION EQUIPMENT** i. Subrack Size: The subrack dimensions shall not be more than 5U, ensuring optimal space utilization across various installation environments.	Section VII – Purchaser's Requirements, Pg.235 **LOT 2: NETWORK UPGRADE** **2.5. DWDM PLATFORM SUPPLY & DEPLOYMENT REQUIREMENTS** **2.5.1. MULTI-SERVICE OPTICAL TRANSMISSION EQUIPMENT** **Amended:** i. Subrack Size: The subrack dimensions shall ensure optimal space utilization across various installation environments.

Section VII – Purchaser's Requirements, Pg.198

3. IP

3.1. IP Backbone Router Deployment Plan

Deploy IP Backbone Routers as follows:

#	Proposed Location	No.
1	Kikagati Border Point	1
2	Orukinga And Nakivale Refugee Hosting Communities	2
3	Rukiga DLG	1
4	Rubanda DLG	1
5	Kanungu DLG	1
6	Lamia Border Point	1
7	Bwindi National Park	1
8	Bukomansimbi DLG	1
9	Kazo DLG	1
10	Kitagwenda DLG	1
11	Kyaka II Refugee Hosting Community	1
12	Gomba DLG	1
13	Butambala DLG	1
14	Kasanda DLG	1
15	Kahunge & Rwanwanja Refugee Hosting Communities	2
16	Kakuube DLG	1
17	Kyangwali Refugee Hosting Community	1
18	Biso TC/Butiaba	1
19	Kyankwanzi DLG	1
20	Kiryandongo Refugee Hosting Community	1
21	Luwero Transmission Station	1
22	Kampala Refugee Hosting Community	1
23	Katosi TC	1
24	Nkokonjeru TC	1
25	Buvuma DLG	1
26	Bugweri DLG	1
27	Kumi Transmission Station	1

Section VII – Purchaser's Requirements, Pg.198

3. IP

3.1. IP Backbone Router Deployment Plan

Deploy IP Backbone Routers as follows:

Inserted:

#48. Isingiro DLG

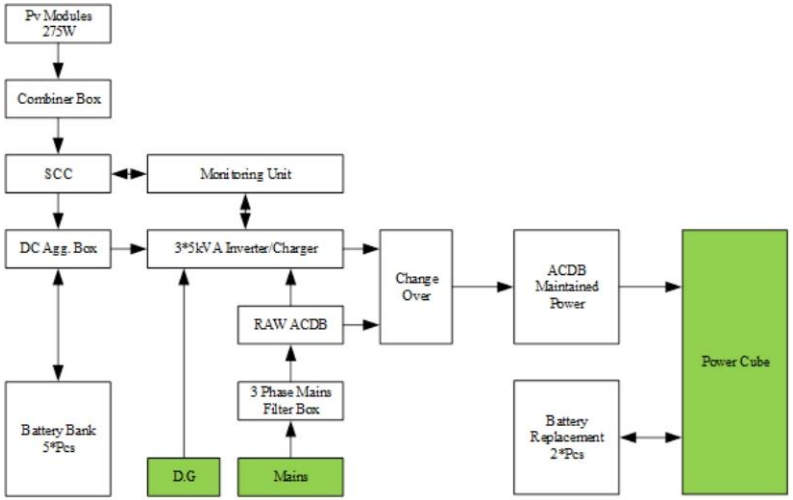
#	Proposed Location	No.
1	Kikagati Border Point	1
2	Orukinga And Nakivale Refugee Hosting Communities	2
3	Rukiga DLG	1
4	Rubanda DLG	1
5	Kanungu DLG	1
6	Lamia Border Point	1
7	Bwindi National Park	1
8	Bukomansimbi DLG	1
9	Kazo DLG	1
10	Kitagwenda DLG	1
11	Kyaka II Refugee Hosting Community	1
12	Gomba DLG	1
13	Butambala DLG	1
14	Kasanda DLG	1
15	Kahunge & Rwanwanja Refugee Hosting Communities	2
16	Kakuube DLG	1
17	Kyangwali Refugee Hosting Community	1
18	Biso TC/Butiaba	1
19	Kyankwanzi DLG	1
20	Kiryandongo Refugee Hosting Community	1
21	Luwero Transmission Station	1
22	Kampala Refugee Hosting Community	1
23	Katosi TC	1

28	Namisindwa DLG	1
29	Lwakhakha Border Post	1
30	Kapelepyong DLG	1
31	Kaabong DLG	1
32	Kamion Border Point	1
33	Karenga DLG	1
34	Namo-Kora TC	1
35	Kalongo TC	1
36	Agago DLG	1
37	Omoro DLG	1
38	Kalaki DLG	1
39	Kwania DLG	1
40	Apac DLG	1
41	Palabek Refugee Hosting Community	1
42	Baratuku Refugee Hosting Community	1
43	Bidi Bidi Refugee Hosting Communities	2
44	Obongi DLG	1
45	Terego DLG	1
46	Madi-Okollo DLG	1
47	Zombo DLG	1
	Total	**50**

