Refer 6.3.4 of the petition

1. **FDR-5 (Sishubhawan)**

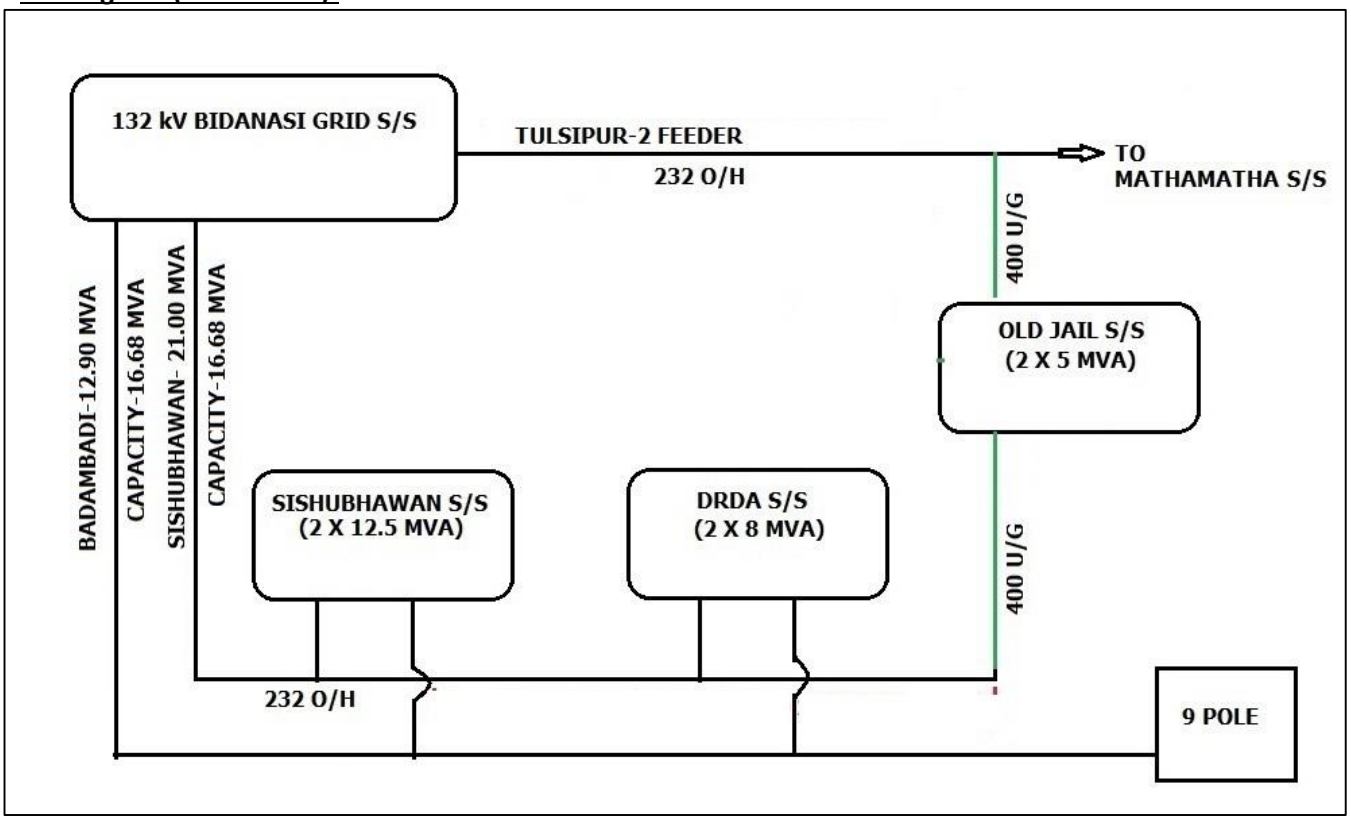
Proposal: Strenthening of existing 33 kV connectivity of Sishubhawan feeder eminating from 33/11 kV Sishubhawan S/S to Blue Lagoon Hotel via DRDA S/S by agumentating the OH conductor from 100 sq.mm. to 232 sq.mm.

Objective: To maintain reliability of Power Supply by mitigating Over loading and N-1.

Existing Scenario:

- At present, 33/11 kV Sishubhawan, DRDA and Old Jail S/S are connected through Sishubhawan feeder from 132 kV Bidanasi Grid S/S.
- Only from 132 kV Bidanasi Grid to Sishubhawan S/S, O/H conductor size is 232 sq.mm. But the conductor size from Sishubhawan S/S to Blue Lagoon Hotel (Near T-off to Old Jail) via DRDA S/S is 100 sq.mm (approx.1.5 KM). The maximum peak of Sishubhawan feeder is 21.00 MVA. In this scenario, Sishubhawan feeder is overloaded and also N-1 is not possible during exigencies.

Existing SLD (Summer'20):



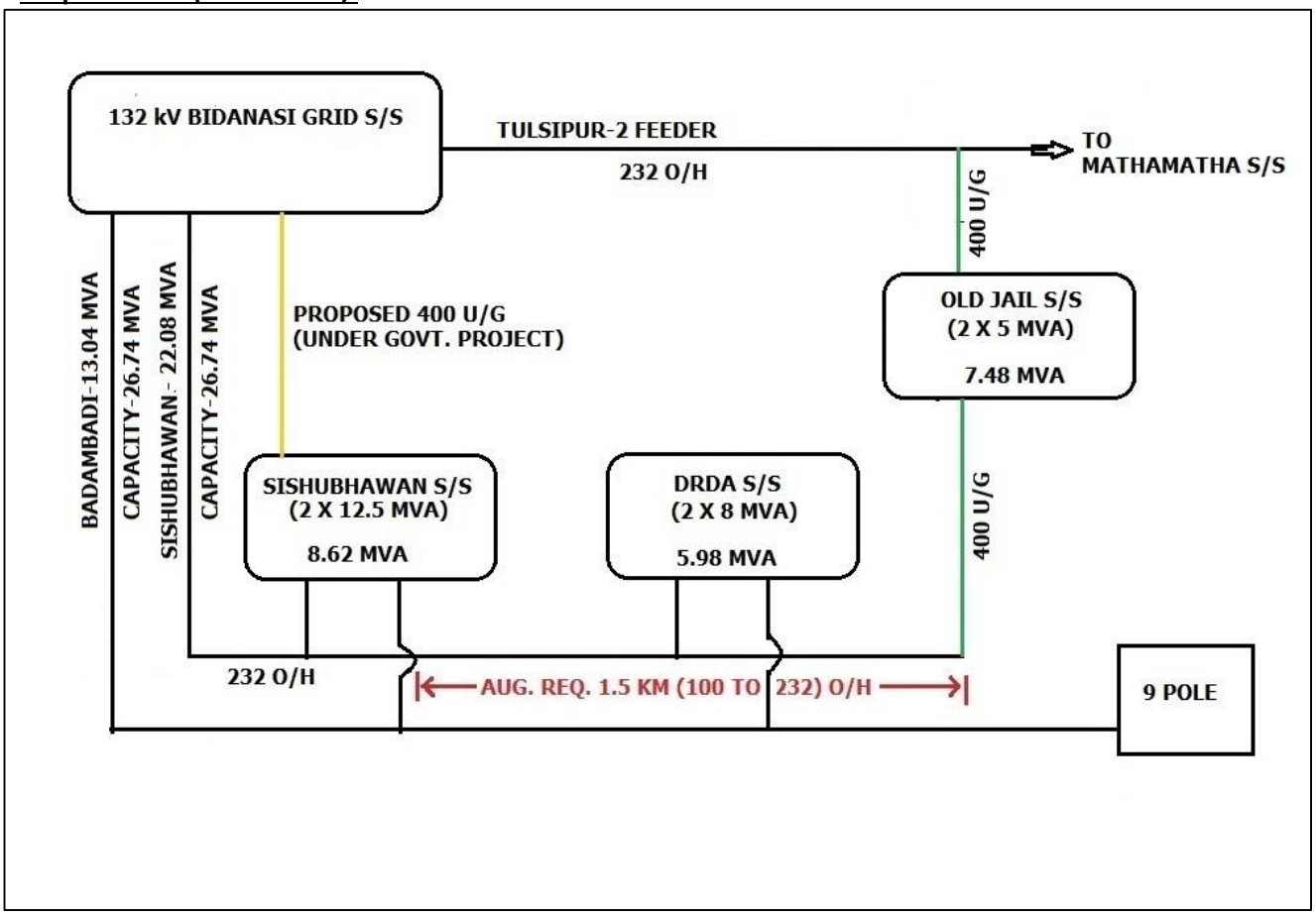
Proposed Scenario:

- Peak load for FY'22 will be 22.08 MVA on Sishubhawan feeder considering load growth of 2.55%.
- Augmentation proposed from 100 sq.mm. to 232 sq.mm., 1.5 KM (approx.) using Double pole from Sishubhawan S/S to Blue lagoon Hotel (Near T-off to Old Jail) via DRDA S/S. So, Sishubhawan feeder will be strengthened and whole feeder capacity will become 26.74 MVA.

