No. RailTel/Tender/OT/NR/M&P/2020-21/MDWDM/02
Dated: 23.03.2021

Corrigendum-I

Sub: "Design, Supply, Installation, Testing & Commissioning of MDWDM System to provide Services to the Customer of RailTel"

Ref: E-Tender Notice No. RailTel/Tender/OT/NR/M&P/2020-21/MDWDM/02 dated 11.03.2021

With reference to the above mentioned open e-tender, based on the bidders queries, amendments to the tender conditions enclosed as Annexure-A are being issued (amended clauses/amendments only are being published with the rest of the document remaining as it is).

All other terms & conditions of tender document remain the same.

This issues with the approval of Competent Authority.

(Vivek Porwal)
General Manager/Marketing
For & on behalf of RailTel Corporation of India Ltd.

DA: (i) Annexure-A (total 3 pages)
(ii) Bidders Queries and Clarifications (total 5 pages)

AMENDMENTS TO THE TENDER CONDITIONS

Annexure-A

SN	Clause No.	Sub-Clause No.	Page No.	Existing Clause	Amended Clause
1	1.4	1	31	Next Generation (NG) new DWDM and MDWDM system shall be based on state of art Modern technology which drives high capacity cost effectively and lowers operational cost. NG DWDM and MDWDM system shall operate at discrete wavelengths in the C-band centered around 193.1 THz frequency as per ITU-T Rec.G.694.1 grid. The proposed DWDM transponder shall support transmission of single carrier channel with Software Configurable 100G & 200G line rate as per link budget requirement and Line Port shall be tunable to 100G/200G through software only to run different line rates to cover different application on the same card with no changes to any of the common equipment at the optical or photonic layer provided meeting link budget. Software Configurable 100G & 200G line rate will not be applicable for Muxponder (10X10G Clients) and Muxponder (10X10G Clients) shall support line rate and client rate as per traffic matrix requirement. DWDM link in Next Generation Optical Network shall be designed for 4 Tbps Capacity for DWDM and 800Gbps for MDWDM with End of Life (EoL) not less than 8 years. The NG DWDM and MDWDM system shall be designed for use in transport networks as a protocol transparent solution for a variety of client/services.	MDWDM system shall be based on state of art Modern technology which drives high capacity cost effectively and lowers operational cost. MDWDM system shall operate at discrete wavelengths in the C-band centered around 193.1 THz frequency as per ITU-T Rec.G.694.1 grid. The proposed DWDM transponder shall support transmission of single carrier channel with 10G & 100G line rate as per link budget requirement. DWDM link in Next Generation Optical Network shall be designed for 800Gbps for MDWDM with End of Life (EoL) not less than 8 years. The MDWDM system shall be designed for use in transport networks as a protocol transparent solution for a variety of client/services.
2	1.4	2	31	Bidder shall propose minimum 4-degree Flex Grid C- band WSS at ROADM sites in Backbone segment depicted in 1.2.1 for DWDM Network. Bidder shall propose minimum min. 8 Channel sites mux/demux with express port in OADM Sites for Metro DWDM.	Bidder shall propose minimum 8 Channel sites mux/demux with express port in OADM Sites for Metro DWDM.
3	1.4	3	31	WSS shall support full C-band spectrum i.e. 4000/4800 GHz for DWDM Network.	Deleted
4	1.4	4	31	Bidder shall consider OEQ (Optical equalizations) & regenerator sites as per long-haul design requirement in backbone segment.	Deleted
5	1.4	5	31	Bidder shall propose max two type of WSS module in DWDM Network i.e. ROADM, OEQ & Regenerator site for operational spare simplicity & in future any OEQ & Regenerator site shall be easily converted into the ROADM site with incremental hardware only.	Deleted
6	1.4	11	31	The WSS system for DWDM Network shall provide software controlled Variable Optical Attenuators (VOA). The optical power per channel must be adjusted automatically, without using external measurement equipment. The adjustment arising out of adding/removing channels has to be done without manual adjustment and shall be possible without affecting other channels; it shall either be triggered by a software command or automated.	The optical power per channel must be adjusted automatically, without using external measurement equipment. The adjustment arising out of adding/removing channels has to be done without manual adjustment and shall be possible without affecting other channels; it shall either be triggered by a software command or automated.

