ANNEXURE-4

NETWORK RECONFIGURATION

ANNEXURE-4

33kV Loss Reduction by Network Reconfiguration

Summary of proposal details for Network Reconfiguration:

Sl. No.	*Circle*	*Division*	*Name of 33kV Feeder*	*Proposal Details*	*Costing in Cr*	*Annexure No.*
1	BBSR-I	BCDD-2	Barang	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.	₹ 3	Annexure-4.1
2	Cuttack	AED	Athagara	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.	₹ 5	Annexure-4.2
TOTAL					**₹ 8**	

33kV Loss reduction by Network Reconfiguration

1.0 Proposal for loss reduction of 33kV Barang Feeder:

Proposal: New 33kV interlinking line from 33kV Naraj feeder (near Ashok Leyland) to Barang PSS for loss reduction of 33kV Barang feeder.

Objective: To ensure loss reduction and increase reliability of the existing network.

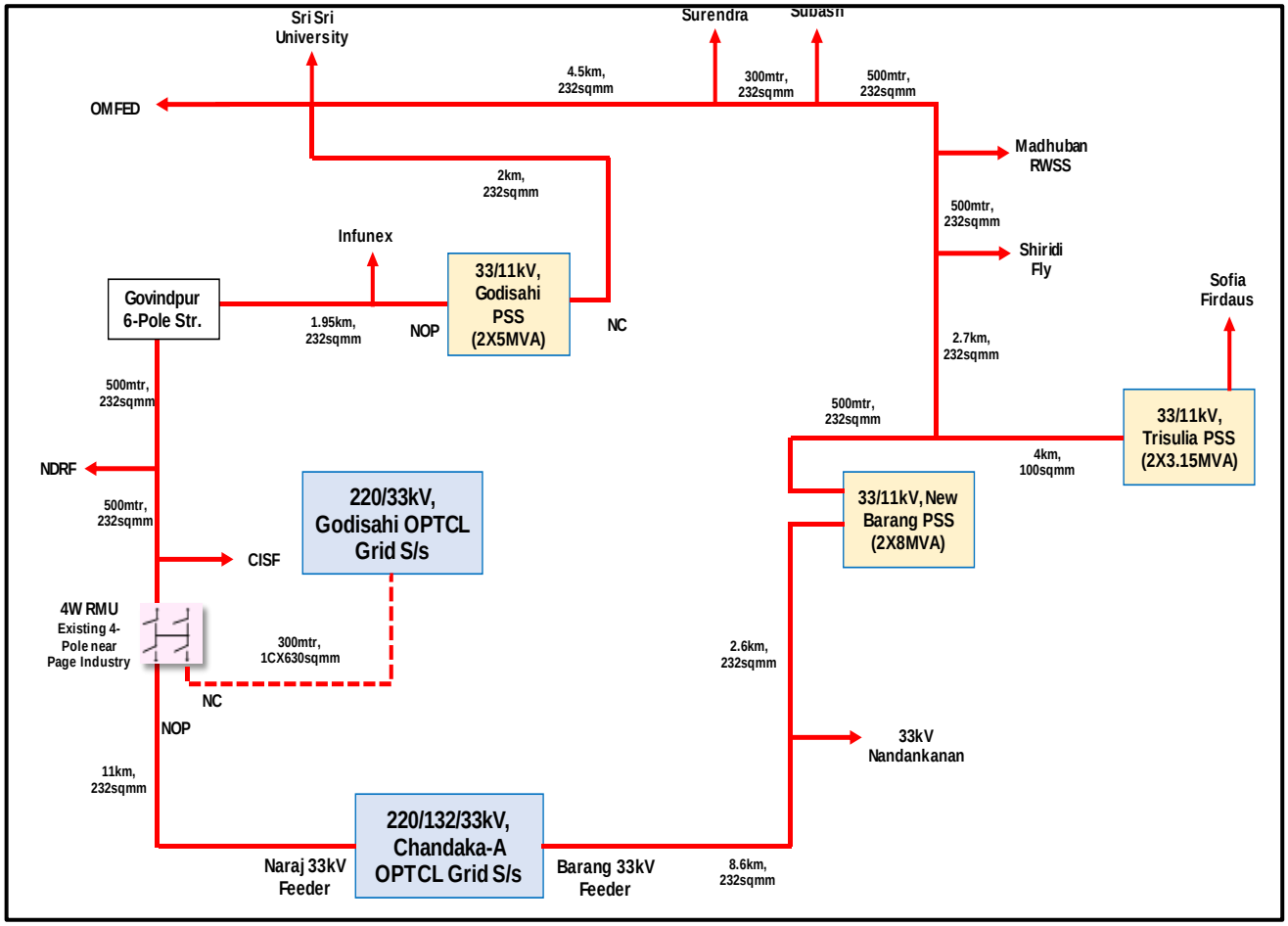
Existing Scenario:

- At present, 33kV Barang feeder is emanating from 132/33kV Chandaka-A GSS and feeding power supply to high value consumer along with 33/11kV Barang and Godisahi PSS. Total length of the 33kV feeder is 30km and the peak loading at Summer'25 is 20MVA.
- Present details 33kV feeder is shown below.

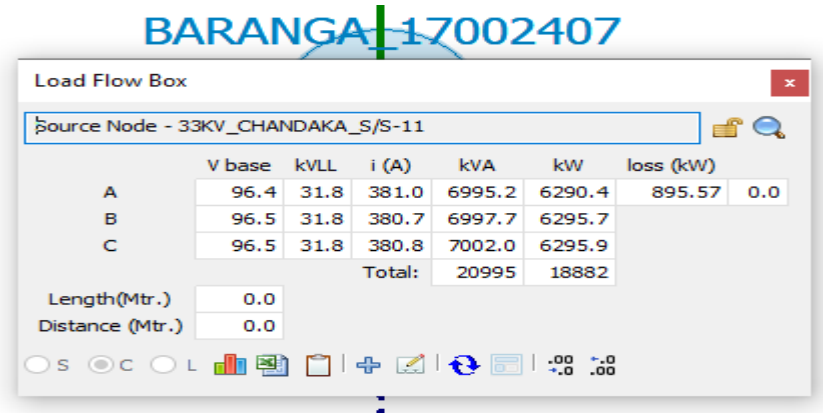
Existing Summer'23 Loading and projected load at 33kV Barang Feeder:

33kV Feeder Name	Feeder Capacity (MVA)	Peak Loading Summer'23 (MVA)	% Loading	Feeder Overloading Status (AS IS)	Projected load Summer'25 (MVA)	% Loading	Feeder Overloading Status	Loss (kW)
Barang	26	14	53.85%	OK	20.16	77.54%	OK	896
Naraj	26	0	0.00%	OK	0.00	0.00%	OK	0

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	i (A)	kVA	kW	loss (kW)	
A	96.4	31.8	381.0	6995.2	6290.4	895.57	0.0
B	96.5	31.8	380.7	6997.7	6295.7		
C	96.5	31.8	380.8	7002.0	6295.9		
			Total:	20995	18882		

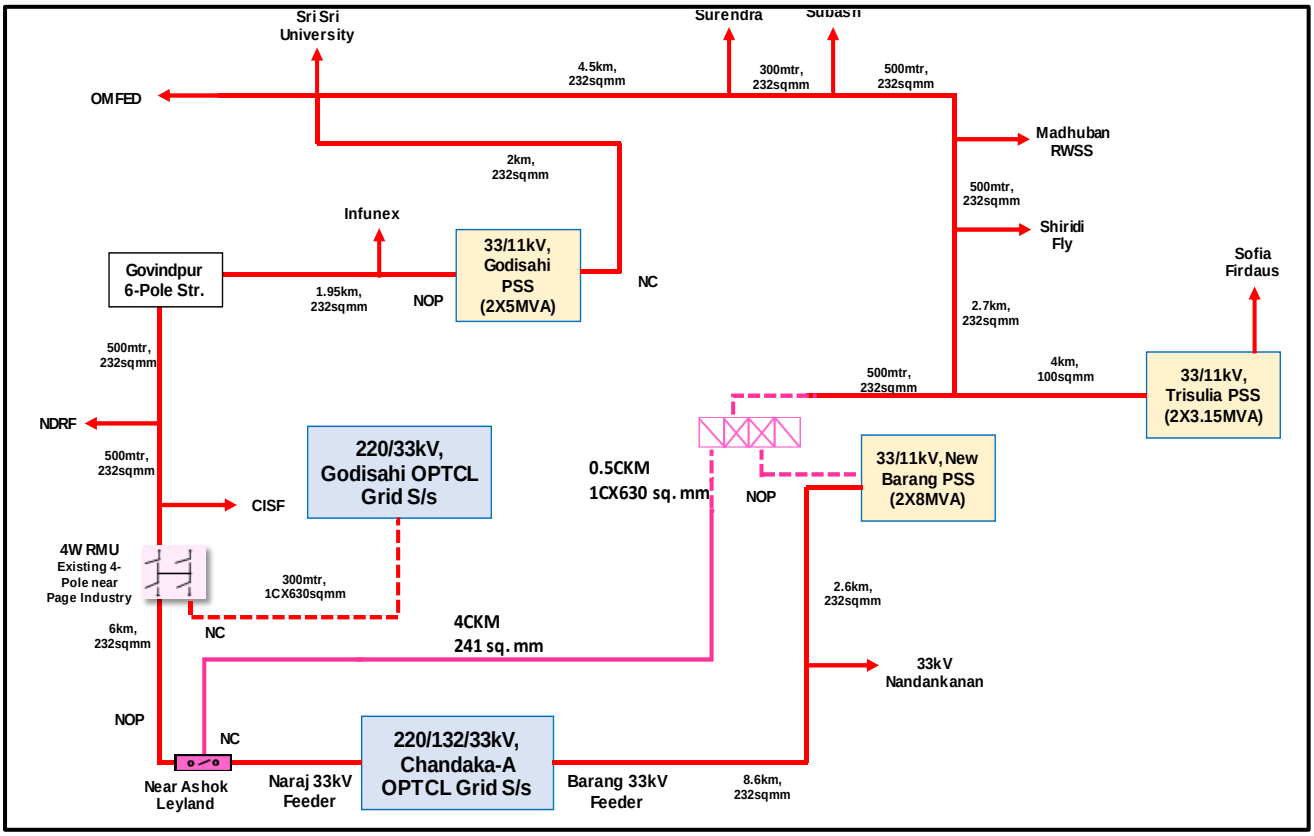
Length(Mtr.)	0.0
Distance (Mtr.)	0.0

Proposed Scenario:

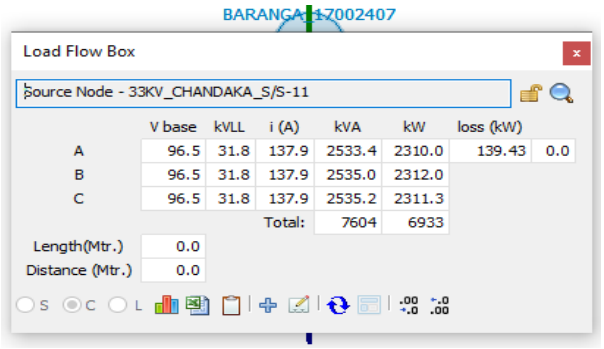
- 4.5Ckm new interlinking line from Naraj feeder (near Ashok Leyland) to Barang PSS.
- Installation of 1nos. of 33kV RMUs at Barang PSS to bifurcate load of 33kV Barang fdr.
- New NOP is proposed with interlinking line of Naraj feeder to reduce 33kV loss at Baran feeder.