Refer 6.3.4 of the petition

- Another 33 kV feeder has already proposed from 132 kV Bidanasi Grid S/S to 33 kV Sishubhawan S/S through 400 sq.mm. U/G under Govt. Project. So, N-1 for Sishubhawan feeder has already been mitigated.

Proposed SLD (Summer'22):



Detailed Scope of Work:

Augmentation of O/H Line:

Augmentation of conductor from 100 sq.mm. to 232 sq.mm., 1.5 KM (approx.) using Double pole from 33/11 kV Sishubhawan S/S to Blue Lagoon Hotel (Near T-off to Old Jail) via DRDA S/S.

BOQ:

Refer 6.3.4 of the petition

6.3.4.1 Augmentation of existing 33 KV Sishubhawan Feeder from 100 sq.mm. to 232 sq.mm. from Sishubhawan Structure to Blue lagoon hotel

NEW POLE 10 ,13 MTR R JOIST POLE .(449.8 KG /POLE)

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
11	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
12	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
13	MSGI37	Earthing Coil	No.	10	166	1,660.00
14	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
15	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
16	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
17	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
18	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
19	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**8,43,125.00**
	B	Stock & Storage @ 3% of A				25293.75
	C	Sub - Total (A+B)				8,68,418.75
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,95,394.22
	E	Sub - Total (C+D)				10,63,812.97
	F	Other Overheads including supervision charges @ 6% of E				63,828.78
	G	Total estimated Capital Cost (E+F)				11,27,641.75
	H	GST 18% of G				2,02,975.51
	I	CESS 1% of G				11,276.42
	J	**Total Cost**				**13,41,893.68**
		Total cost For 1.5 CKT KM	**CKM**	**1.5**	**13,41,893.68**	**20,12,840.52**

Benefit:

1) Overloading on Sishubhawan feeder will be Mitigate and the capacity will become 26.74 MVA.
2) Also, N-1 redundancy will improve reliability of Power Supply for the consumers of Badambadi S/S

Refer 6.3.4 of the petition

2. Sector 6 Feeder

Proposal:

A) Power evacuation from newly constructed OPTCL 132 kV CDA Grid S/S (Brajabiharpur), through 2 Nos. of 33KV O/H feeder which will provide load relief to 132/33KV Bidanasi Grid.
B) Augmentation of existing 100 Sq mm from 4 pole to Sector 6 to mitigate the overloading Problem of the line.
C) For mitigating the Single connectivity issue at Satichaura, Sector 10 & 11 and Sector 13 S/S additional 33KV network connectivity is proposed between Satichaura Structure to 33KVTulsipur-1 feeder.
.

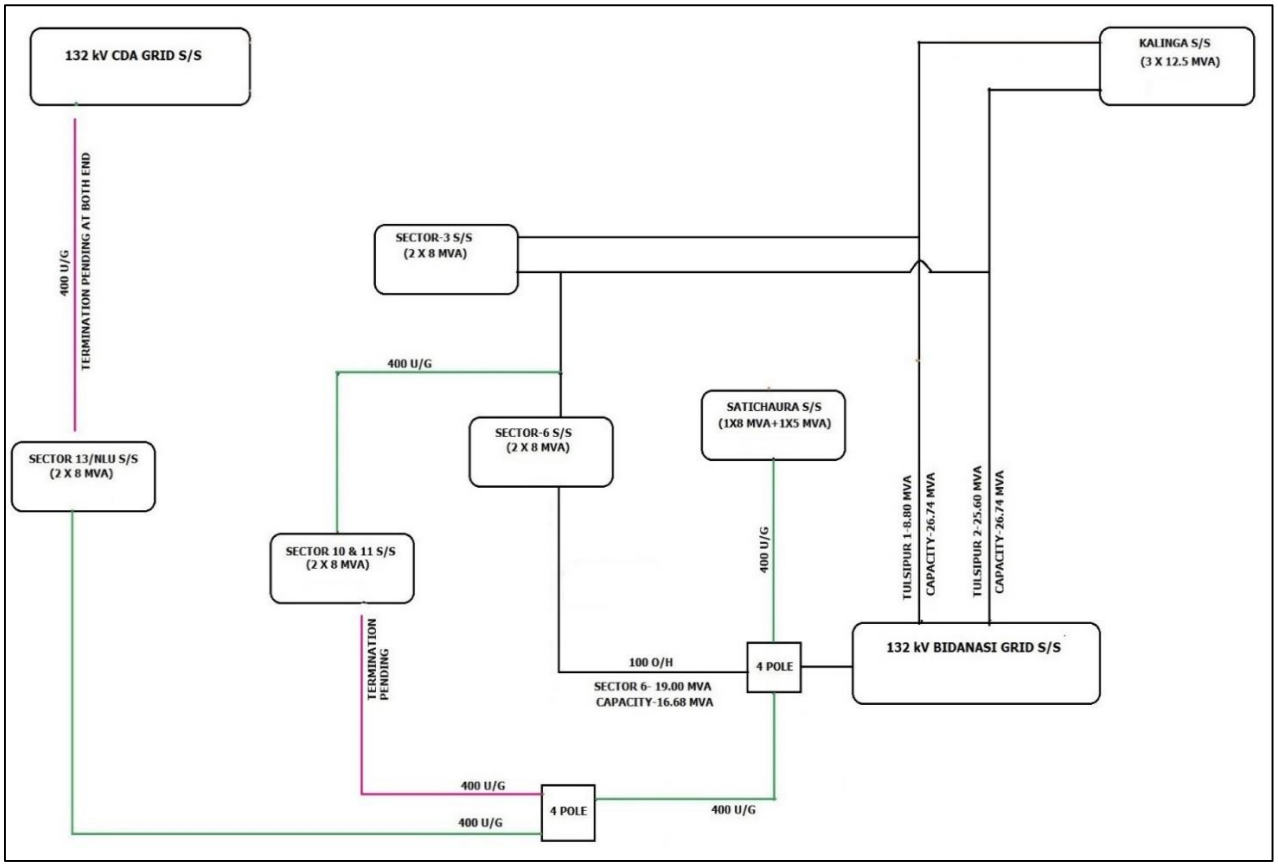
Objective: To maintain reliability of Power Supply by mitigating Over loading, N-1 and Single connectivity.

Existing Scenario:

- At present, 33/11 kV Sector-6, Satichaura, Sector-10 & 11 and Sector-13 S/S are connected through Sector-6 feeder from 132 kV Bidanasi Grid S/S.
- Conductor size from 4 pole inside 132 kV Bidanasi Grid S/S to Sector-6 S/S is 100 sq.mm and experienced the peak load of 19 MVA. In this scenario, Sector-6 feeder becomes overloaded and any interruption in this feeder will cause interruption to entire consumers connected on 33/11 kV Sector-6 and Sector-10 & 11.
- Single connectivity exists at Satichaura S/S, Sector-13 S/S and Sector-10 & 11 S/S.