Annexure-A

SN	Clause No.	Sub-Clause No.	Page No.	Existing Clause	Amended Clause
7	1.4	13	31-32	The DWDM equipment shall have the provision for monitoring the performance of individual channel through overhead byte of OTUn/OTUCn. Also, in the case Ethernet support, there shall be the provision of analysis of Ethernet frames.	The DWDM equipment shall have the provision for monitoring the performance of individual channel through overhead byte of OTUn. Also, in the case Ethernet support, there shall be the provision of analysis of Ethernet frames.
8	1.4	14	32	There shall be the provisioning of power and wavelength monitoring points for external monitoring of power and wavelengths at the input/output points of the Booster Amplifier, ILA and Pre-amplifier. These points shall be suitably connectorized and connecting the measurement devices shall not affect the transmission of the main path. Power splitter modules with a ratio of 95%/5% shall be available to use them where needed.	The MDWDM equipment shall have the provision for power equalization.
9	1.4	24(h)	32-33	The above requirement shall hold for the optical amplifiers that are part of ROADM, Mux & Demux also.	The above requirement shall hold for the optical amplifiers that are part of Mux & Demux also.
10	1.4	30(b)	34	To support “East-West separation (EWS) i.e. the add/drop channel traversing the east direction shall not share common cards with add/drop channels in west direction	To support “East-West separation (EWS) i.e. the add/drop channel traversing the east direction shall not share common traffic cards with add/drop channels in west direction
11	1.4	30 (c)	34	ROADM node shall provide an integrated two-stage EDFA optical amplifier to offset various losses i.e., insertion loss for channel add/drop and fibre-attenuation etc. Upgrades to additional add/drop channels upto limits proposed, shall be hitless and shall be supported in field.	Deleted
12	1.4	30(e)	34	Reconfigurable optical add-drop multiplexer (ROADM) is a form of optical add-drop multiplexer that adds the ability to remotely configure wavelength in OADM system. This allows individual wavelengths carrying traffic channels to be added and dropped from a transport fiber without the need to convert the signals on all the WDM channels to electronic signals and back to optical signals.	Deleted
13	1.4	30(f)	34	Bidder shall propose minimum 4-degree directional Flex Gird ROADM for Backbone segment.	Deleted
14	1.4	30(g)	34	ROADM shall allow for remote configuration and reconfiguration	Deleted
15	1.4	30(h)	34	ROADMs shall allow automatic power balancing.	Deleted
16	1.4	30(i)	34	ROADM shall provide add/drop of 100G, 200G channel as offered bidder (0 to 40 channels for 100G Channel based solution or 0 to 20 Channels for 200G rates-based solution)	Deleted
17	1.4	30(k)	34	ROADM shall allow for remote configuration and reconfiguration	Deleted
18	1.4	30(l)	34	In ROADM, as it is not clear beforehand where a signal can be potentially routed, there is a necessity of power balancing of these signals. ROADMs shall allow automatic power balancing.	Deleted
19	1.4	30(m)	34	The ROADM shall be compact in size and shall be of low power consumption and low insertion loss type	Deleted