24	Nkokonjeru TC	1
25	Buvuma DLG	1
26	Bugweri DLG	1
27	Kumi Transmission Station	1
28	Namisindwa DLG	1
29	Lwakhakha Border Post	1
30	Kapelepyong DLG	1
31	Kaabong DLG	1
32	Kamion Border Point	1
33	Karenga DLG	1
34	Namo-Kora TC	1
35	Kalongo TC	1
36	Agago DLG	1
37	Omoro DLG	1
38	Kalaki DLG	1
39	Kwania DLG	1
40	Apac DLG	1
41	Palabek Refugee Hosting Community	1
42	Baratuku Refugee Hosting Community	1
43	Bidi Bidi Refugee Hosting Communities	2
44	Obongi DLG	1
45	Terego DLG	1
46	Madi-Okollo DLG	1
47	Zombo DLG	1
48	Isingiro DLG	1
	Total	**51**

Section VII – Purchaser's Requirements, Pg.167

3.3.2. SITE POWER ENHANCEMENT AT TRANSMISSION STATIONS



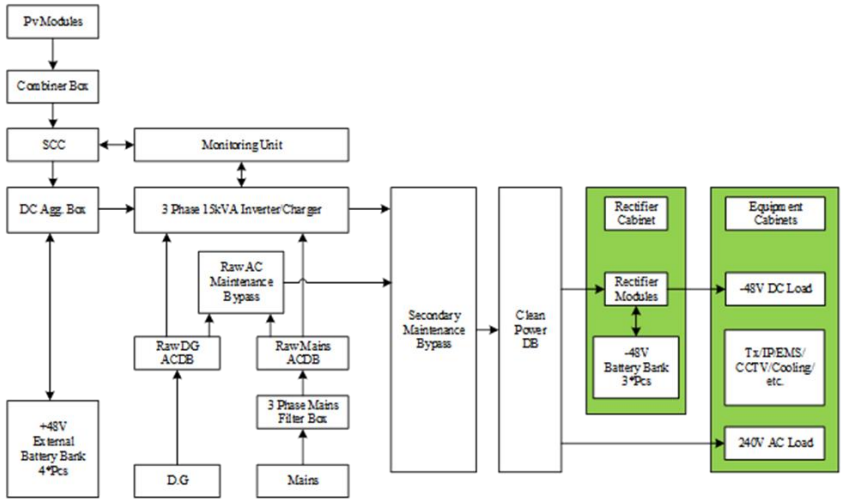
i. Upgrade the hybrid power infrastructure at the 32 data transmission stations implemented in previous phases (1 to 4). This is expected to boost system stability, improve reliability, and reduce the dependency on diesel generators and conventional grid power sources. By doing so, it is anticipated to significantly reduce operational disruptions and alleviate maintenance burdens.

ii. Mpigi DLG, Lukaya, Lwengo DLG, Lyantonde DLG, Kalisizo DLG, Ntungamo DLG, Sheema DLG, Rubirizi DLG, Ibanda DLG, Kamwenge DLG, Kibiito, Kagadi DLG, Kyegegwa DLG, Mubende (UNRA), Mityana (URA), Mityana DLG, Kiryandongo DLG, Pakwach DLG, Yumbe DLG, Adjumani DLG, Dokolo DLG, Katakwi DLG, Bukedea DLG, Iganga DLG, Bugiri DLG, Malaba (URA), Lugazi Municipal Council.

Section VII – Purchaser's Requirements, Pg.167

3.3.2 SITE POWER ENHANCEMENT AT TRANSMISSION STATIONS

Amended:



i. Upgrade the hybrid power infrastructure at the 32 data transmission stations implemented in previous phases (1 to 4). This is expected to boost system stability, improve reliability, and reduce the dependency on diesel generators and conventional grid power sources. By doing so, it is anticipated to significantly reduce operational disruptions and alleviate maintenance burdens.