Existing SLD (Summer'20):

Refer 6.3.4 of the petition

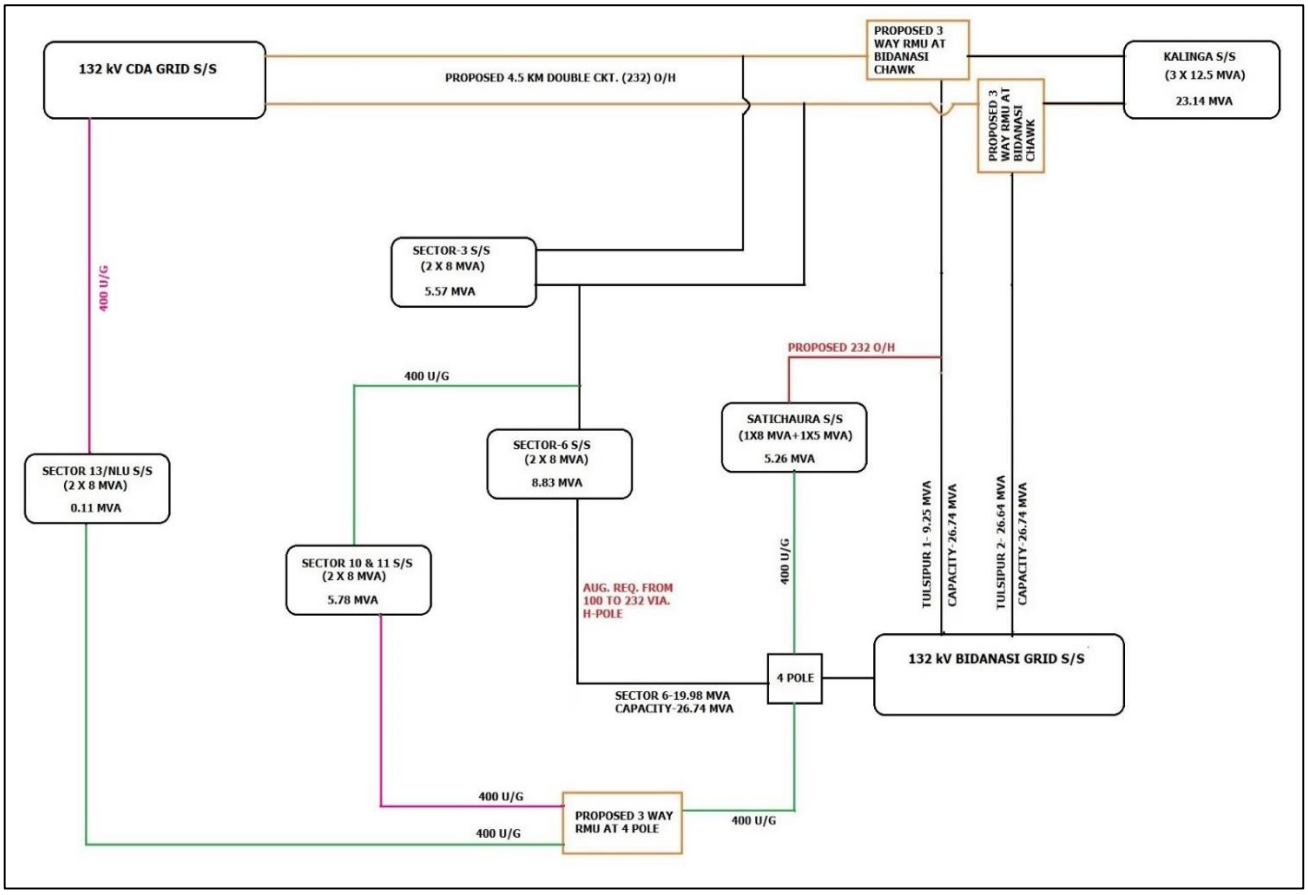


Proposed Scenario:

- Peak load for FY'22 is estimated to be 19.98 MVA on Sector-6 feeder considering load growth of 2.55%.
- Augmentation proposed for the existing conductor 100 sq.mm. to 232 sq.mm., 2.7 KM (approx.) using H-pole from 4 pole inside 132 kV Bidanasi Grid S/S to 33/11 kV Sector-6 S/S. So, capacity of the Sector-6 feeder will become 26.74 MVA.
- 2 nos. of new 33 kV feeder is proposed from 132 kV CDA Grid S/S(Brajabiharpur) to Bidanasi Chawk. This 33 kV line (approx. 4.5 KM) will be double circuited via H-pole and connected with Tulsipur-1 & 2 feeders through 2 nos. of 3 Way 33 kV RMU accordingly at Bidanasi Chawk. At this scenario, load shifting can be possible to 2 nos. New feeder from Tulsipur-1 & 2.
- 400 sq.mm. Cable has already laid from 132 kV CDA Grid S/S to Sector-13 S/S, termination required at both end of 132 kV CDA Grid S/S(Brajabiharpur) and Sector -13 S/S. So, Single connectivity of Sector-13 S/S and N-1 of Sector-6 feeder will be mitigated.
- 400 sq.mm Cable has already laid from 4 pole to Sector-10 & 11 S/S, termination required at Sector -10 & 11 S/S. So, Single connectivity of Sector-10 &11 S/S will be mitigated.
- O/H line proposed from Tulsipur-1 feeder to Satichaura S/S. So, Single connectivity of Satichaura S/S will be mitigated.

Proposed SLD (Summer'22):

Refer 6.3.4 of the petition



Detailed Scope of Work:

Augmentation of O/H Line:

Augmentation proposed from 100 sq.mm. to 232 sq.mm., 2.7 KM (approx.) using H-pole from 4 pole inside 132 kV Bidanasi Grid S/S to 33/11 kV Sector-6 S/S.

New O/H Line:

4.5 KM double circuit, 232 sq.mm., AAAC O/H line via H-Pole from 132 kV CDA Grid S/S(New) to Bidanasi Chawk.

0.1 KM, 232 sq.mm O/H line from Tower of Tulsipur-1 feeder to Satichaura S/S. 0.1 KM 400 sq.mm. U/G cable will be required for connection to Proposed Incomer GIS panel.

33 kV RMU:

2 nos. of 3 Way 33 kV RMU proposed at Bidanasi Chawk.

2 no. of 3 Way 33 kV RMU proposed at 4 pole.

Cable Termination:

Termination required at both end of 132 kV CDA Grid S/S(Brajabiharpur) and Sector -13 S/S. 0.1 KM 232 sq.mm. AAAC O/H conductor, Cable termination Kit, DP structure will be required.

Termination required at the end of Sector -10 & 11 S/S. Cable termination Kit, DP structure will be required.

GIS Panels:

1 No. 33 kV Incomer GIS Panel required at Satichaura S/S.

1 No. 33 kV Bus- coupler GIS Panel required at Satichaura S/S.

Refer 6.3.4 of the petition

BOQ-

For Power evacuation from 132 kV CDA Grid S/S(Brajabiharpur) to Bidanasi Chawk:

33 KV DOUBLE CKT. LINE BY 13 METER H-POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.						
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	H-Pole-13 Mtr long (Galvanized) (720 Kg./each) (Cost=720kg x 75/- per kg = 54000.00 Each)	NO	29	54000	1566000
3		Concreting of pole	No	29	2639.18	76536.22
4		Couping of pole	No	29	676.37	19614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	69	1580	109020
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	0	100	0
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	69	150	10350
8	INS30	33KV G I pin	No.	0	192	0
9	INS2	33KV pin insulator polymer	No.	156	480	74880
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	36	500	18000
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	36	1440	51840
12	MSGI20	Stay Set 18mm	No	10	1050	10500
13	INS17	HT stay insulator(140x85 mm)	No.	10	50	500
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	10	125	1250
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	100	75	7500
16	MSGI37	Earthing Coil	No.	23	166	3818
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	6.18	156500	967170
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16169
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	250	65	16250
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30000	90000
21		50x6 flat	kg	100	75	7500
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1050	6300
23		No.6 GI Wire	K.g.	40	75	3000
24		40x6mm GI Flat for nutral	K.g.	50	75	3750
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19070	57210
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5525
		No-6 G I wire(Dia 4.8mm)	Kg	75	28.8	2160
		No-8 G I wire(Dia 4.6 mm)	Kg	75	9.17	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6630
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	0
	A	Total Cost of materials.				3138971.51
	B	Stock & Storage @ 3% of A				94169.1453
	C	Sub - Total (A+B)				3233140.655
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				727456.6474
	E	Sub - Total (C+D)				3960597.303
	F	Other Overheads including supervision charges @ 6% of E				237635.8382
	G	Total estimated Capital Cost (E+F)				4198233.141
	H	GST 18% of G				755681.9654
	I	CESS 1% of G				41982.33141
	J	Total Cost				4995897.438
B		Total cost For 4.5 KM Double Ckt. Line	CKM	4.5	4995897.438	22481538.47

Refer 6.3.4 of the petition

FOR 3 WAY RMU					
	Description of Materials	Unit	Qty	Rate	Amount
	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	EA	1	2347300	2347300
	Design & construction of RCC foundation structure	LS	1	30083.86	30083.86
	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3150
	50X6 FLAT	KG	50	75	3750
	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	LS	1	40000	40000
	Total Estimated Capital cost				2424283.86
	Stock ,Storage &Insurance				72728.5158
	Sub Total (A+B)				2497012.376
	2% T & P charges of (A+B)				49940.24752
	3% Contigency of (A+B)				74910.37127
	7.5% Transportation charges of (A+B)				187275.9282
	10% Errection Charges of (A+B)				249701.2376
	Sub total (A to F)				3058840.16
	Other over head (Including 6%) supervision charges of G				183530.4096
	Total Estimated Capital cost (G+H)				3242370.57
	GST @ 18% of H				583626.7026
	CESS @1% of I				32423.7057
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				3863995.978
C	Total cost for 2 Nos. of 3 way RMU	No	2	3863995.978	7727991.957

A) <u>Augmentation of existing 100 Sq mm from 4 pole to Sector 6 to mitigate the overloading issue:</u>

Refer 6.3.4 of the petition

6.3.4.2 1) Power evacuation via 2 nos. feeder from CDA(Brajabiharpur) OPTCL Grid S/S by construction of 4.5 KM Double Ckt. Line.
2) Augmentation of 33 kV line from Bidanasi to Sector-VI S/S through H pole from 100 sq.mm to 232 sq.mm.