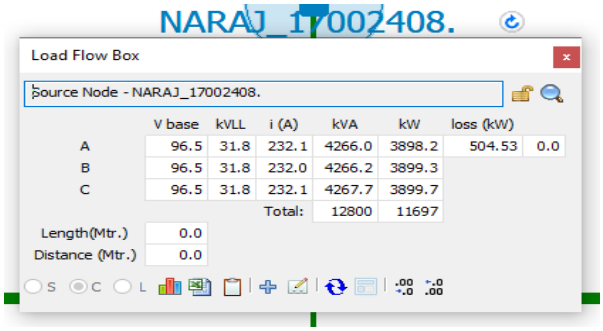
33kV Feeder Name	Feeder Capacity (MVA)	Projected load Summer'25 (MVA)	% Loading	Feeder Overloading Status	Loss (kW)
Barang	26	7.60	29.23%	OK	139
Naraj	26	12.80	49.23%	OK	504

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:





Detailed Scope of Work:

- New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.
- Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm."

BoQ:

ANNEXURE-4.1			
TP CENTRAL ODISHA DISTRIBUTION LIMITED			
Name of the Division :-	**BCDD-II**		
Name of the Sub-Division : -	PERIPHERI		
Name of the Work :-	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.		
Scope:-	Part A:- New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.Part B:- Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm.		
Names of Schemes: -	TPCODL CAPEX(FY 24-25)		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount**
1	A	Part A:- New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.	1,55,51,465.79
2	B	Part B:- Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm.	98,48,409.15
		Total Amount	**2,53,99,874.94**
		Total Amount (In Cr)	**2.54**
Total estimated cost is Rs. 2.54 Crore. (On TPCODL Capex Scheme)			

Cost Estimate: ₹ 2.54Cr. (For detailed BoQ refer Annexure-4.1).

Benefit:

- Reduction of 33kV loss in 33kV Barang Feeder.
- Ensuring reliability of power supply for consumers & connected PSS.

2.0 Proposal for loss reduction of 33kV Athagar Feeder:

Proposal: New 33kV interlinking line from CDA GSS to 33kV Athagar feder (near RK Agro) for loss reduction of 33kV Athagar feeder.

Objective: To ensure loss reduction and increase reliability of the existing network.

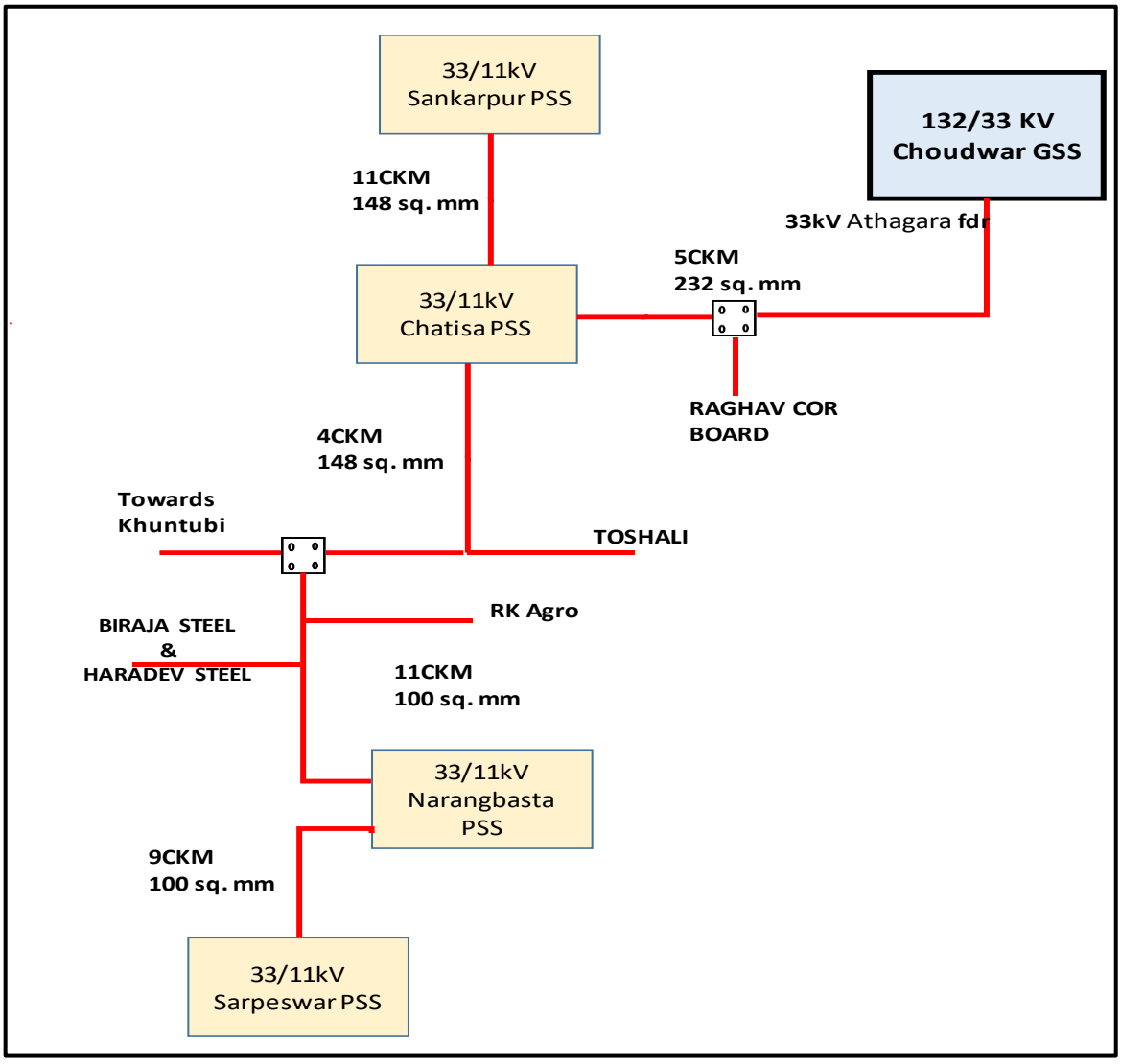
Existing Scenario:

- At present, 33kV Athagar feeder is emanating from 132/33kV Choudwar GSS and feeding power supply to high value consumer along with 33/11kV Sankarpur, Chatisa, Narangbasta and Sarpeswar PSS. Total length of the 33kV feeder is 46km and the peak loading at Summer'25 is 18MVA.
- Present details at 33kV feeder is shown below.

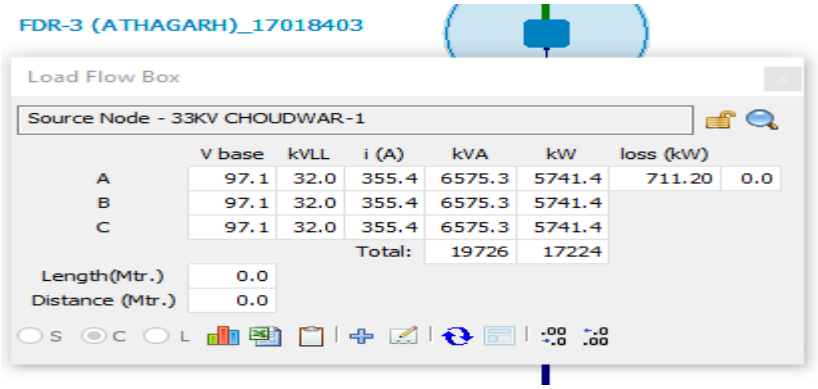
Existing Summer'23 Loading and projected load at 33kV Athagar Feeder:

33kV Feeder Name	Feeder Capacity (MVA)	Peak Loading Summer'23 (MVA)	% Loading	Feeder Overloading Status (AS IS)	Projected load Summer'25 (MVA)	% Loading	Feeder Overloading Status	Loss (kW)
Athagara	26	14	53.85%	OK	17.88	68.76%	OK	711