Removed:

ii. Mpigi DLG, Lukaya, Lwengo DLG, Lyantonde DLG, Kalisizo DLG, Ntungamo DLG, Sheema DLG, Rubirizi DLG, Ibanda DLG, Kamwenge DLG, Kibiito, Kagadi DLG, Kyegegwa DLG, Mubende (UNRA), Mityana (URA), Mityana DLG, Kiryandongo

	DLG, Pakwach DLG, Yumbe DLG, Adjumani DLG, Dokolo DLG, Katakwi DLG, Bukedea DLG, Iganga DLG, Bugiri DLG, Lugazi Municipal Council. **Inserted:** ii. The breakdown of the existing solar plant capacities for the existing 32 transmission sites is in the table below:

S/N	Site Name	Installed Solar Power Plant (KW)
1	Kabale	4
2	Hoima	4
3	Kyenjojo	4
4	Bombo	5
5	Kumi	5
6	Tororo	5
7	Nakasongola	5
8	Entebbe	6
9	Busia	6
10	Lira	6
11	Luwero	6
12	Mbale	6
13	Mukono	6
14	Soroti	6
15	Masaka	6
16	Mutukula	6
17	Bushenyi	6
18	Kasese	6
19	Fort Portal	6
20	Masindi	6
21	Gulu	6
22	Elegu	6
23	Kampala	7
24	Jinja	7
25	Mbarara	7
26	Karuma	7.2
27	Mpondwe	4.5
28	Moroto	4.5
29	Moyo	4.5
30	Koboko	4.5
31	Arua	4.5
32	Nebbi	4.5

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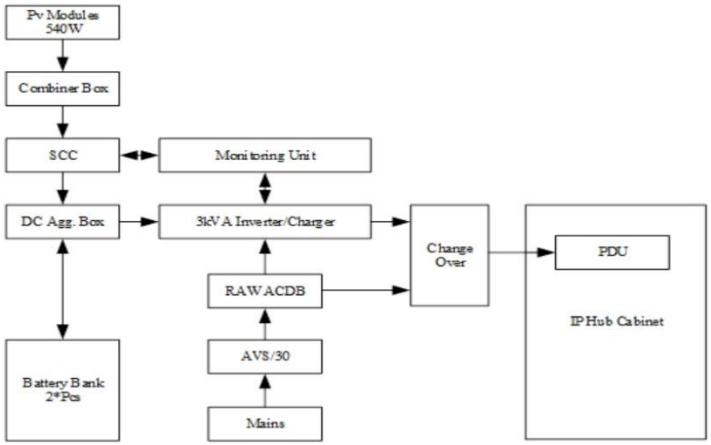
3.3.3. SITE POWER DEPLOYMENT AT HUB SITES

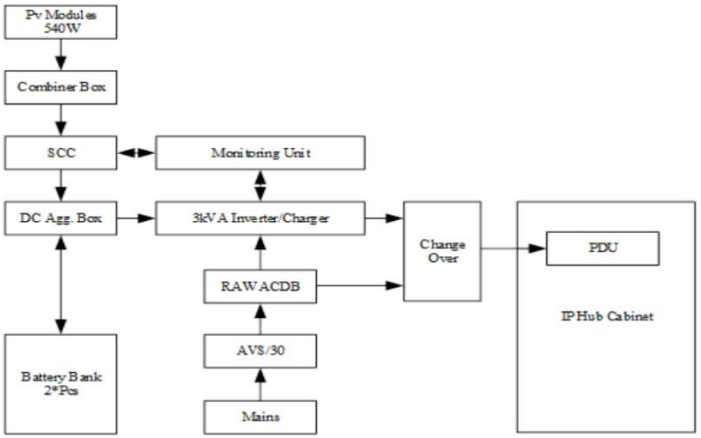


i. Similarly, implement solar plants at twenty-seven (27) IP hub sites to diversify power sources and ensure uninterrupted operations. As these sites currently rely solely on mains supply, a hybrid solution is crucial for seamless power provision.

ii. Initially, the main source of power for each transmission station was grid hydro power backed-up by a diesel generator. Improvements were later made by installing solar plants that support these transmission stations for a big part of the day. Further greening of these stations is still required especially with expansion of the network, stability of the transmission stations is critical in maintenance. Several regions still suffer frequent power outages triggering use of diesel generators. This results in frequent travels to

Section VII – Purchaser's Requirements, Pg.168

3.3.3. SITE POWER DEPLOYMENT AT HUB SITES



i. Similarly, implement solar plants at twenty-seven (27) IP hub sites to diversify power sources and ensure uninterrupted operations. As these sites currently rely solely on mains supply, a hybrid solution is crucial for seamless power provision.