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG H-POLE	No.	10	54,000	5,40,000.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
12	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
13	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
14	MSGI37	Earthing Coil	No.	10	166	1,660.00
15	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
21	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
22	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
23	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
24	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
25	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**10,90,805.00**
	B	Stock & Storage @ 3% of A				32724.15
	C	Sub - Total (A+B)				11,23,529.15
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				2,52,794.06
	E	Sub - Total (C+D)				13,76,323.21
	F	Other Overheads including supervision charges @ 6% of E				82,579.39
	G	Total estimated Capital Cost (E+F)				14,58,902.60
	H	GST 18% of G				2,62,602.47
	I	CESS 1% of G				14,589.03
	J	**Total Cost**				**17,36,094.10**
A		**Total cost For 2.7 CKT KM Line with (Aug. by H-Pole)**	**CKM**	**2.7**	**17,36,094.10**	**46,87,454.06**

Refer 6.3.4 of the petition

B) <u>For mitigating the Single connectivity issue at Satichaura, Sector 10 & 11 and Sector 13 S/S:</u>

<u>For Satichaura:</u>

6.4.3.2 For mitigating the Single connectivity issue at Satichaura,					
1	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
	33 kV GIS PanelFor 1 No. I/C and 1 No. Bus-Coupler	EA	2	1200000	24,00,000.00
	Stock ,Storage &Insurance				72,000.00
	Sub Total (A+B)				24,72,000.00
	2% T & P charges of (A+B)				49,440.00
	3% Contigency of (A+B)				74,160.00
	7.5% Transportation charges of (A+B)				1,85,400.00
	10% Errection Charges of (A+B)				2,47,200.00
	Sub total (A to F)				30,28,200.00
	Other over head (Including 6%) supervision charges of G				1,81,692.00
	Total Estimated Capital cost (G+H)				32,09,892.00
	GST @ 18% of H				5,77,780.56
	CESS @1% of I				32,098.92
	Inspection Fee				5575
A	**Grand Total (I+J+K+L+M+N)**				**38,25,346.48**

Refer 6.3.4 of the petition

Sl. No.	Description of Materials	Unit		Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr		1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set		3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set		2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos		3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos		4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos		20	2000	40000
5	Cable laying, excavation and backfilling	MTR		1000	3000	3000000
6	Hosting of 33KV Cable	Nos		2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24		2	250	500
8	Clamp for brassing	Nos		4	117	468
Construction of DP=2Nos.						
9	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2		65	116948
10	10x50x6 mm GI channel	Kg	206		78	16068
11	75 x 40 x 6 mm GI. Channel	Kg		180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg		145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.		4	1050	4200
14	No.6 GI Wire	K.g.		40	75	3000
15	40x6mm GI Flat for nutral	K.g.		40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set		2	19070	38140
17	33KV LA	No		6	10350	62100
18	33KVHG fuse	No		2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.		4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No		12	1360	16320
21	4 Bolt single tension H/W fitting	Nos		12	3460	41520
22	HT Stay Set Complete	Set		4	1050	4200
23	HT Stay insulator	No.		4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair		4	125	500
25	7/10 Stay Wire	Kg		40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.		4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.		4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.		4	676.37	2705.48

Refer 6.3.4 of the petition

29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
	Total cost of Material as per 2018-19				
A	Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				**93,61,866.19**

Refer 6.3.4 of the petition

B		Total cost For 0.1 KM U/G cable NW				9,36,186.62
		33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.				
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29232	847728
3		Concreting of pole	No	29	2639.18	76536.22
4		Couping of pole	No	29	676.37	19614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1580	36340
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2300
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3450
8	INS30	33KV G I pin	No.	0	192	0
9	INS2	33KV pin insulator polymer	No.	78	480	37440
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6000
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1440	17280
12	MSGI20	Stay Set 18mm	No	8	1050	8400
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1000
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6000
16	MSGI37	Earthing Coil	No.	23	166	3818
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	156500	483585
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16169
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7410
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30000	90000
21		50x6 flat	kg	60	75	4500
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1050	6300
23		No.6 GI Wire	K.g.	40	75	3000
24		40x6mm GI Flat for nutral	K.g.	50	75	3750
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19070	57210
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5525
		No-6 G I wire(Dia 4.8mm)	Kg	75	28.8	2160
		No-8 G I wire(Dia 4.6 mm)	Kg	75	9.17	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6630

Refer 6.3.4 of the petition

29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	0
	A	**Total Cost of materials.**				**17,60,044.51**
	B	Stock & Storage @ 3% of A				52801.3353
	C	Sub - Total (A+B)				18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
	E	Sub - Total (C+D)				22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E				1,33,244.17
	G	Total estimated Capital Cost (E+F)				23,53,980.33
	H	GST 18% of G				4,23,716.46
	I	CESS 1% of G				23,539.80
	J	**Total Cost**				**28,01,236.59**
C		**Total cost For 0.1 KM New 33 kV Line**				**2,80,123.66**
			GRAND TOTAL(A+B+C)			**50,41,656.76**

For Sector 10 & 11:

Refer 6.3.4 of the petition

	6.4.3.2For mitigating the Single connectivity issue at Sector 10 & 11 S/S.					
	FOR 3 WAY RMU					
	TYPE OF RMU		UOM	Quantity	Rate	Amount
	1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
	2	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
	3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
	4	50X6 FLAT	KG	50	75	3,750.00
	5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
		Total Estimated Capital cost				24,24,283.86
		Stock ,Storage &Insurance				72,728.52
		Sub Total (A+B)				24,97,012.38
		2% T & P charges of (A+B)				49,940.25
		3% Contigency of (A+B)				74,910.37
		7.5% Transportation charges of (A+B)				1,87,275.93
		10% Errection Charges of (A+B)				2,49,701.24
		Sub total (A to F)				30,58,840.16
		Other over head (Including 6%) supervision charges of G				1,83,530.41
		Total Estimated Capital cost (G+H)				32,42,370.57
		GST @ 18% of H				5,83,626.70
		CESS @1% of I				32,423.71
		Inspection Fee				5575
		Grand Total (I+J+K+L+M+N)				38,63,995.98
A	**For 1 Nos. of 3 way RMU**		**No**	**2**	**38,63,995.98**	**77,27,991.96**
		For 33 kV Outdoor VCB Set				
	1	33 kV Outdoor VCB with 2 core CT and Indoor C & R Panel	No	1	533600	533600
	2	3x400mm^2 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
		Total Estimated Capital cost				6,00,110.00
		Stock ,Storage &Insurance				18,003.30
		Sub Total (A+B)				6,18,113.30
		2% T & P charges of (A+B)				12,362.27
		3% Contigency of (A+B)				18,543.40
		7.5% Transportation charges of (A+B)				46,358.50
		10% Errection Charges of (A+B)				61,811.33
		Sub total (A to F)				7,57,188.79
		Other over head (Including 6%) supervision charges of G				45,431.33
		Total Estimated Capital cost (G+H)				8,02,620.12
		GST @ 18% of H				1,44,471.62
		CESS @1% of I				8,026.20
		Inspection Fee				5575
B		**Grand Total**				**9,60,692.94**
		Grand Total (A+B)				**86,88,684.90**

Refer 6.3.4 of the petition

Benefit:

1) Power evacuation from 132 kV CDA Grid S/S (Brajabiharpur), through 2 Nos. O/H feeder provide relief to 132/33KV Bidanasi Grid alongwith network connectivity at Satichaura to give N-1 redundancy.

2) Strengthen the 33 kV connectivity by Augmentation of 33 kV line from 4 pole to Sector-6.

3) Mitigating the Single connectivity at Satichaura and Sector 10 & 11 will improve the Power reliability for the consumers.