Annexure-A

SN	Clause No.	Sub-Clause No.	Page No.	Existing Clause	Amended Clause
20	1.4	30(p)	34	Each side of a ROADM is to be split logically and physically, ensuring that there are no single points of failure that would cause both east and west add/drop traffic to be lost. Mux & Demux should be provided in each direction at ROADM sites.	Deleted
21	1.4	30(q)	34	The WSS based ROADM must support "drop and continue" Power leveling of add wavelengths without the need for additional equipment required and ROADM solutions must provide the capability to add/drop all wavelengths running per degree if configured accordingly	Deleted
22	1.4	31	34	The following client interfaces or combinations thereof shall be supported on proposed client interface in Backbone DWDM Network. 1) 100GE 2) OTU4	Deleted
23	1.4	32	34	DWDM Line port shall support Post FEC BER 10-15 for all 100G & 200G rates.	DWDM Line port shall support Post FEC BER 10-15 for all 100G rates.
24	1.4	33	34	100/200G for protected circuits channel must be protected within ring against fiber cut. Traffic must survive against single fiber cut in each ring independently or simultaneously. The switching time must be less than 50 ms.	10/100G for protected circuits channel must be protected within ring against fiber cut. Traffic must survive against single fiber cut in each ring independently or simultaneously. The switching time must be less than 50 ms.
25	1.4	35	34	Proposed DWDM and MDWDM system shall be managed by NMS system for all the active component.	MDWDM system shall be managed by NMS system for all the active component.
26	1.4	37	35	100G Transponder shall provide following client protocol a. 100GE b. OTU4	Deleted
27	1.3.7	1.3.2.8	40	100/200G Transponder shall support OTU4 and OTUC2 DWDM line rate in pluggable/fixed module.	10/100G Transponder shall support OTU4 DWDM line rate in pluggable/fixed module.
28	7.5	7.5.1	94	The supplier/manufacturer shall give a call for inspection within six weeks of issue of LOA (Letter of Acceptance) when the material is ready to be supplied and ready for inspection.	The supplier/manufacturer shall give a call for inspection within one week of issue of LOA (Letter of Acceptance) when the material is ready to be supplied and ready for inspection.
29	7.5	7.5.5	94	The material should be offered for inspection within six weeks of issue of purchase order.	The material should be offered for inspection within one week of issue of purchase order.

No. RailTel/Tender/OT/NR/M&P/2020-21/MDWDM/02

BIDDERS QUERIES AND CLARIFICATIONS

Ref: E-Tender Notice No. RailTel/Tender/OT/NR/M&P/2020-21/MDWDM/02 dated 11.03.2021

SN	Chapter / Clause No.	Sub-Clause No.	Page No.	Clause Description	Query from Bidder	RailTel's Response
1	1.4	1	31	Next Generation (NG) new DWDM and MDWDM system shall be based on state of art Modern technology which drives high capacity cost effectively and lowers operational cost. NG DWDM and MDWDM system shall operate at discrete wavelengths in the C-band centered around 193.1 THz frequency as per ITU-T Rec.G.694.1 grid. The proposed DWDM transponder shall support transmission of single carrier channel with Software Configurable 100G & 200G line rate as per link budget requirement and Line Port shall be tunable to 100G/200G through software only to run different line rates to cover different application on the same card with no changes to any of the common equipment at the optical or photonic layer provided meeting link budget. Software Configurable 100G & 200G line rate will not be applicable for Muxponder (10X10G Clients) and Muxponder (10X10G Clients) shall support line rate and client rate as per traffic matrix requirement. DWDM link in Next Generation Optical Network shall be designed for 4 Tbps Capacity for DWDM and 800Gbps for MDWDM with End	Mentioned clause refers to 200G line which is not part of asked network. So, clause should be amended to : MDWDM system shall be based on state of art Modern technology which drives high capacity cost effectively and lowers operational cost. MDWDM system shall operate at discrete wavelengths in the C-band centered around 193.1 THz frequency as per ITU-T Rec.G.694.1 grid. The proposed DWDM transponder shall support transmission of single carrier channel with 10G & 100G line rate as per link budget requirement.	Corrigendum-I may be referred.
2	1.4	2	31	Bidder shall propose minimum 4-degree Flex Grid C-band WSS at ROADM sites in Backbone segment depicted in 1.2.1 for DWDM Network. Bidder shall propose minimum min. 8 Channel sites mux/demux with express port in OADM Sites for Metro DWDM.	WSS is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
3	1.4	3	31	WSS shall support full C-band spectrum i.e. 4000/4800 GHz for DWDM Network.	WSS is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
4	1.4	4	31	Bidder shall consider OEQ (Optical equalizations) & regenerator sites as per long-haul design requirement in backbone segment.	Long-Haul is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.