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

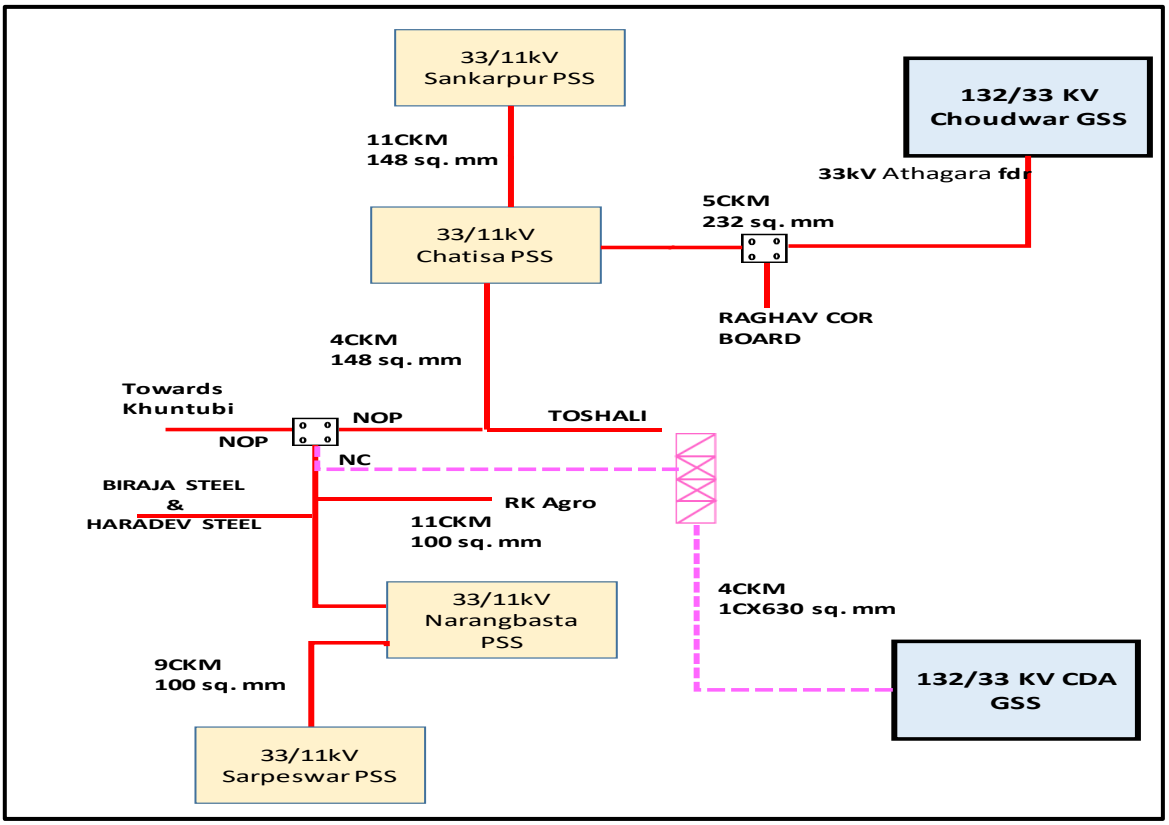


Proposed Scenario:

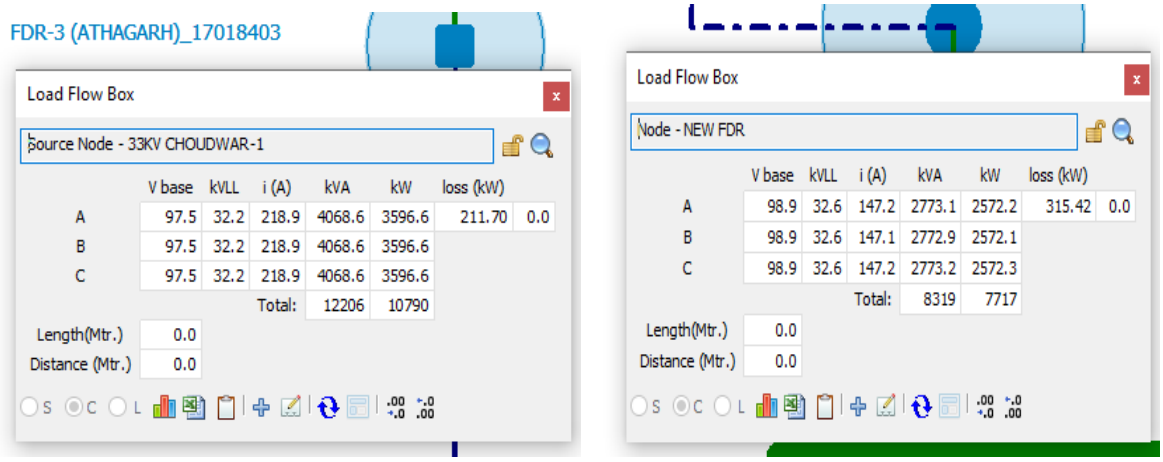
- 4Ckm new interlinking line from CDA GSS to 33kV Athagar feder (near RK Agro) and Installation of 1nos. of 33kV RMUs at 6-Pole for smooth switching.
- New NOP is proposed with interlinking line from CDA GSS to reduce 33kV loss at Athagar feeder.

33kV Feeder Name	Feeder Capacity (MVA)	Projected load Summer'25 (MVA)	% Loading	Feeder Overloading Status	Loss (kW)
Athagara	26	11.00	42.31%	OK	211
New Fdr	26	8.30	31.92%	OK	315.4

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Detailed Scope of Work:

- New 33kV Interlinking Line 1CX630sqmm from CDA GSS to 33kV Athagar feder (near RK Agro) - 4 CKM and 1No's 33 kV RMU at 6-Pole.

BoQ:

ANNEXURE-4.2			
TP CENTRAL ODISHA DISTRIBUTION LIMITED			
	Name of the Division :-	**AED**	
	Name of the Sub-Division :-	ATHAGARH	
	Name of the Work :-	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.	
	Scope of work:-	Part A:- Installation of 2No's 33 kV RMU and Laying of 33kV UG Cable from CDA GSS to T-off R.K.Agro Industries - 4 Ckm.	
	Names of Schemes: -	TPCODL CAPEX (FY 24-25)	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount**
1	A	Part A:- Installation of 2No's 33 kV RMU and Laying of 33kV UG Cable from CDA GSS to T-off R.K.Agro Industries - 4 Ckm.	₹ 5,49,62,499.62
		Total Amount	**₹ 5,49,62,499.62**
		Total Amount (In Cr)	**5.50**
Total estimated cost is Rs. 5.50 Crore. (On TPCODL Capex Scheme)			

Cost Estimate: ₹ 5.50Cr. (For detailed BoQ refer Annexure-4.2).

Benefit:

- Reduction of 33kV loss in 33kV Athagar Feeder.
- Ensuring reliability of power supply for consumers & connected PSS.

ANNEXURE-4.1			
TP CENTRAL ODISHA DISTRIBUTION LIMITED			
Name of the Division :-	**BCDD-II**		
Name of the Sub-Division : -	PERIPHERI		
Name of the Work :-	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.		
Scope:-	Part A:- New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.Part B:- Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm.		
Names of Schemes: -	TPCODL CAPEX(FY 24-25)		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount**
1	A	Part A:- New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.	15,551,465.79
2	B	Part B:- Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm.	9,848,409.15
		Total Amount	**25,399,874.94**
		Total Amount (In Cr)	**2.54**
Total estimated cost is Rs. 2.54 Crore. (On TPCODL Capex Scheme)			

ANNEXURE-4.1

Part A:-

New 33kV Interlinking Line 241sq.mm AAA Conductor from 33kV Naraj to 33kV Barang Fdr. near Ashok Leyland to Barang PSS - 4 CKM.

33kV Line Length with 40 Mtr. Span using 241 SQ.MM. -AAA Conductor

No. of 33 KV DP required Without Isolator (Ref. Drawing No.- TPCODL-HVD-0004)	6

MATERIALS FOR 33 KV DP Without Isolator

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	WPB (GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	34,322.00	12	411,864.00
2	Top Channel 100X50X6mm, 9.56 KG/Mtr., each channel length 3.25 mtr., 2 no's channel required =(2x9.56x3.25)	KG	76.00	372.84	28,335.84
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 6 no's required = (6x2.36x0.280)	KG	97.50	23.7888	2,319.41
4	Double Pole Belting Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 1.96 Mtr., 5 no's channel required =(5x7.14x1.96)	KG	76.00	419.832	31,907.23
5	50x50x6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 3.432 mtr., 4 nos angle required = (4*4.5*3.432)	KG	76.00	370.656	28,169.86
6	Danger Plate, 2 no's.	No.	104.00	12	1,248.00
7	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 2 no's = (2x0.59x0.510)	KG	97.50	3.6108	352.05
8	H.T. Stay clamp, 50x8 mm. flat, 3.14Kg/Mtr., 0.511 Mtr. Length, 2 no's qty. required (1 Pair)	Pair	162.50	12	1,950.00
9	H.T. Stay set (Complete)	Set	1,365.00	12	16,380.00
10	H.T. Stay Insulator Type-C (2 No's.)	No.	65.00	24	1,560.00
11	7/8 SWG Stay Wire 15kg /stay	K.g.	97.50	180	17,550.00
12	Gi Pipe Earthing 40mm. 3 Mtr. Long	No.	1,365.00	6	8,190.00
13	50x6mm GI Flat for earthing, 2.36kg/mtr., (2.5 mtr. For mesh formation and 2.5 mtr. For raising)= 5x2.36	KG	97.50	70.8	6,903.00
14	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.00	36	3,744.00
15	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 8 no's = (8x0.59x0.510)	KG	97.50	14.4432	1,408.21
16	33KV pin insulator polymer	No.	624.00	18	11,232.00
17	Non Metallic Ties 33KV (For covered conductor)	No.	331.00	18	5,958.00
18	IPC for 241 sq.mm AAA conductor (For covered conductor)	No.	915.00	36	32,940.00
19	Spike (GI) (using 50x6mm Flat welded with 8 mm square bar) (2 Nos of spike per Set in each Pole)	Set	332.00	24	7,968.00
20	H W fitting(B&S)90KN,4 Bolt	No.	650.00	36	23,400.00
21	Disc insulator (B&S) 90 KN polymer	No.	1,495.00	36	53,820.00
22	GI Nut , Bolt & Washer of different sizes (12.261 Kg each DP without Isolator)	K.g.	101.40	73.566	7,459.59
23	Black Paint	Ltr	286.00	6	1,716.00
24	Yellow Colour Paint for Background	Ltr	216.00	12	2,592.00
A				**Total Cost of materials**	**708,967.19**
B				Stock, Storage & Insurance i.e 3% of A	21,269.02
C				**Sub Total (A+B)**	**730,236.21**
D				Contigency @ 3% of C	21,907.09
E				Tools & Plants @ 2% of C	13,664.75
F				Transportation @ 7.5% of C	54,767.72
G				Erection Charges @ 5% on Trf/Breaker/WPB/ H-Pole	21,211.00
H				Erection Charges @ 10% of C (except Trf/Breaker/WPB/ H-Pole/HT stay set/GI Pipe/PSC pole)	25,901.74
I				Erection Charges @ 20% of PSC pole- Not to be used for 33kv	-
J				**Sum of (C to I)**	**867,688.49**