Refer 6.3.4 of the petition

3. Bahugram Feeder

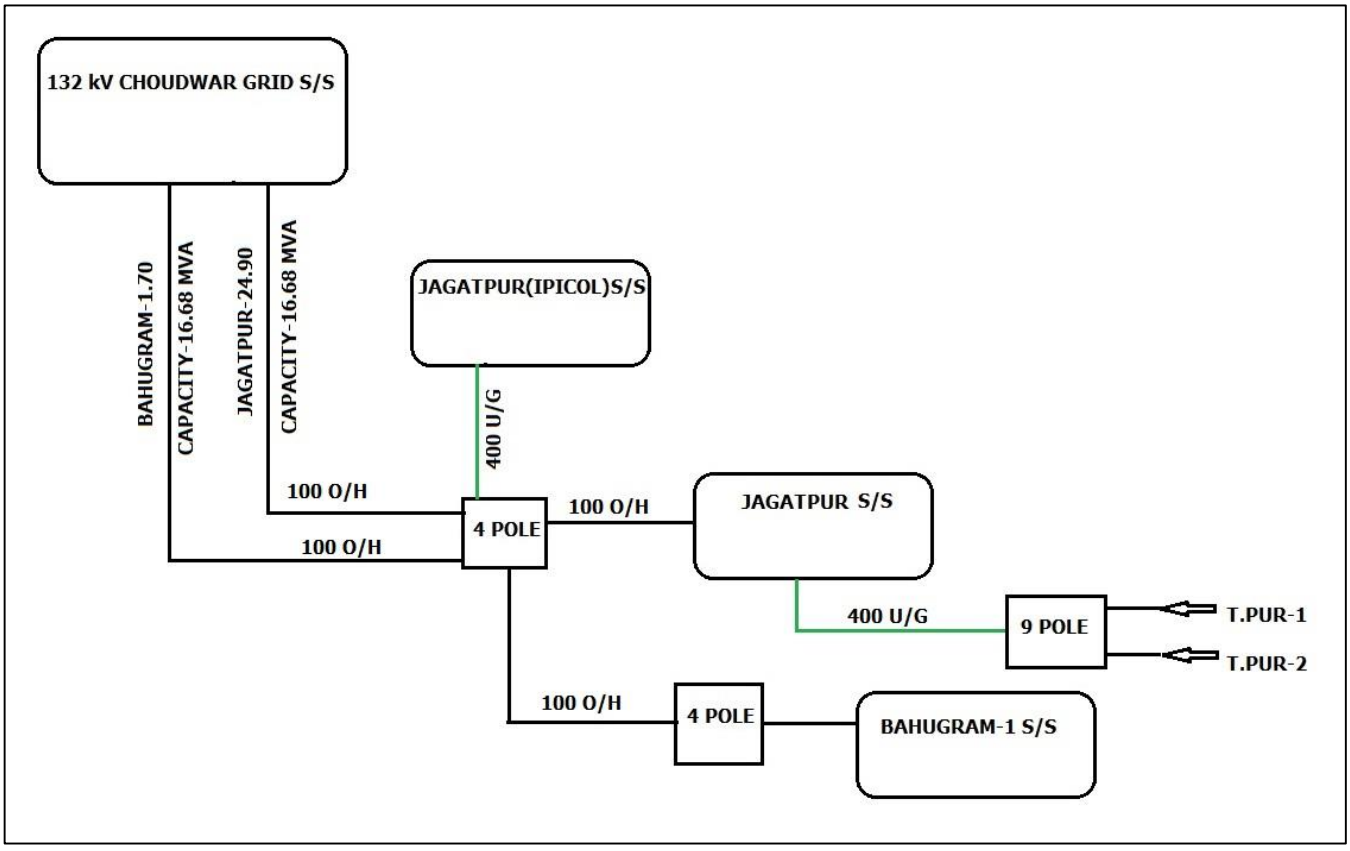
Proposal: 33 kV interconnectivity between 33KV Bahugram feeder with Jagatpur Feeder by installing 3 Way 33 kV RMU inside Jagatpur S/S.

Objective: To maintain reliability of Power Supply by mitigating N-1.

Existing Scenario:

- At present, 33/11 kV Bahugram-1 & 2 S/S are connected through Bahugram feeder from 132 kV Choudwar Grid S/S via 33 kV VCB at Jagatpur S/S. 33/11 kV Jagatpur S/S is connected through Jagatpur feeder from 132 kV Choudwar Grid S/S and also connected from Tulsipur-I/II from 132 kV Bidanasi Grid S/S. But, there is no connectivity between Bahugram feeder, Jagatpur feeder and Tulsipur- I/II feeder.
- Therefore, No provision for mitigating N-1 for Bahugram feeder.

Existing SLD (Summer'20):

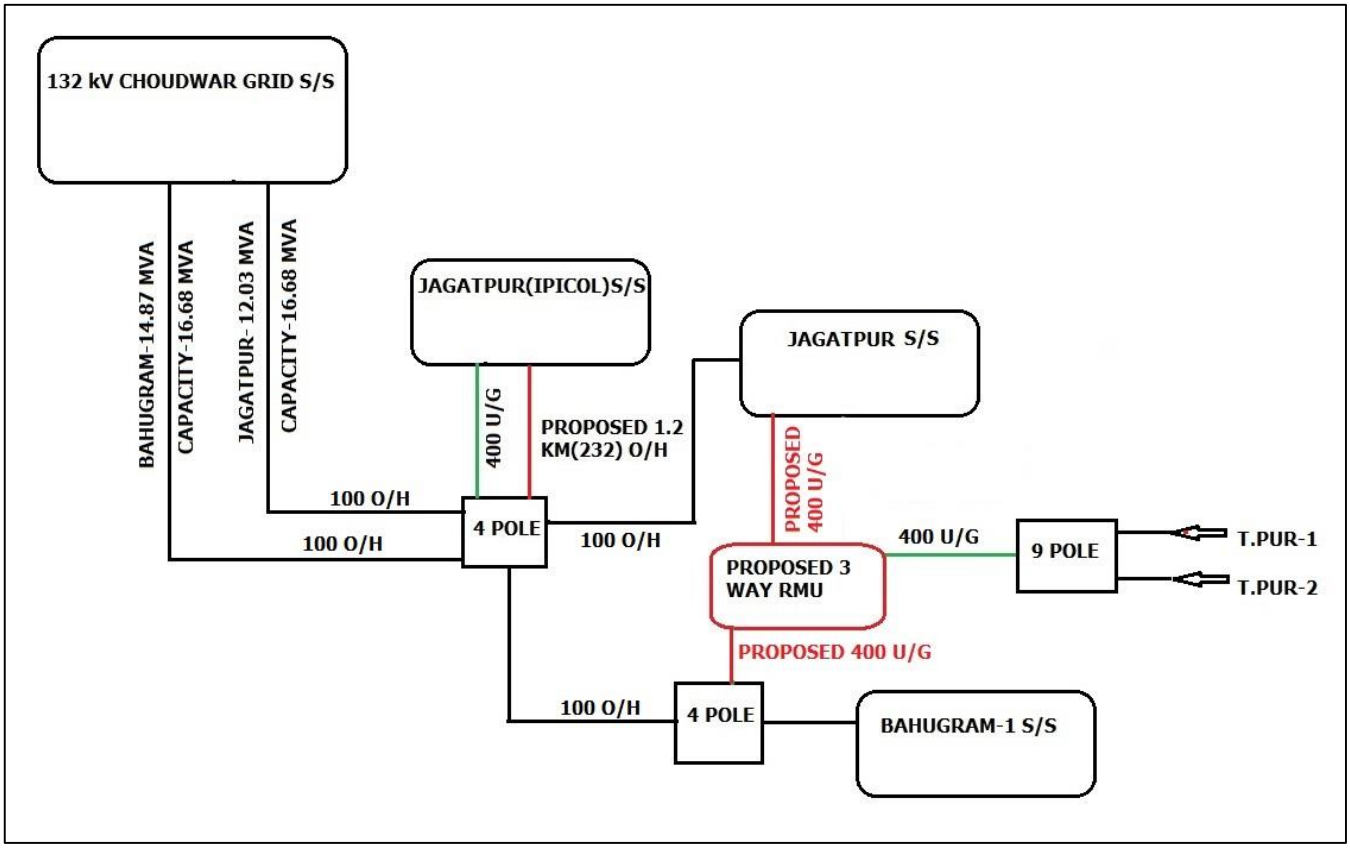


Proposed Scenario:

- 3 Way RMU proposed inside Jagatpur S/S. 0.2 KM (400 sq.mm) U/G cable proposed for connection between 4 pole to proposed 3 Way RMU and 3 Way RMU to 33 kV Bus at Jagatpur S/S.
- In this scenario, N-1 for Bahugram feeder will be mitigated.
- Also, Tulsipur-I/II will be connected to Isolator on proposed RMU.