SN	Chapter / Clause No.	Sub-Clause No.	Page No.	Clause Description	Query from Bidder	RailTel's Response
5	1.4	5	31	Bidder shall propose max two type of WSS module in DWDM Network i.e. ROADM, OEQ & Regenerator site for operational spare simplicity & in future any OEQ & Regenerator site shall be easily converted into the ROADM site with incremental hardware only.	WSS is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
6	1.4	11	31	The WSS system for DWDM Network shall provide software controlled Variable Optical Attenuators (VOA). The optical power per channel must be adjusted automatically, without using external measurement equipment. The adjustment arising out of adding/removing channels has to be done without manual adjustment and shall be possible without affecting other channels; it shall either be triggered by a software command or automated	WSS is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
7	1.4	13	31	The DWDM equipment shall have the provision for monitoring the performance of individual channel through overhead byte of OTUn/OTUCn. Also, in the case Ethernet support, there shall be the provision of analysis of Ethernet frames.	OTUCn is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
8	1.4	14	32	There shall be the provisioning of power and wavelength monitoring points for external monitoring of power and wavelengths at the input/output points of the Booster Amplifier, ILA and Pre-amplifier. These points shall be suitably connectorized and connecting the measurement devices shall not affect the transmission of the main path. Power splitter modules with a ratio of 95%/5% shall be available to use them where needed	Power monitoring is not required in solution. So, we request you to remove the clause	Corrigendum-I may be referred.
9	1.4	24(h)	32	The above requirement shall hold for the optical amplifiers that are part of ROADM, Mux & Demux also.	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
10	1.4	30(b)	34	To support “East-West separation (EWS) i.e. the add/drop channel traversing the east direction shall not share common cards with add/drop channels in west direction	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
11	1.4	30 (c)	34	ROADM node shall provide an integrated two-stage EDFA optical amplifier to offset various losses i.e., insertion loss for channel add/drop and fibre-attenuation etc. Upgrades to additional add/drop channels upto limits proposed, shall be hitless and shall be supported in field.	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.

SN	Chapter / Clause No.	Sub-Clause No.	Page No.	Clause Description	Query from Bidder	RailTel's Response
12	1.4	30(d)	34	They shall be dual fiber	ROADM is not part of asked solution. So, we request you to remove the clause	Tender clause is clear, no modification required.
13	1.4	30(e)	34	Reconfigurable optical add-drop multiplexer (ROADM) is a form of optical add-drop multiplexer that adds the ability to remotely configure wavelength in OADM system. This allows individual wavelengths carrying traffic channels to be added and dropped from a transport fiber without the need to convert the signals on all the WDM channels to electronic signals and back to optical signals	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
14	1.4	30(f)	34	Bidder shall propose minimum 4-degree directional Flex Gird ROADM for Backbone segment	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
15	1.4	30(g)	34	ROADM shall allow for remote configuration and reconfiguration	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
16	1.4	30(h)	34	ROADMs shall allow automatic power balancing	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
17	1.4	30(i)	34	ROADM shall provide add/drop of 100G, 200G channel as offered bidder (0 to 40 channels for 100G Channel based solution or 0 to 20 Channels for 200G rates-based solution)	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
18	1.4	30(j)	34	The planning of entire bandwidth assignment need not be carried during initial deployment of a system. The configuration can be done as and when required.	ROADM is not part of asked solution. So, we request you to remove the clause	Tender clause is clear, no modification required.
19	1.4	30(k)	34	The planning of entire bandwidth assignment need not be carried during initial deployment of a system. The configuration can be done as and when required.	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
20	1.4	30(l)	34	In ROADM, as it is not clear beforehand where a signal can be potentially routed, there is a necessity of power balancing of these signals. ROADMs shall allow automatic power balancing.	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
21	1.4	30(m)	34	The ROADM shall be compact in size and shall be of low power consumption and low insertion loss type	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
22	1.4	30(n)	34	It shall provide Express channel equalization	ROADM is not part of asked solution. So, we request you to remove the clause	Tender clause is clear, no modification required.
23	1.4	30(o)	34	It shall be highly reliable	ROADM is not part of asked solution. So, we request you to remove the clause	Tender clause is clear, no modification required.