Civil & Services

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	Fixing of 33KV line Complete stay set includes 1) Turn Buckle Assembly 2) Stay Rod & Stay plate 3) Stay Insulator 4) Stay Wire. 5)Stay clamps with Nuts & bolts, including excvation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm) using 20mm BHG metal with all labour and material (Excavation of earth will be done of size 500X500X1500 mm.)	No.	2,250.00	12	27,000.00
2	Concreting ratio 1:1.5:3 (500mmX500mmX2200mm) = 0.55Cu.mtr	Cu.mtr	6,500.00	6.6	42,900.00
3	Couping ratio 1:1.5:3 with dimension (500X500X450)= 0.1125 Cu mtr	Cu.mtr	6,500.00	1.35	8,775.00
4	Construction Earthing chamber including installation of earthing pipe.Making earthing chamber including excavation , soil treatment with bentonide powder , calculation of earth resistance, including Installation of 3Mtr GI Pipe 40mm/50mm including welding of GI flat around pipe .	No.	3,700.00	6	22,200.00
K				**Total Civil & Services**	**100,875.00**
L				**Total (J+K)**	968,563.49
M				Other overheads (Including 6% supervision charges) of L (for 33 KV DP Without Isolator)	-
N				**Sub Total (L+M)**	**968,563.49**
O				Total GST @ 18% of (N)	174,341.43
P				Total CESS @ 1% of (N)	9,685.63
Q				**Gross Total Material +Services (N+O+P) for 33 KV DP Without Isolator**	**1,152,590.56**

No. of 33 KV DP required With Isolator (Ref. Drawing No.- TPCODL-TCE-0001)	2

MATERIALS FOR 33 KV DP With Isolator

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	WPB (GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	34,322.00	4	137,288.00
2	Top Channel 100X50X6mm, 9.56 KG/Mtr., each channel length 4.3 mtr., 2 no's channel required =(2x9.56x4.3)	KG	76.00	164.432	12,496.83
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 6 no's required = (6x2.36x0.280)	KG	97.50	7.9296	773.14
4	Insulator Support Cahnnel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 4.3 Mtr., 1 no's channel required =(1x7.14x4.3)	KG	76.00	61.404	4,666.70
5	Isolator Support Cahnnel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 4.3 Mtr., 2 no's channel required =(2x7.14x4.3)	KG	76.00	122.808	9,333.41
6	Double Pole Belting Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 4.3 Mtr., 4 no's channel required =(4x7.14x4.3)	KG	76.00	245.616	18,666.82
7	50x50x6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 4.927 mtr., 4 nos angle required = (4*4.5*4.927)	KG	76.00	177.372	13,480.27
8	Isolator Operating Down Pipe Support Cahnnel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 0.8 Mtr., 1 no's channel required =(1x7.14x0.8)	KG	76.00	11.424	868.22

9	Down Pipe Diagonal Support Angle, 4.5Kg./mtr., each angle length 0.388mtr., 1 nos angle required = (1*4.5*0.388)	KG	76.00	3.492	265.39
10	Down Pipe Base Support Angle, 4.5Kg./mtr., each angle length 0.34mtr., 1 nos angle required = (1*4.5*0.340)	KG	76.00	3.06	232.56
11	Isolator Support Side Cahnnel 100X50X6mm, 9.56 KG/Mtr., each channel length 0.5 mtr., 2 no's channel required =(2x9.56x0.5)	KG	76.00	19.12	1,453.12
12	Danger Plate, 2 no's.	No.	104.00	4	416.00
13	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 2 no's = (2x0.59x0.510)	KG	97.50	1.2036	117.35
14	H.T. Stay clamp, 50x8 mm. flat, 3.14Kg/Mtr., 0.511 Mtr. Length, 2 no's qty. required (1 Pair)	Pair	162.50	4	650.00
15	H.T. Stay set (Complete)	Set	1,365.00	4	5,460.00
16	H.T. Stay Insulator Type-C (2 No's.)	No.	65.00	8	520.00
17	7/8 SWG Stay Wire 15kg /stay	K.g.	97.50	60	5,850.00
18	Gi Pipe Earthing 40mm. 3 Mtr. Long	No.	1,365.00	4	5,460.00
19	50x6mm GI Flat for earthing, 2.36kg/mtr., (15 Mtr. For L.A, 4 Mtr for Isolator Body, 2.5 mtr. For mesh formation and 2.5 mtr. For raising)= 24x2.36	KG	97.50	113.28	11,044.80
20	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.00	12	1,248.00
21	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 8 no's = (8x0.59x0.510)	KG	97.50	4.8144	469.40
22	Lightning Arrester(30KV,10KA) (Station Class,class-2)	EA	13,455.00	6	80,730.00
23	33 KV 1250 AMP Double break (Turn & twist center rotating) isolator without earth switch with PI(Polymer)	Set	66,000.00	2	132,000.00
24	33KV pin insulator polymer	No.	624.00	6	3,744.00
25	Non Metallic Ties 33KV (For covered conductor)	No.	331.00	6	1,986.00
26	IPC for 241 sq.mm AAA conductor (For covered conductor)	No.	915.00	12	10,980.00
27	Spike (GI) (using 50x6mm Flat welded with 8 mm square bar) (2 Nos of spike per Set in each Pole)	Set	332.00	8	2,656.00
28	H W fitting(B&S)90KN,4 Bolt	No.	650.00	12	7,800.00
29	Disc insulator (B&S) 90 KN polymer	No.	1,495.00	12	17,940.00
30	GI Nut , Bolt & Washer of different sizes (22.15 Kg each DP with Isolator)	K.g.	101.40	44.3	4,492.02
31	Black Paint	Ltr	286.00	2	572.00
32	Yellow Colour Paint for Background	Ltr	216.00	4	864.00
A				**Total Cost of materials**	**494,524.04**
B				Stock, Storage & Insurance i.e 3% of A	14,835.72
C				**Sub Total (A+B)**	**509,359.76**
D				Contigency @ 3% of C	15,280.79
E				Tools & Plants @ 2% of C	9,817.63
F				Transportation @ 7.5% of C	38,201.98
G				Erection Charges @ 5% on Trf/Breaker/WPB/ H-Pole	7,070.33
H				Erection Charges @ 10% of C (except Trf/Breaker/WPB/ H-Pole/HT stay set/GI Pole/PSC pole)	34,947.49
I				Erection Charges @ 20% of PSC pole- Not to be used for 33kv	-
J				**Sum of (C to I)**	**614,677.99**

Civil & Services

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	Fixing of 33KV line Complete stay set includes 1) Turn Buckle Assembly 2) Stay Rod & Stay plate 3) Stay Insulator 4) Stay Wire. 5)Stay clamps with Nuts & bolts, including excvation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm) using 20mm BHG metal with all labour and material (Excavation of earth will be done of size 500X500X1500 mm.)	No.	2,250.00	4	9,000.00
2	Concreting ratio 1:1.5:3 (500mmX500mmX2200mm) = 0.55Cu.mtr	Cu.mtr	6,500.00	2.2	14,300.00
3	Couping ratio 1:1.5:3 with dimension (500X500X450)= 0.1125 Cu mtr	Cu.mtr	6,500.00	0.45	2,925.00
4	Construction Earthing chamber including installation of earthing pipe.Making earthing chamber including excavation , soil treatment with bentonide powder , calculation of earth resistance, including Installation of 3Mtr GI Pipe 40mm/50mm including welding of GI flat around pipe .	No.	3,700.00	4	14,800.00
K				**Total Civil & Services**	**41,025.00**
L				**Total (J+K)**	655,702.99
M				Other overheads (Including 6% supervision charges) of L (for 33 KV DP With Isolator)	-
N				**Sub Total (L+M)**	**655,702.99**
O				Total GST @ 18% of (N)	118,026.54
P				Total CESS @ 1% of (N)	6,557.03
Q				**Gross Total Material +Services (N+O+P) for 33 KV DP With Isolator**	**780,286.56**

No. of 33 KV Cut Point with 180 Degree Angle (Ref. Drawing No.- TPCODL-HVD-0002)	5

MATERIALS FOR 33 KV Cut Point with 180 Degree Angle

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	WPB (GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	34,322.00	5	171,610.00
2	Straight Cross Arm Channel 100 x 50 x 6 mm, 9.56 KG/mtr, each channel length 1.7 Mtr., 2 No's of Channel = (2x 9.56x1.7)	K.g.	76.00	162.52	12,351.52
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 8 no's required = (8x2.36x0.280)	K.g.	97.50	26.432	2,577.12
4	Straight Cross Arm Top Channel 100 x 50 x 6 mm, 9.56 KG/mtr, each channel length 0.306 Mtr., 2 No's of Channel = (2x 9.56x0.306)	K.g.	76.00	29.2536	2,223.27
5	Danger Plate, 1 no's.	No.	104.00	5	520.00
6	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 1 no's = (1x0.59x0.510)	KG	97.50	1.5045	146.69
7	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.00	15	1,560.00
8	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 4 no's = (4x0.59x0.510)	KG	97.50	6.018	586.76
9	33KV pin insulator polymer	No.	624.00	15	9,360.00
10	Non Metallic Ties 33KV (For covered conductor)	No.	331.00	15	4,965.00
11	IPC for 241 sq.mm AAA conductor (For covered conductor)	No.	915.00	30	27,450.00
12	Spike (GI) (using 50x6mm Flat welded with 8 mm square bar) (2 Nos of spike per Set in each Pole)	Set	332.00	10	3,320.00
13	H W fitting(B&S)90KN,4 Bolt	No.	650.00	30	19,500.00
14	Disc insulator (B&S)90 KN polymer	No.	1,495.00	30	44,850.00
15	Earthing of Support (Coil Type)	EA	215.80	5	1,079.00
16	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	K.g.	97.50	1.31	127.73
17	GI Nut , Bolt & Washer of different sizes (4.879 Kg each 180 deg. Cut point)	K.g.	101.40	24.395	2,473.65
18	Black Paint	Ltr	286.00	5	1,430.00
19	Yellow Colour Paint for Background	Ltr	216.00	10	2,160.00
A				**Total Cost of materials**	**308,290.74**
B				Stock, Storage & Insurance i.e 3% of A	9,248.72