Refer 6.3.4 of the petition

Proposed SLD (Summer'22):



Detailed Scope of Work:

New U/G :

0.2 KM 33 kV (400 sq.mm.) U/G cable proposed for interconnection 4 pole to RMU and RMU to 33 kV Bus at Jagatpur S/S.

33 kV RMU:

1 no. 3 Way 33 kV RMU proposed inside Jagatpur S/S.

BOQ:

Refer 6.3.4 of the petition

6.3.4.3 Proposal: 33 kV interconnectivity between 33KV Bahugram feeder with Jagatpur Feeder by installing 3 Way 33 kV RMU inside Jagatpur S/S.

	FOR 3 WAY RMU	UOM	Quantity	Rate	Amount
	TYPE OF RMU				
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
2	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
4	50X6 FLAT	KG	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
A	**For 1 Nos. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**
	For 33 kV Isolator without Earth Switch				
1	33 kV Isolator with Earth Switch	No	1	67500	67500
	Total Estimated Capital cost				67,500.00
	Stock ,Storage &Insurance				2,025.00
	Sub Total (A+B)				69,525.00
	2% T & P charges of (A+B)				1,390.50
	3% Contigency of (A+B)				2,085.75
	7.5% Transportation charges of (A+B)				5,214.38
	10% Errection Charges of (A+B)				6,952.50
	Sub total (A to F)				85,168.13
	Other over head (Including 6%) supervision charges of G				5,110.09
	Total Estimated Capital cost (G+H)				90,278.21
	GST @ 18% of H				16,250.08
	CESS @1% of I				902.78
	Inspection Fee				5575
B	**Grand Total**				**1,13,006.07**

Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	o/Kg 4/1799	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140

Refer 6.3.4 of the petition

17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
O	Grand Total (I+J+K+L+M+N)				93,61,866.19
C	**For 0.2 KM U/G**	**KM**		**9361866.186**	**18,72,373.24**
	Grand Total(A+B+C)				**58,49,375.29**

Refer 6.3.4 of the petition

Benefit:

3) N-1 for Bahugram feeder will be Mitigate.
4) Reliability of Power Supply will be improved for the consumers of Jagatpur S/S, Bahugram-1 & 2 S/S.

4. RSB Feeder

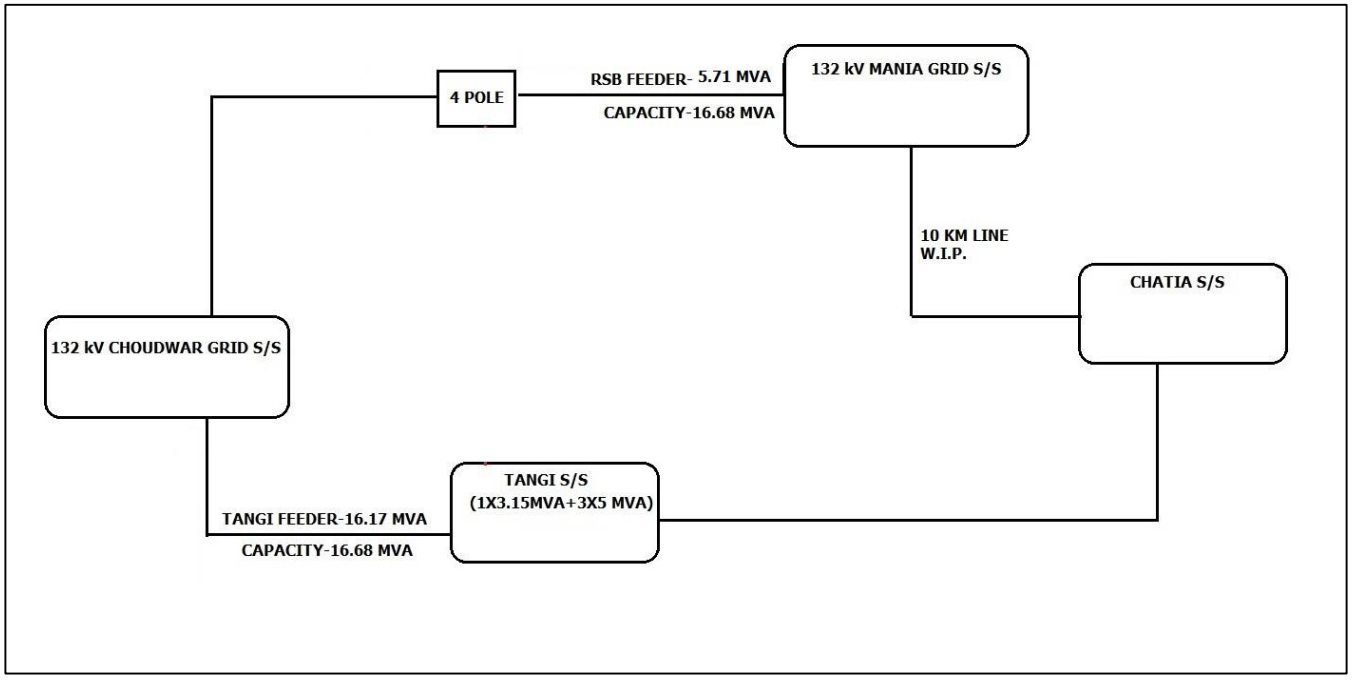
Proposal: Strenthening existing 33 kV RSB feeder connectivity from 132 kV Mania Grid S/S to 4 Pole near Tangi by agumentating the conductor from 100 sq.mm. to 232 sq.mm. and Construction of New O/H 33 kV Line from 4 Pole to Tangi S/S. The propoasl will mitigate RSB feeder Overloading & will improve N-1 reliability.

Objective: To maintain reliable Power Supply to consumers by mitigating the Over loading and establising N-1 connectivity.

Existing Scenario:

- At present, 33/11 kV Tangi S/S and some 33 kV consumer are connected through Tangi feeder from 132 kV Choudwar Grid S/S and peak load in Tangi feeder is 16.17 MVA.
- No provision for mitigating N-1 for Tangi feeder.

Existing SLD (Summer'20):



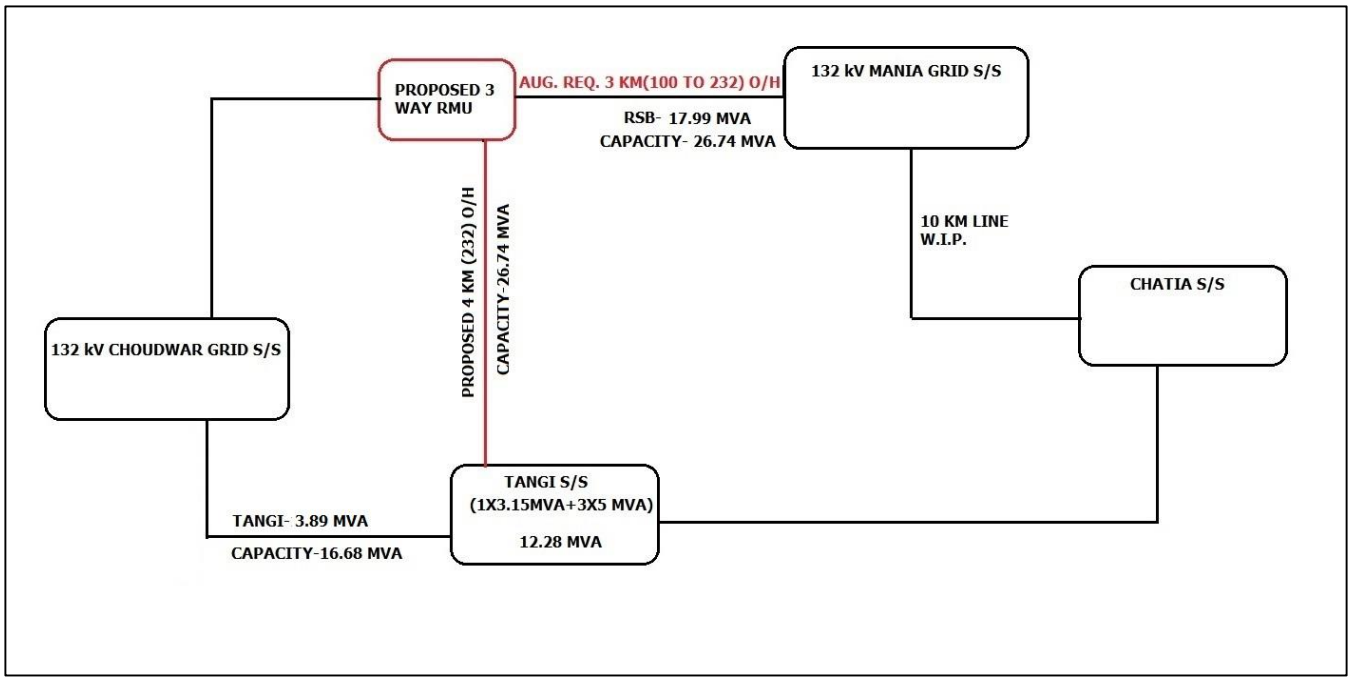
Proposed Scenario:

- Peak load for FY'22 will be 17.10 MVA on Tangi feeder considering load growth of 2.83%.