SN	Chapter / Clause No.	Sub-Clause No.	Page No.	Clause Description	Query from Bidder	RailTel's Response
24	1.4	30(p)	34	Each side of a ROADM is to be split logically and physically, ensuring that there are no single points of failure that would cause both east and west add/drop traffic to be lost. Mux & Demux should be provided in each direction at ROADM sites	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
25	1.4	30(q)	34	The WSS based ROADM must support “drop and continue” Power leveling of add wavelengths without the need for additional equipment required and ROADM solutions must provide the capability to add/drop all wavelengths running per degree if configured accordingly	ROADM is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
26	1.4	31	34	The following client interfaces or combinations thereof shall be supported on proposed client interface in Backbone DWDM Network 1) 100GE 2) OTU4	100GE/OTU4 is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
27	1.4	32	34	DWDM Line port shall support Post FEC BER 10-15 for all 100G & 200G rates	100GE/200G is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
28	1.4	33	34	100/200G for protected circuits channel must be protected within ring against fiber cut. Traffic must survive against single fiber cut in each ring independently or simultaneously. The switching time must be less than 50 ms.	100GE/200G is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
29	1.4	34	34	Protection switching shall be triggered based on Loss of Signal and Pre-FEC BER signal failure/Degrade signal failure.		Tender clause is clear, no modification required.
30	1.4	35	34	Proposed DWDM and MDWDM system shall be managed by NMS system for all the active component	DWDM is not part of solution. So, request you to remove word "DWDM" from the clause	Corrigendum-I may be referred.
31	1.4	37	35	100G Transponder shall provide following client protocol a. 100GE b. OTU4	100GE/200G is not part of asked solution. So, we request you to remove the clause	Corrigendum-I may be referred.
32	4.7	4.7	47	DWDM Coloured 10G SFP+	10G coloured SFP asked is from Router prespective, which is not part of solution. So, request you to remove the clause.	Tender clause is clear, no modification required.

SN	Chapter / Clause No.	Sub-Clause No.	Page No.	Clause Description	Query from Bidder	RailTel's Response
33	1.3.2	1.3.2.1	40	100G Transponder shall support 100GbE &OTU4 client rates with the same plugable/fixed module	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
34	1.3.3	1.3.2.2	40	100G Muxponder shall support 10x10G client ports. 10G client shall support 10GbE LAN-PHY, OC-192, STM-64, 10G WAN-PHY, 10G FC, OUT2 &OUT2e data rates with same XFP/SFP+ modules	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
35	1.3.4	1.3.2.3	40	All client ports shall support flexible configurations i.e. it shall be possible to configure all client ports in any mix of all supported client rates at the same time.	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
36	1.3.5	1.3.2.4	40	100G Transponder and Muxponders shall support OTU4 DWDM line rate	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
37	1.3.6	1.3.2.5	40	100G Transponders and Muxponders shall support pluggable/fixed interfaces for all client side and line side interface	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
38	1.3.7	1.3.2.6	40	100G Transponder and Muxponder shall support integrated PRBS test generators and loop-back capabilities	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
39	1.3.7	1.3.2.7	40	System should support Optical channel/path protection at DWDM line side or client side	100G transponder is not part of asked solution. So, we request you to remove the clause.	Tender clause is clear, no modification required.
40	1.3.7	1.3.2.8	40	System should support Optical channel/path protection at DWDM line side or client side	100G transponder is not part of asked solution. So, we request you to remove the clause.	Corrigendum-I may be referred.
41	7.5	7.5.1	94	The supplier/manufacturer shall give a call for inspection within six weeks of issue of LOA (Letter of Acceptance) when the material is ready to be supplied and ready for inspection.	Pls correct inspection call timeline of six week to one week of issue of LOA as total link commissioning time is 30 days.	Corrigendum-I may be referred.