C	**Sub Total (A+B)**	**317,539.46**
D	Contigency @ 3% of C	9,526.18
E	Tools & Plants @ 2% of C	6,350.79
F	Transportation @ 7.5% of C	23,815.46
G	Erection Charges @ 5% on Trf/Breaker/WPB/ H-Pole	8,837.92
H	Erection Charges @ 10% of C (except Trf/Breaker/WPB/ H-Pole/HT stay set/PSC pole)	14,078.12
I	Erection Charges @ 20% of PSC pole- Not to be used for 33kv	-
J	**Sum of (C to I)**	**380,147.92**

Civil & Services

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	Concreting ratio 1:1.5:3 (500mmX500mmX2200mm) = 0.55Cu.mtr	Cu.mtr	6,500.00	2.75	17,875.00
2	Couping ratio 1:1.5:3 with dimension (500X500X450)= 0.1125 Cu mtr	Cu.mtr	6,500.00	0.5625	3,656.25
K	**Total Civil & Services**				**21,531.25**
L	**Total (J+K)**				401,679.17
M	Other overheads (Including 6% supervision charges) of L (for 33 KV Cut Point with 180 Degree Angle)				-
N	**Sub Total (L+M)**				**401,679.17**
O	Total GST @ 18% of (N)				72,302.25
P	Total CESS @ 1% of (N)				4,016.79
Q	**Gross Total Material +Services (N+O+P) for 33 KV Cut Point with 180 Degree Angle**				**477,998.21**

No. of 33 KV Cut Point with 90 Degree Angle (Ref. Drawing No.- TPCODL-HVD-0003)	3

MATERIALS FOR 33 KV Cut Point with 90 Degree Angle

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	WPB (GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	34,322.00	3	102,966.00
2	Straight Cross Arm Channel 100 x 50 x 6 mm, 9.56 KG/mtr, each channel length 1.7 Mtr., 4 No's of Channel = (4x 9.56x1.7)	K.g.	76.00	195.024	14,821.82
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 16 no's required = (16x2.36x0.280)	K.g.	97.50	31.7184	3,092.54
4	Straight Cross Arm Top Channel 100 x 50 x 6 mm, 9.56 KG/mtr, each channel length 0.306 Mtr., 4 No's of Channel = (4x 9.56x0.306)	K.g.	76.00	35.10432	2,667.93
5	Danger Plate, 1 no's.	No.	104.00	3	312.00
6	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 1 no's = (1x0.59x0.510)	KG	97.50	0.9027	88.01
7	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.00	9	936.00
8	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 4 no's = (4x0.59x0.510)	KG	97.50	3.6108	352.05
9	33KV pin insulator polymer (4 No's each 90 Deg. Cut point)	No.	624.00	12	7,488.00
10	H W fitting(B&S)90KN,4 Bolt	No.	650.00	18	11,700.00
11	Disc insulator (B&S)90 KN polymer	No.	1,495.00	18	26,910.00
12	Non Metallic Ties 33KV (For covered conductor)	No.	331.00	12	3,972.00
13	IPC for 241 sq.mm AAA conductor (For covered conductor)	No.	915.00	18	16,470.00
14	Spike (GI) (using 50x6mm Flat welded with 8 mm square bar) (2 Nos of spike per Set in each Pole)	Set	332.00	6	1,992.00
15	Earthing of Support (Coil Type)	No.	215.80	3	647.40
16	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	K.g.	97.50	0.786	76.64
17	H.T. Stay clamp, 50x8 mm. flat, 3.14Kg/Mtr., 0.511 Mtr. Length, 2 no's qty. required (1 Pair)	Pair	162.50	3	487.50
18	H.T. Stay set (Complete)	Set	1,365.00	3	4,095.00
19	H.T. Stay Insulator Type-C (2 No's.)	No.	65.00	3	195.00
20	7/8 SWG Stay Wire 15kg /stay	K.g.	97.50	45	4,387.50
21	GI Nut , Bolt & Washer of different sizes (11.31 Kg each 90 deg. Cut point)	K.g.	101.40	33.93	3,440.50
22	Black Paint	Ltr	286.00	3	858.00
23	Yellow Colour Paint for Background	Ltr	216.00	6	1,296.00
A	**Total Cost of materials**				**209,251.90**
B	**Stock, Storage & Insurance i.e 3% of A**				6,277.56
C	**Sub Total (A+B)**				**215,529.46**
D	Contigency @ 3% of C				6,465.88
E	Tools & Plants @ 2% of C				4,121.79
F	Transportation @ 7.5% of C				16,164.71
G	Erection Charges @ 5% on Trf/Breaker/WPB/ H-Pole				5,302.75
H	Erection Charges @ 10% of C (except Trf/Breaker/WPB/ H-Pole/HT stay set/PSC pole)				10,003.45
I	Erection Charges @ 20% of PSC pole- Not to be used for 33kv				-
J	**Sum of (C to I)**				**257,588.04**

Civil & Services

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	Concreting ratio 1:1.5:3 (500mmX500mmX2200mm) = 0.55Cu.mtr	Cu.mtr	6,500.00	1.65	10,725.00
2	Couping ratio 1:1.5:3 with dimension (500X500X450)= 0.1125 Cu mtr	Cu.mtr	6,500.00	0.34	2,193.75
3	Fixing of 33KV line Complete stay set includes 1) Turn Buckle Assembly 2) Stay Rod & Stay plate 3) Stay Insulator 4) Stay Wire. 5)Stay clamps with Nuts & bolts, including excvation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm) using 20mm BHG metal with all labour and material (Excavation of earth will be done of size 500X500X1500 mm.)	No.	2,250.00	3	6,750.00
K	**Total Civil & Services**				**19,668.75**
L	**Total (J+K)**				277,256.79
M	Other overheads (Including 6% supervision charges) of L (for 33 KV Cut Point with 90 Degree Angle)				-
N	**Sub Total (L+M)**				**277,256.79**
O	Total GST @ 18% of (N)				49,906.22
P	Total CESS @ 1% of (N)				2,772.57
Q	**Gross Total Material +Services (N+O+P) for 33 KV Cut Point with 90 Degree Angle**				**329,935.58**

33 Kv Line Length In KM with 40 Mtr. Span Ref. Drawing No.- TPCODL-HVD-0001)	4

MATERIALS FOR 33 KV Pin Points

Sl. No.	*Description of Materials*	*Unit*	*Unit Rate*	*Total Quantity*	*Total Amount*
1	WPB (GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	34,322.00	84	2,883,048.00

2	33 KV V cross Arm (GI) 22Kg each	No.	2,340.00	84	196,560.00
3	Top bracket 100x50x6mm GI channel (2kg each)	No.	195.00	84	16,380.00
4	Danger Plate, 1 no's.	No.	104.00	84	8,736.00
5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 1 no's = (1x0.59x0.510)	KG	97.50	25.28	2,464.37
6	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.00	252.00	26,208.00
7	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 4 no's = (4x0.59x0.510)	KG	97.50	101.10	9,857.48
8	33KV pin insulator polymer	No.	624.00	252	157,248.00
9	Non Metallic Ties 33KV (For covered conductor)	No.	331.00	252	83,412.00
10	Earthing of Support (Coil Type)	No.	215.80	84	18,127.20
11	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	K.g.	97.50	22.01	2,145.78
12	GI Nut , Bolt & Washer of different sizes (1.45 Kg/ Pin Point)	K.g.	101.40	121.80	12,350.52
13	Spike (GI) (using 50x6mm Flat welded with 8 mm square bar) (2 Nos of spike per Set in each Pole)	Set	332.00	168	55,776.00
14	241 sq.mm AAA conductor	Mtr.	386.00	12360.00	4,770,960.00
15	Crimping type Midspan Compression Joint for 241 sq.mm AAA conductor	EA	4,701.00	12	56,412.00
16	Black Paint	Ltr	286.00	84.0	24,024.00
17	Yellow Colour Paint for Background	Ltr	216.00	168.0	36,288.00
A				**Total Cost of materials**	**8,359,997.36**
B				Stock, Storage & Insurance i.e 3% of A	250,799.92
C				**Sub Total (A+B)**	**8,610,797.28**
D				Contigency @ 3% of C	258,323.92
E				Tools & Plants @ 2% of C	172,215.95
F				Transportation @ 7.5% of C	645,809.80
G				Erection Charges @ 5% on Trf/Breaker/WPB/ H-Pole	148,476.97
H				Erection Charges @ 10% of C (except Trf/Breaker/WPB/ H-Pole/HT stay set/PSC pole)	564,125.78
I				Erection Charges @ 20% of PSC pole- Not to be used for 33kv	-
J				**Sum of (C to I)**	**10,399,749.69**

Civil & Services

Sl. No.	***Description of Materials***	***Unit***	***Unit Rate***	***Total Quantity***	***Total Amount***
1	Concreting ratio 1:1.5:3 (500mmX500mmX2200mm) = 0.55Cu.mtr	Cu.mtr	6,500.00	46.20	300,300.00
2	Couping ratio 1:1.5:3 with dimension (500X500X450)= 0.1125 Cu mtr	Cu.mtr	6,500.00	9.45	61,425.00
K				**Total Civil & Services**	**361,725.00**
L				**Total (J+K)**	10,761,474.69
M	Other overheads (Including 6% supervision charges) of L (for 33 KV Pin Points)				-
N				**Sub Total (L+M)**	**10,761,474.69**
O				Total GST @ 18% of (N)	1,937,065.44
P				Total CESS @ 1% of (N)	107,614.75
Q	**Gross Total Material +Services (N+O+P) for 33 KV Pin Points**				**12,806,154.88**