Refer 6.3.4 of the petition

- Augmentation proposed from 100 sq.mm. to 232 sq.mm., 3 KM (approx.) for RSB feeder from 132 Mania Grid S/S to 4 pole near Tangi S/S. So, RSB feeder will be strengthened and whole feeder capacity will be 26.74 MVA.
- Now, new 4 KM 33 kV O/H(232 sq.mm.) line proposed from 4 pole to 33/11 kV Tangi S/S. So, Overloading and N-1 for Tangi feeder has already been mitigated.

Proposed SLD (Summer'22):



Detailed Scope of Work:

Augmentation of O/H Line:

Augmentation proposed from 100 sq.mm. to 232 sq.mm., 3 KM (approx.) for RSB feeder from 132 Mania Grid S/S to 4 pole near Tangi S/S.

New O/H Line:

4 KM 33 kV O/H(232 sq.mm., AAAC) line proposed from 4 pole to 33/11 kV Tangi S/S.

33 kV RMU:

1 no. 3 Way 33 kV RMU proposed at 4 pole near Tangi S/S.

33 kV Line Bay:

Construction of 1 no. 33 kV Line Bay at Tangi S/S.

Refer 6.3.4 of the petition

6.3.4.4 Proposal- Augmentation of 33 kV line from Mania to 4 pole from 100 sq.mm. to 232 sq.mm. and to be extended by constructing New 33 kV Line to Tangi S/S.						
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
11	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
12	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
13	MSGI37	Earthing Coil	No.	10	166	1,660.00
14	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
15	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
16	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
17	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
18	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
19	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**8,43,125.00**
	B	Stock & Storage @ 3% of A				25293.75
	C	Sub - Total (A+B)				8,68,418.75
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,95,394.22
	E	Sub - Total (C+D)				10,63,812.97
	F	Other Overheads including supervision charges @ 6% of E				63,828.78
	G	Total estimated Capital Cost (E+F)				11,27,641.75
	H	GST 18% of G				2,02,975.51
	I	CESS 1% of G				11,276.42
	J	**Total Cost**				**13,41,893.68**
A		**For Augmentation of 3 kM Line**				**40,25,681.04**

BOQ:

Refer 6.3.4 of the petition

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.						
Sl.No.	**Mtr Code**	**Description of Materials**	**Unit**	**Qty**	**Rate**	**Amount**
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**17,60,044.51**
	B	Stock & Storage @ 3% of A				52801.3353
	C	Sub - Total (A+B)				18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
	E	Sub - Total (C+D)				22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E				1,33,244.17
	G	Total estimated Capital Cost (E+F)				23,53,980.33
	H	GST 18% of G				4,23,716.46
	I	CESS 1% of G				23,539.80
	J	**Total Cost**				**28,01,236.59**
B		**For 33 kV New Line-4 kM**				**1,12,04,946.37**

Refer 6.3.4 of the petition

	BAY ADDITION	**13,00,000.00**
	Total Estimated Capital cost -1NO Qty	1300000
	Stock ,Storage &Insurance	39,000.00
	Sub Total (A+B)	13,39,000.00
	2% T & P charges of (A+B)	26,780.00
	3% Contigency of (A+B)	40,170.00
	7.5% Transportation charges of (A+B)	1,00,425.00
	10% Errection Charges of (A+B)	1,33,900.00
	Sub total (A to F)	16,40,275.00
	Other over head (Including 6%) supervision charges of G	98,416.50
	Total Estimated Capital cost (G+H)	17,38,691.50
	GST @ 18% of H	3,12,964.47
	CESS @1% of I	17,386.92
	Inspection Fee	5575
C	**Grand Total (I+J+K+L+M+N)**	**20,74,617.89**

	TYPE OF RMU	
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	23,47,300.00
2	Design & construction of RCC foundation structure	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	3,150.00
4	50X6 FLAT	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	40,000.00
	Total Estimated Capital cost	24,24,283.86
	Stock ,Storage &Insurance	72,728.52
	Sub Total (A+B)	24,97,012.38
	2% T & P charges of (A+B)	49,940.25
	3% Contigency of (A+B)	74,910.37
	7.5% Transportation charges of (A+B)	1,87,275.93
	10% Errection Charges of (A+B)	2,49,701.24
	Sub total (A to F)	30,58,840.16
	Other over head (Including 6%) supervision charges of G	1,83,530.41
	Total Estimated Capital cost (G+H)	32,42,370.57
	GST @ 18% of H	5,83,626.70
	CESS @1% of I	32,423.71
	Inspection Fee	5575
D	**Total (I+J+K+L+M+N)**	**38,63,995.98**
	GRAND TOTAL(A+B+C+D)	**2,11,69,241.27**

Benefit:

1) Power supply reliability will be improved for the consumers of Tangi S/S .
2) 33KV RSB Feeder overloading & N-1 issue will be resolved .

Refer 6.3.4 of the petition

5. Balikuda Feeder

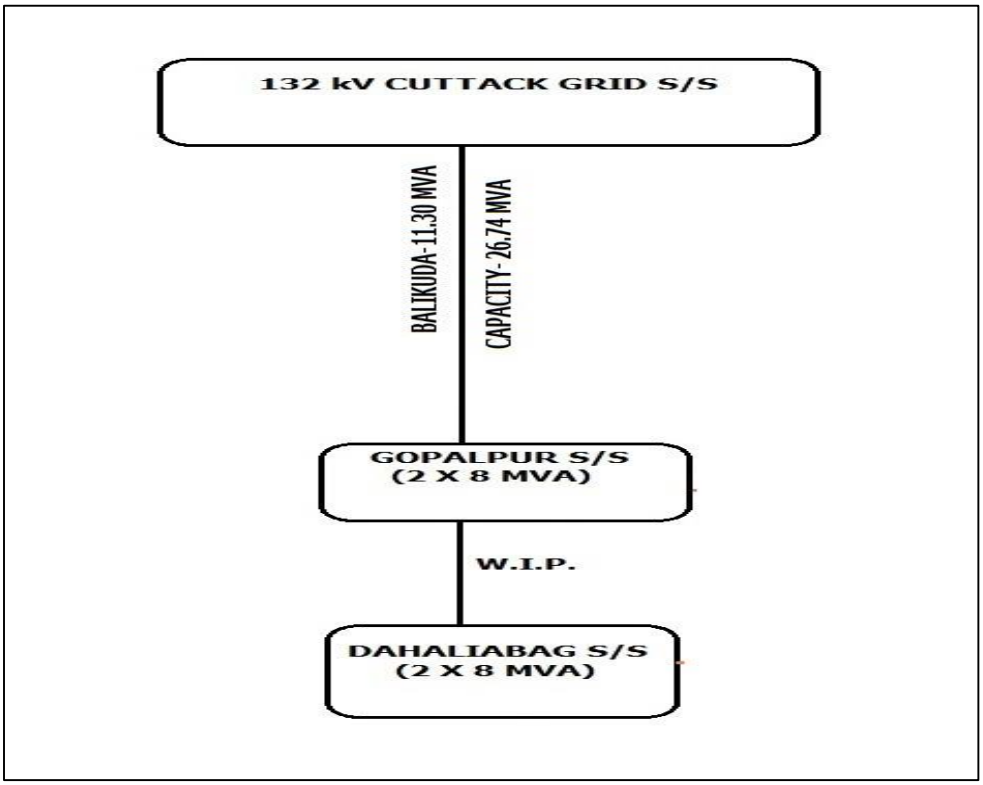
Proposal:
Mitigation of the Single connectivity of 33/11 kV Gopalpur , 33/11KV Dahaliabag S/S and providing N-1 redundancy to 33KV Balikuda feeder.

Objective: To maintain reliable Power Supply to consumers by mitigating Single connectivity.

Existing Scenario:

- At present, 33/11 kV Gopalpur S/S is connected through Balikuda feeder from 132 kV Cuttack Grid S/S and peak load in this feeder is 11.30 MVA. Single connectivity exists for Gopalpur S/S.
- Also, 33/11 kV Dahaliabag S/S is connected from 33/11 kV Gopalpur S/S. Single connectivity exists for Gopalpur S/S.