Inserted

ii. The proposed 27 IP hubs are as follows: Mpigi DLG, Lukaya, Lwengo DLG, Lyantonde DLG, Kalisizo DLG, Ntungamo DLG, Sheema DLG, Rubirizi DLG, Ibanda DLG, Kamwenge DLG, Kibiito, Kagadi DLG, Kyegegwa DLG, Mubende (UNRA), Mityana (URA), Mityana DLG, Kiryandongo DLG, Pakwach DLG, Yumbe DLG, Adjumani DLG, Dokolo DLG, Katakwi DLG, Bukedea DLG, Iganga DLG, Bugiri DLG, Maracha DLG, Lugazi Municipal Council.

the stations to operate the generators; topping up fuel, servicing, manual startup in case automatic running is not possible. iii. More greening will make it cheaper and more convenient to maintain these stations.	iii. Initially, the main source of power for each transmission station was grid hydro power backed-up by a diesel generator. Improvements were later made by installing solar plants that support these transmission stations for a big part of the day. Further greening of these stations is still required especially with expansion of the network, stability of the transmission stations is critical in maintenance. Several regions still suffer frequent power outages triggering use of diesel generators. This results in frequent travels to the stations to operate the generators; topping up fuel, servicing, manual startup in case automatic running is not possible. iv. More greening will make it cheaper and more convenient to maintain these stations.

Section VII – Purchaser's Requirements, Pg.198

2. HYBRID POWER DEPLOYMENT

2.1. SITE POWER ENHANCEMENT AT EXISTING TRANSMISSION STATIONS

i. Increase solar plant capacity to a minimum of 12kW, including necessary restructuring of installed panel frames.

ii. Replace current lead-acid battery banks with lithium cell battery bank, each with a capacity of 200Ah for at least 48-hour support. Batteries should be mounted in scalable racks.

iii. Install 15kVA inverters/chargers.

iv. Enhance equipment earthing to within 1.0 Ohm.

v. Install lightning arrestor systems.

vi. Implement a power supply remote network management system to monitor all power systems deployed.

Section VII – Purchaser's Requirements, Pg.198

2. HYBRID POWER DEPLOYMENT

2.1. SITE POWER ENHANCEMENT AT EXISTING TRANSMISSION STATIONS

Amended

i. The solar plant capacity must be increased to a minimum of 12kW. This includes the necessary restructuring of the installed panel frames to accommodate the increased capacity. The upgraded system should provide at least 48 hours of backup time for the existing systems.
ii. The existing lead-acid battery banks must be replaced with a 200Ah lithium-ion battery setup. This setup should consist of a +48V system with a 4-cell configuration and a -48V system with a 3-cell configuration, as specified in Addendum No.1, Section VII - Purchaser's Requirements, Pg.167 of the bidding document.
iii. The +48V external battery bank system must be mounted in scalable racks. The -48V battery banks are to be installed in the existing rectifier cabinet using standard 19" rack-mountable units.
iv. A 3-phase, 15KVA hybrid inverter/charger must be deployed. This equipment should include standard SNMP (Simple Network Management Protocol) capabilities for remote monitoring and management.
v. The proposed lithium-ion battery packs should be rack-mountable and must include an in-built Battery Management System (BMS) for monitoring and maintaining battery health and safety.
vi. The system's equipment grounding must be enhanced to achieve an earth resistance of within 1.0 ohm. Additionally,

	lightning arrestor systems must be deployed to protect the equipment from electrical surges. vii. A remote network management system must be implemented to monitor all deployed power systems. This system should provide real-time data and alerts, enabling efficient management and maintenance. viii. The proposals are not restricted to the amended schematic configuration diagram provided in Addendum No.1, Section VII - Purchaser's Requirements, Pg.167 of the bidding document. While this serves as the basic requirement for the solution, proposers are permitted to suggest alternative solutions, provided they meet the minimum requirements outlined above for an integrated hybrid solution.

Section VII – Purchaser's Requirements, Pg.230

2.3.3. RACK CABINET SUPPLY AND DEPLOYMENT IN IP HUBS

The related specifications are not stated in the purchaser's requirements section. However, the same is well captured in the Test Plan.

Section VII – Purchaser's Requirements, Pg.230

Insert:

2.3.3. RACK CABINET SUPPLY AND DEPLOYMENT IN IP HUBS

1	Cabinet Overview	- Intelligent IP hub cabinet - Space-efficient design - Transportable - Factory pre-tested and pre-installed components
2	Hardware Requirements	- Power system: 220/230/240VAC, 1Ph+N+PE, 50/60Hz, 63A - Cooling system: 3.5kW - Fire extinguishing module: Perfluorohexanone - Monitoring system: Remote Web Page Access - NMS compatibility
3	Aisle Containment	- Cold and Hot Aisle Containment
4	Installation Mode	- Compatibility with Concrete Floor or Raised Floor installation
5	Cable Route	- Compatibility with cable routing from the Top
6	Humidity and Temperature	- Compliance with 0℃ to 40℃, 5-95%
7	Altitude	- Compliance within 0~1000m
8	Maximum IT Load	- Compatibility with a 3kW load
9	Total Dimensions	- Dimensions: 600mm×2000mm×1100mm (W×H×D)
10	Available Space	- Compatibility with ≤27U
11	Protection Level	- IP20 protection level