6% Supervision Charges Summary

1	Other overheads (Including 6% supervision charges) of L (for 33 KV DP Without Isolator)	-
2	Other overheads (Including 6% supervision charges) of L (for 33 KV DP With Isolator)	-
3	Other overheads (Including 6% supervision charges) of L (for 33 KV Cut Point with 180 Degree Angle)	-
4	Other overheads (Including 6% supervision charges) of L (for 33 KV Cut Point with 90 Degree Angle)	-
5	Other overheads (Including 6% supervision charges) of L (for 33 KV Pin Points)	-
	Total (6% supervision charges)	**-**

Gross Total Summary

1	Gross Total Material +Services (N+O+P) for 33 KV DP Without Isolator	1,152,590.56
2	Gross Total Material +Services (N+O+P) for 33 KV DP With Isolator	780,286.56
3	Gross Total Material +Services (N+O+P) for 33 KV Cut Point with 180 Degree Angle	477,998.21
4	Gross Total Material +Services (N+O+P) for 33 KV Cut Point with 90 Degree Angle	329,935.58
5	Gross Total Material +Services (N+O+P) for 33 KV Pin Points	12,806,154.88
Q	**Gross Total Material +Services**	**15,546,965.79**
R	Inspection Fee of Over Head Line (HT) - Rs. 1500 upto 1 KM	1,500.00
S	Inspection Fee of Over Head Line (HT) - Rs. 750/ Additional Km	**2,250.00**
T	Inspection Fee of Drawing Checking and Approval	750.00
U	**Gross Total Material, Services and Inspection Fees (Q+R+S+T)**	**15,551,465.79**

ANNEXURE-4.1

Part B:-
Installation of 1No's 33 kV RMU and Laying of 33kV UG Cable near Banang PSS - 0.5 Ckm.

Standard BoQ and Estimate for 33kV, 1C 630sqmm U/G Cable along with 33kV RMU

Supply Portion

Sl. No.	Description of items	Unit	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	**Supply of materials for 33kV, 1Core, 630sqmm Aluminium, XLPE insulation U/G Cable (aloing with 1core spare cable) with accessories**				
a	***Length of 33kV 1C, 630sqmm cable (open trench)***	***Mtr.***	***500***		
b	***Length of 33kV 1C, 630sqmm cable (HDD)***	***Mtr.***			
1.1	Supply of 33kV, 1Core, 630sqmm Aluminium, XLPE insulation U/G Cable (SC rating of cable in kA- 59.4kA and SC rating of Armour in kA-20kA)	Mtr.	1500	1,495.47	2,243,205.00
1.3	Supply of Outdoor termination kits Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT U/G Cable kits for 1Core	Set	9	6,350.00	57,150.00
1.4	Supply of Indoor termination kits Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT U/G Cable kits for 1Core	Set	9	6,100.00	54,900.00
1.5	Supply of materials for High Density Polyethelene (HDPE) pipe 110mm diameter, PE 80- PN8 for laying of 33kV U/G cable	Mtr.	1428.00	357.60	510,652.80
2	**Supply of 33kV RMU**				
d	***No. of 33kV 4Way RMU (LLVV)***	***nos.***	***1***		
2.4	Supply of RMU 33KV 4WAY 630A (2ISLTR+2 BKR) (LLVV)	Nos.	1	2,335,264.00	2,335,264.00
3	**Earthing**				
3.1	Earthing Conductor: **50X6 mm** (2.4kg./mtr.) **GI Flat** for equipment, structure etc.)	kg	13.20	97.50	1,287.00
3.2	Pipe Earthing 40mm. GI Pipe	Nos.	2	1,365.00	2,730.00
4	**FRTU for RMU SCADA Automation**				
a	***No. of FRTU***	***nos.***	***1***		
4.1	Pre-Wired FRTU Panel with FRTU	No.	1	121,744.00	121,744.00
4.2	Managed Layer2 Ethernet Switch (FRTU Panel)	No.	1	100,000.00	100,000.00
4.3	Networking Accessories	No.	1	72.00	72.00
4.4	CMR with Mounting Base for Digital Inputs	Nos.	32	650.00	20,800.00
4.5	Interposing Relay for Digital Output	Nos.	16	467.94	7,487.04
4.6	Battery Charger	Nos.	1	15,385.00	15,385.00
4.7	Battery	Nos.	1	8,333.00	8,333.00
4.8	4G Modem cum Router	Nos.	1	18,500.00	18,500.00
4.9	Instrumentation Cable 12 C X 0.5 mm2, Armored cable for Status and Indications	Mtr.	40	204.87	8,194.80
4.10	Instrumentation Cable 7 C X 1.5 mm2, Armored for Control Output	Mtr.	40	305.58	12,223.20
4.11	Twisted Pair Shielded & Over all shielded Instrumentation Cable	Mtr.	40	275.23	11,009.20
4.12	4 C X 2.5 mm2 Copper cable for extension of CT & PT	Mtr.	20	165.25	3,305.00
4.13	2 C X 4 mm2 Cable for DC Power Supply	Mtr.	10	150.00	1,500.00
4.14	4P X 0.36 mm2, Armored Communication Cable for MFM	Mtr.	20.0	148.43	2,968.60

4.15	Armored CAT6 SFTP Cable	Mtr.	20	45.87	917.40
4.16	Un-Armored CAT6 SFTP Cable	Mtr.	20	89.45	1,789.00
4.17	Multi Function Meter	Nos.	2	18,651.00	37,302.00
	Sub Total (Supply Portion) (in Rs.)				**5,576,719.04**

Erection Portion

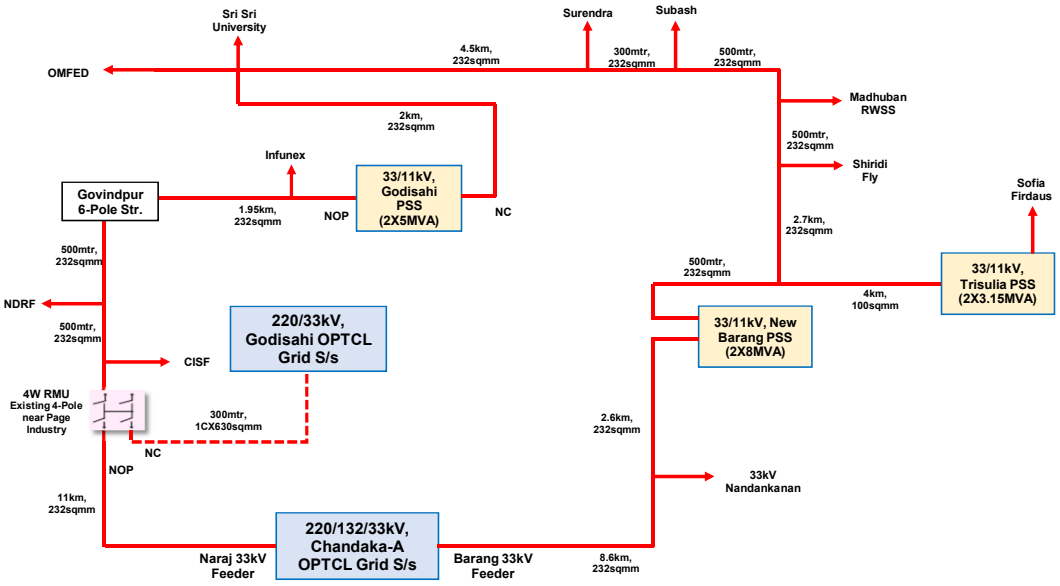
Sl. No.	Description of items	Unit	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	**Erection, Commissioning & Testing of 33kV new line by 3X1Core, 630sqmm, XLPE UG cable with one spare**				
1.1	Laying, Commissioning & Testing of 33kV, 1Core, 4Runs, 630sqmm, XLPE insulation (extruted type) UG cable (with one single 1core, 630sqmm, XLPE cable as spare) in trefoil formation by **open trench method**.	Mtr.	1500	94.50	141,750.00
1.3	Erection of **Outdoor termination kits** Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT UG cable kits	Set	9	2,081.70	18,735.30
1.4	Erection of **Indoor termination kits** Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT UG cable kits	Set	9	2,081.70	18,735.30
1.5	Installation, Laying, Commissioning & Testing of 33kV, 1Core, 4Runs, 630sqmm, XLPE U/G cable by **HDD method with** HDPE pipe (110mm dia, PN8 PE80) including suply of HDPE Pipe.	Mtr.	0	2,300.00	-
1.6	Laying of **110mm dia** PE 80-PN8, **HDPE pipe** inside open trench.	Mtr.	1428.00	300.00	428,400.00
2	**Erection, Commissioning, Wiring and Testing of 33kV RMU**				
2.4	Erection of RMU 33KV 4WAY 630A (2ISLTR+2 BKR) (LLVV)	Nos.	1	8,000.00	8,000.00
3	**FRTU and OFC for RMU SCADA Automation**				
3.1	Services of FRTU Panel, Communication and Other Supplied System	EA	1.0	16,000.00	16,000.00
	Sub Total (Erection Portion) (in Rs.)				**631,620.60**

Civil Portion

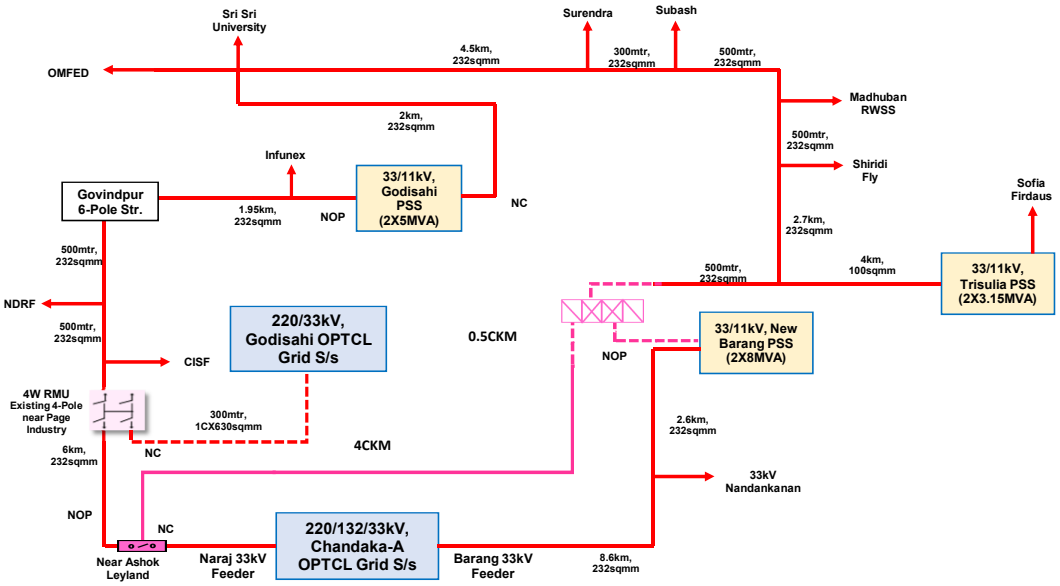
Sl. No.	Description of items	Unit	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	**Civil works with supply of all materials like cement, MS tor rod, brick, coarse & fine aggregates and labour, T&P, etc for UG Cable Trench**				
1.1	Earth work excavation of soil (1mtr. width X 1.2mtr. depth)-Route Length	Mtr	476		
1.1.a	Earth work excavation of **soil**	Cum	399.84	700.00	279,888.00
1.1.b	Earth work excavation of **hard rock**	Cum	171.36	1,720.00	294,739.20
1.2	Back filling with excavated soil outside and above the trench	Cum	571.2	202.00	115,382.40
1.3	Damage of asphalt/tar road and other utilities and reconstructing to bring to its original shape after laying of cable in open trench (1mtr. width)	Mtr	142.8	2,643.67	377,516.17
2	**Civil works for Prefabricated RCC foundation with supply of all materials**				
2.1	Prefabricated RCC foundation of 33kV RMU	Nos.	1	23,145.30	23,145.30
3	Supply of GI Fencing with Gate around each **RMU**	sqmtr	20	3,600.00	72,000.00
4	Construction Earthing chamber including installation of earthing pipe.Making earthing chamber including excavation , soil treatment with bentonide powder , calculation of earth resistance, including Installation of 3Mtr GI Pipe 40mm/50mm including welding of GI flat around pipe .	Set	2	3,700.00	7,400.00

5	Supply and erection of GI Pipe of dia. 150mm, Class-B (8Mtr.)	Mtr	72	1,463.40	105,364.80
6	Supply and Erection of Cable Route Marker along the cable route at an interval of 30mtrs with civil works	Nos.	17	1,012.00	17,204.00
	Sub Total (Civil Portion) (in Rs.)				**1,292,639.87**
A	**Sub Total (Supply Portion)**				**5,576,719.04**
B	Stock, Storage & Insurance @ 3 % of A				167,301.57
C	**Sub Total (A+B)**				**5,744,020.61**
D	Contingency @ 3 % of C				172,320.62
E	Tools & Plants Charges @ 2% of C (considered for earthing items)				26.51
F	Transportation @ 7.5% of C				430,801.55
G	Erection Charges @ 10% of earthing items				132.56
H	**Total (C+D+E+F+G)**				**6,347,301.85**
I	Sub Total (Erection Portion + Civil Portion)				1,924,260.47
J	**Total Cost (H+I)**				**8,271,562.31**
K	Other Overhead /(including Supervision Charges) @ 6 % of J				-
L	**Total Estimated Capital Cost i.e. (J+K)**				**8,271,562.31**
M	GST @ 18% of L				1,488,881.22
M1	CESS @ 1% of L				82,715.62
N	**Grand Total (L+M+M1)**				**9,843,159.15**
O	Inspection Fee of UG Line (HT) - Rs. 3000/ km.				3,000.00
P	Inspection Fee of UG Line (HT) - Rs. 1500/ Additional Km				
Q	Inspection Fee of RMU - Rs. 1500/ RMU				1,500.00
R	Inspection Fee of Drawing Checking and Approval				750.00
S	**Gross Total Material, Services and Inspection Fees (N+O+P+Q+R)**				**9,848,409.15**

Existing SLD of 33 kV Naraj and Barang FEEDER



Proposed SLD of 33 kV Naraj and Barang FEEDER



ANNEXURE-4.2			
TP CENTRAL ODISHA DISTRIBUTION LIMITED			
	Name of the Division :-	**AED**	
	Name of the Sub-Division : -	ATHAGARH	
	Name of the Work :-	Loss reduction by Network Reconfiguration: Proposal for Loss reduction of existing 33 kV Barang feeder by network reconfigration.	
	Scope of work:-	Part A:- Installation of 2No's 33 kV RMU and Laying of 33kV UG Cable from CDA GSS to T-off R.K.Agro Industries - 4 Ckm.	
	Names of Schemes: -	TPCODL CAPEX (FY 24-25)	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount**
1	A	Part A:- Installation of 2No's 33 kV RMU and Laying of 33kV UG Cable from CDA GSS to T-off R.K.Agro Industries - 4 Ckm.	₹ 54,962,499.62
		Total Amount	**₹ 54,962,499.62**
		Total Amount (In Cr)	**5.50**
Total estimated cost is Rs. 5.50 Crore. (On TPCODL Capex Scheme)			

ANNEXURE-4.2

Part A:-
Installation of 2No's 33 kV RMU and Laying of 33kV UG Cable from CDA GSS to T-off R.K.Agro Industries - 4 Ckm.

Standard BoQ and Estimate for 33kV, 1C 630sqmm U/G Cable along with 33kV RMU

Supply Portion

Sl. No.	Description of items	Unit	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	**Supply of materials for 33kV, 1Core, 630sqmm Aluminium, XLPE insulation U/G Cable (aloing with 1core spare cable) with accessories**				
a	***Length of 33kV 1C, 630sqmm cable (open trench)***	***Mtr.***	***3000***		
b	***Length of 33kV 1C, 630sqmm cable (HDD)***	***Mtr.***	***1000***		
1.1	Supply of 33kV, 1Core, 630sqmm Aluminium, XLPE insulation U/G Cable (SC rating of cable in kA- 59.4kA and SC rating of Armour in kA-20kA)	Mtr.	12000	1,495.47	17,945,640.00
1.2	Supply of Straight throU/Gh jointing kits Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, aluminium U/G Cable kits for 1Core	Set	36	11,900.00	428,400.00
1.3	Supply of Outdoor termination kits Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT U/G Cable kits for 1Core	Set	0	6,350.00	-
1.4	Supply of Indoor termination kits Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT U/G Cable kits for 1Core	Set	12	6,100.00	73,200.00
1.5	Supply of materials for High Density Polyethelene (HDPE) pipe 110mm diameter, PE 80- PN8 for laying of 33kV U/G cable	Mtr.	9000.00	357.60	3,218,400.00
2	**Supply of 33kV RMU**				
a	***No. of 33kV 3Way RMU (LLV+M)***	***nos.***			
b	***No. of 33kV 4Way RMU (LLVV+M)***	***nos.***			
c	***No. of 33kV 3Way RMU (LLV)***	***nos.***			
d	***No. of 33kV 4Way RMU (LLVV)***	***nos.***	***1***		
e	***No. of 33kV 3Way RMU (LLL)***	***nos.***			
f	***No. of 33kV 4Way RMU (LLLL)***	***nos.***			
2.1	Supply of RMU 33KV 3WAY 630A WITH METERING UNIT (LLV+M) **(CT Ratio to be mentioned)**	Nos.	0	2,293,723.00	-
2.2	Supply of RMU 33KV 4WAY 630A WITH METERING UNIT (LLVV+M) **(CT Ratio to be mentioned)**	Nos.	0	3,174,874.00	-
2.3	Supply of RMU 33KV 3WAY 630A (2ISLTR+ 1BKR) (LLV)	Nos.	0	1,787,101.00	-
2.4	Supply of RMU 33KV 4WAY 630A (2ISLTR+2 BKR) (LLVV)	Nos.	1	2,335,264.00	2,335,264.00
2.5	Supply of RMU 33KV 3WAY 630AMP (3 ISOLATORS) (LLL)	Nos.	0	1,446,210.00	-
2.6	Supply of RMU 33KV 4WAY 630AMP (4 ISOLATORS) (LLLL)	Nos.	0	1,959,421.00	-
3	**Earthing**				
3.1	Earthing Conductor: **50X6 mm** (2.4kg./mtr.) **GI Flat** for equipment, structure etc.)	kg	7220.40	97.50	703,989.00
3.2	Pipe Earthing 40mm. GI Pipe	Nos.	4	1,365.00	5,460.00
4	**FRTU for RMU SCADA Automation**				
a	***No. of FRTU***	***nos.***	***1***		
4.1	Pre-Wired FRTU Panel with FRTU	No.	1	121,744.00	121,744.00
4.2	Managed Layer2 Ethernet Switch (FRTU Panel)	No.	1	100,000.00	100,000.00
4.3	Networking Accessories	No.	1	72.00	72.00

4.4	CMR with Mounting Base for Digital Inputs	Nos.	32	650.00	20,800.00
4.5	Interposing Relay for Digital Output	Nos.	16	467.94	7,487.04
4.6	Battery Charger	Nos.	1	15,385.00	15,385.00
4.7	Battery	Nos.	1	8,333.00	8,333.00
4.8	4G Modem cum Router	Nos.	1	18,500.00	18,500.00
4.9	Instrumentation Cable 12 C X 0.5 mm2, Armored cable for Status and Indications	Mtr.	40	204.87	8,194.80
4.10	Instrumentation Cable 7 C X 1.5 mm2, Armored for Control Output	Mtr.	40	305.58	12,223.20
4.11	Twisted Pair Shielded & Over all shielded Instrumentation Cable	Mtr.	40	275.23	11,009.20
4.12	4 C X 2.5 mm2 Copper cable for extension of CT & PT	Mtr.	20	165.25	3,305.00
4.13	2 C X 4 mm2 Cable for DC Power Supply	Mtr.	10	150.00	1,500.00
4.14	4P X 0.36 mm2, Armored Communication Cable for MFM	Mtr.	20.0	148.43	2,968.60
4.15	Armored CAT6 SFTP Cable	Mtr.	20	45.87	917.40
4.16	Un-Armored CAT6 SFTP Cable	Mtr.	20	89.45	1,789.00
4.17	Multi Function Meter	Nos.	2	18,651.00	37,302.00
5	Angle for Cantilever arrangement for Cable laying beside the river bridge 50 x 50 x 6mm (4.5 K.g. per mtr.), at every 1 meter distance along the river bridge.	kg	37125		-
	Sub Total (Supply Portion) (in Rs.)				**25,081,883.24**

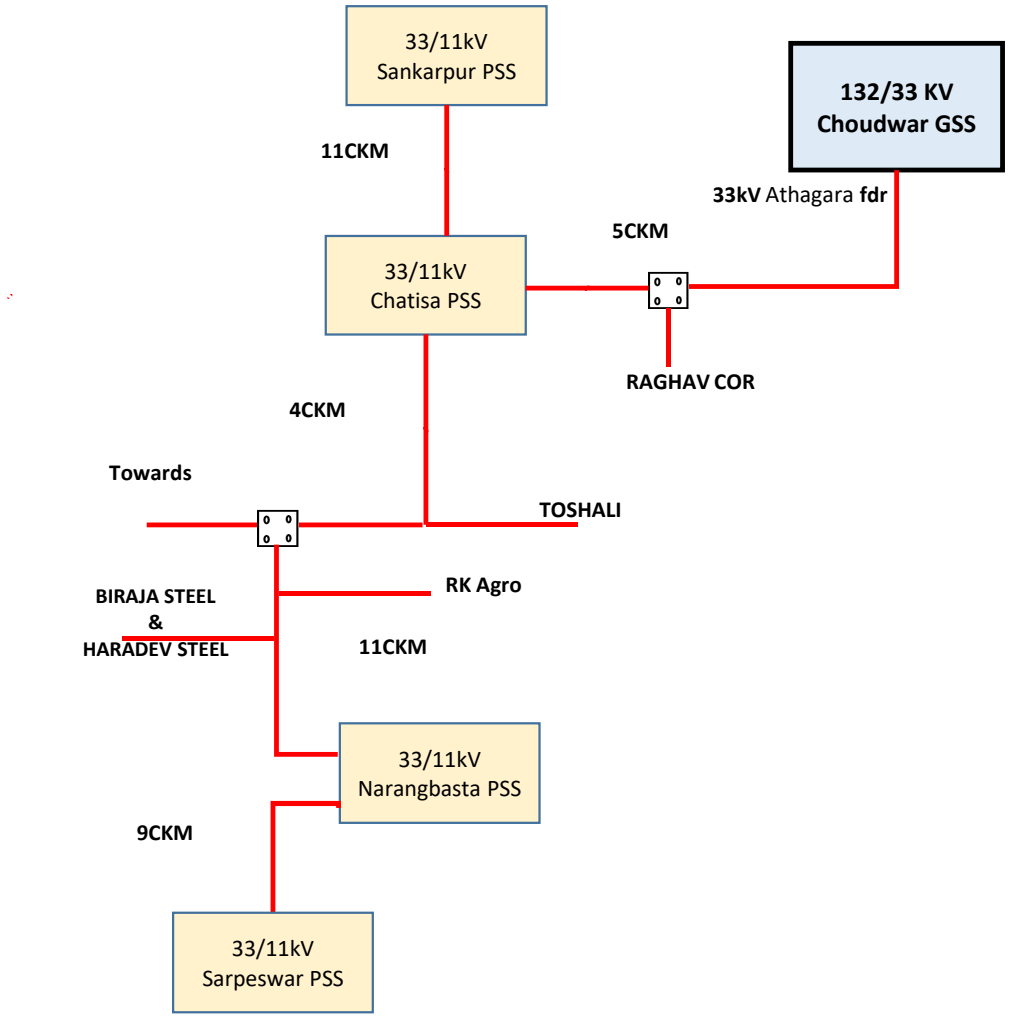
Erection Portion

Sl. No.	Description of items	Unit	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	**Erection, Commissioning & Testing of 33kV new line by 3X1Core, 630sqmm, XLPE UG cable with one spare**				
1.1	Laying, Commissioning & Testing of 33kV, 1Core, 4Runs, 630sqmm, XLPE insulation (extruted type) UG cable (with one single 1core, 630sqmm, XLPE cable as spare) in trefoil formation by **open trench method**.	Mtr.	9000	94.50	850,500.00
1.2	Erection of **Straight through jointing kits** Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, aluminium UG cable kits	Set	36	2,400.00	86,400.00
1.3	Erection of **Outdoor termination kits** Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT UG cable kits	Set	0	2,081.70	-
1.4	Erection of **Indoor termination kits** Heat Shrinkable type suitable for 33kV, 1Core, 630sqmm, HT UG cable kits	Set	12	2,081.70	24,980.40
1.5	Installation, Laying, Commissioning & Testing of 33kV, 1Core, 4Runs, 630sqmm, XLPE U/G cable by **HDD method with** HDPE pipe (110mm dia, PN8 PE80) including suply of HDPE Pipe.	Mtr.	3000	2,300.00	6,900,000.00
1.6	Laying of **110mm dia** PE 80-PN8, **HDPE pipe** inside open trench.	Mtr.	9000.00	300.00	2,700,000.00
2	**Erection, Commissioning, Wiring and Testing of 33kV RMU**				
2.1	Erection of RMU 33KV 3WAY 630A WITH METERING UNIT (LLV+M)	Nos.	0	15,000.00	-
2.2	Erection of RMU 33KV 4WAY 630A WITH METERING UNIT (LLVV+M)	Nos.	0	15,000.00	-
2.3	Erection of RMU 33KV 3WAY 630A (2ISLTR+ 1BKR) (LLV)	Nos.	0	8,000.00	-
2.4	Erection of RMU 33KV 4WAY 630A (2ISLTR+2 BKR) (LLVV)	Nos.	1	8,000.00	8,000.00
2.5	Erection of RMU 33KV 3WAY 630AMP (3 ISOLATORS) (LLL)	Nos.	0	8,000.00	-

2.6	Erection of RMU 33KV 4WAY 630AMP (4 ISOLATORS) (LLLL)	Nos.	0	8,000.00	-
3	**FRTU and OFC for RMU SCADA Automation**				
3.1	Services of FRTU Panel, Communication and Other Supplied System	EA	1.0	16,000.00	16,000.00
	Sub Total (Erection Portion) (in Rs.)				**10,585,880.40**
Civil Portion					
Sl. No.	**Description of items**	**Unit**	**Quantity**	**Rate (in Rs.)**	**Amount (in Rs.)**
1	**Civil works with supply of all materials like cement, MS tor rod, brick, coarse & fine aggregates and labour, T&P, etc for UG Cable Trench**				
1.1	Earth work excavation of soil (1mtr. width X 1.2mtr. depth)-Route Length	Mtr	3000		
1.1.a	Earth work excavation of **soil**	Cum	2520	700.00	1,764,000.00
1.1.b	Earth work excavation of **hard rock**	Cum	1080	1,720.00	1,857,600.00
1.2	Back filling with excavated soil outside and above the trench	Cum	3600	202.00	727,200.00
1.3	Damage of asphalt/tar road and other utilities and reconstructing to bring to its original shape after laying of cable in open trench (1mtr. width)	Mtr	900	2,643.67	2,379,303.57
2	**Civil works for Prefabricated RCC foundation with supply of all materials**				
2.1	Prefabricated RCC foundation of 33kV RMU	Nos.	1	23,145.30	23,145.30
3	Supply of GI Fencing with Gate around each **RMU**	sqmtr	20	3,600.00	72,000.00
4	Construction Earthing chamber including installation of earthing pipe.Making earthing chamber including excavation , soil treatment with bentonide powder , calculation of earth resistance, including Installation of 3Mtr GI Pipe 40mm/50mm including welding of GI flat around pipe .	Set	2	3,700.00	7,400.00
5	Supply and erection of GI Pipe of dia. 150mm, Class-B (8Mtr.)	Mtr	0	1,463.40	-
6	Supply and Erection of Cable Route Marker along the cable route at an interval of 30mtrs with civil works	Nos.	133	1,012.00	134,596.00
	Sub Total (Civil Portion) (in Rs.)				**6,965,244.87**
A	**Sub Total (Supply Portion)**				**25,081,883.24**
B	Stock, Storage & Insurance @ 3 % of A				752,456.50
C	**Sub Total (A+B)**				**25,834,339.74**
D	Contingency @ 3 % of C				775,030.19
E	Tools & Plants Charges @ 2% of C (considered for earthing items)				14,502.17
F	Transportation @ 7.5% of C				1,937,575.48
G	Erection Charges @ 10% of earthing items				72,510.87
H	**Total (C+D+E+F+G)**				**28,633,958.45**
I	Sub Total (Erection Portion + Civil Portion)				17,551,125.27
J	**Total Cost (H+I)**				**46,185,083.72**
K	Other Overhead /(including Supervision Charges) @ 6 % of J				-
L	**Total Estimated Capital Cost i.e. (J+K)**				**46,185,083.72**
M	GST @ 18% of L				8,313,315.07
M1	CESS @ 1% of L				461,850.84
N	**Grand Total (L+M+M1)**				**54,960,249.62**
O	Inspection Fee of UG Line (HT) - Rs. 3000/ km.				-
P	Inspection Fee of UG Line (HT) - Rs. 1500/ Additional Km				
Q	Inspection Fee of RMU - Rs. 1500/ RMU				1,500.00

R	Inspection Fee of Drawing Checking and Approval	750.00
S	**Gross Total Material, Services and Inspection Fees (N+O+P+Q+R)**	**54,962,499.62**

Existing SLD of 33 kV Athagara FEEDER



Existing SLD of 33 kV Athagara FEEDER