Existing SLD (Summer'20):

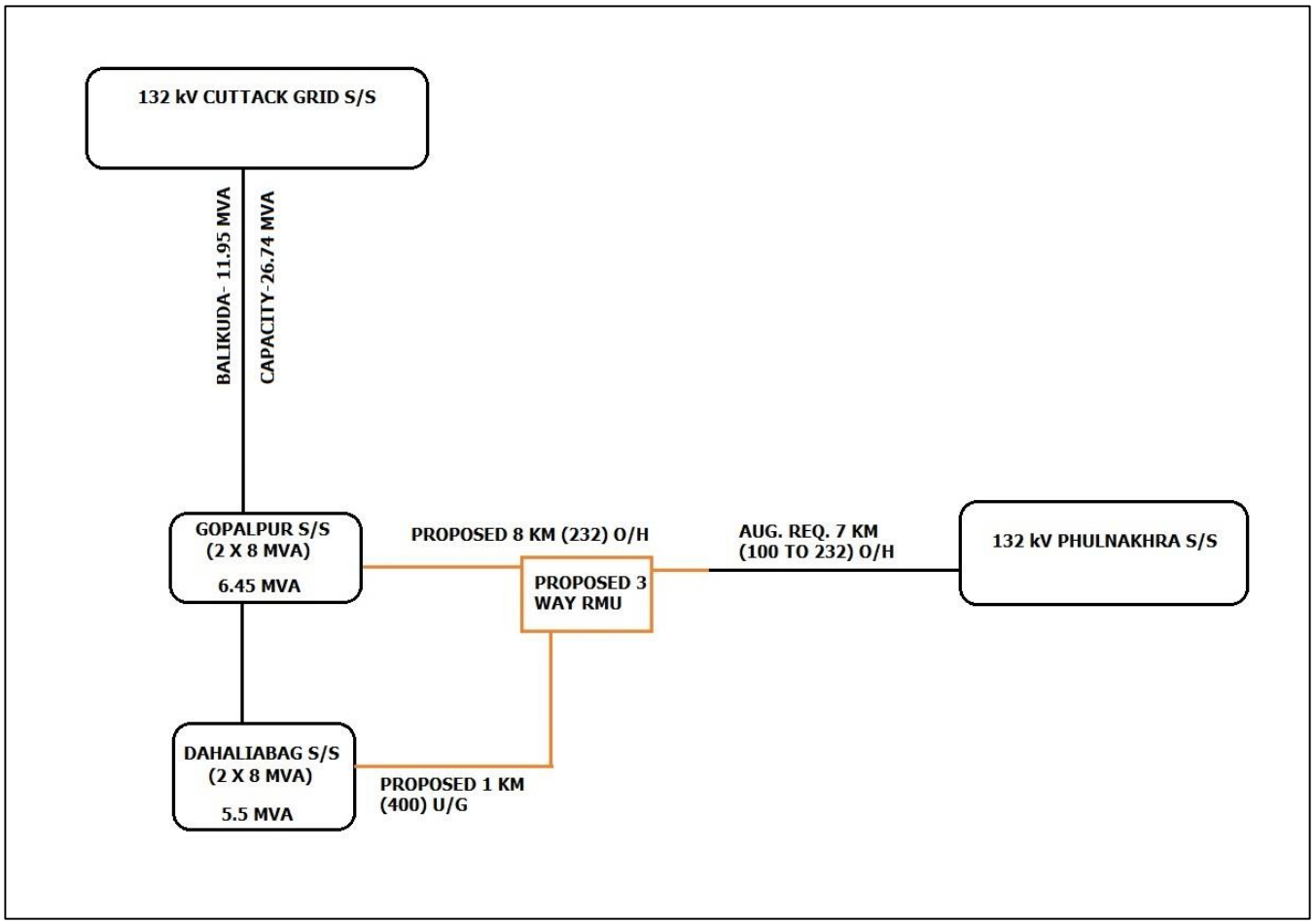


Proposed Scenario:

- Augmentation proposed for 7 KM O/H line from 100 sq.mm to 232 sq.mm. from 132 kV Phulnakhra Grid S/S. Then 8 KM new O/H line (232 sq.mm., AAAC) proposed and extended to Gopalpur S/S. So, Single connectivity for Gopalpur S/S and N-1 for Balikuda feeder will be mitigated.
- New 1 KM (400 sq.mm.) U/G line proposed from T-off of proposed new line to Gopalpur S/S. 3 Way 33 kV RMU proposed at T-off point. So, Single connectivity for Dahaliabag S/S will be mitigated.

Refer 6.3.4 of the petition

Proposed SLD (Summer'22):



Detailed Scope of Work:

Augmentation of Line:

Augmentation proposed for 7 KM O/H line from 100 sq.mm to 232 sq.mm. from 132 kV Phulnakhra Grid S/S.

New O/H Line:

8 KM new O/H line (232 sq.mm., AAAC) proposed and extended to Gopalpur S/S.

New U/G Line:

1 KM (400 sq.mm.) U/G line proposed from T-off of proposed new line to Gopalpur S/S

33 kV RMU:

1 no. 3 Way 33 kV RMU proposed at T-off point of proposed new line to Gopalpur S/S.

33 kV Line Bay:

1) Construction of 1 no. Line Bay at Gopalpur S/S.
2) Construction of 1 no. Line Bay at Dahaliabag S/S.

BOQ:

Refer 6.3.4 of the petition

A) <u>For Mitigating Single connectivity of 33/11 kV Gopalpur S/S and to give N-1 redundancy for Balikuda feeder:</u>

6.3.4.5- Proposal- Addition of New Line from Phulnakhra Grid S/S to Gopalpur S/S.						
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
11	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
12	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
13	MSGI37	Earthing Coil	No.	10	166	1,660.00
14	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
15	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
16	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
17	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
18	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
19	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**8,43,125.00**
	B	Stock & Storage @ 3% of A				25293.75
	C	Sub - Total (A+B)				8,68,418.75
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,95,394.22
	E	Sub - Total (C+D)				10,63,812.97
	F	Other Overheads including supervision charges @ 6% of E				63,828.78
	G	Total estimated Capital Cost (E+F)				11,27,641.75
	H	GST 18% of G				2,02,975.51
	I	CESS 1% of G				11,276.42
	J	**Total Cost**				**13,41,893.68**
A		**For Augmentation of 7 kM Line**				**93,93,255.75**

Refer 6.3.4 of the petition

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.						
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00

Refer 6.3.4 of the petition

		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**17,60,044.51**
	B	Stock & Storage @ 3% of A				52801.3353
	C	Sub - Total (A+B)				18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
	E	Sub - Total (C+D)				22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E				1,33,244.17
	G	Total estimated Capital Cost (E+F)				23,53,980.33
	H	GST 18% of G				4,23,716.46
	I	CESS 1% of G				23,539.80
	J	**Total Cost**				**28,01,236.59**
B		**For 33 kV New Line-8 kM**				**2,24,09,892.74**

	33KV BAY ADDITION -1NO.	**13,00,000.00**
	Total Estimated Capital cost	1300000
	Stock ,Storage &Insurance	39,000.00
	Sub Total (A+B)	13,39,000.00
	2% T & P charges of (A+B)	26,780.00
	3% Contigency of (A+B)	40,170.00
	7.5% Transportation charges of (A+B)	1,00,425.00
	10% Errection Charges of (A+B)	1,33,900.00
	Sub total (A to F)	16,40,275.00
	Other over head (Including 6%) supervision charges of G	98,416.50
	Total Estimated Capital cost (G+H)	17,38,691.50
	GST @ 18% of H	3,12,964.47
	CESS @1% of I	17,386.92
	Inspection Fee	5575
C	**Grand Total (I+J+K+L+M+N)**	**20,74,617.89**
	Grand Total(A+B+C)	**3,38,77,766.38**

Refer 6.3.4 of the petition

B) <u>For Mitigating Single connectivity of 33/11 kV Dahaliabag S/S:</u>

6.3.4.5 -Proposal Mitigating Single connectivity of 33/11 kV Dahaliabag S/S by addition of New 33 kV line					
Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =<u>0.081</u> 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48

Refer 6.3.4 of the petition

29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
A	**Grand Total (I+J+K+L+M+N)**				**93,61,866.19**

Refer 6.3.4 of the petition

	33KV BAY ADDITION COST-1NO				**13,00,000.00**
	Total Estimated Capital cost				1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
B	**Grand Total (I+J+K+L+M+N)**				**20,74,617.89**

	TYPE OF RMU				
	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories				23,47,300.00
	Design & construction of RCC foundation structure				30,083.86
	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)				3,150.00
	50X6 FLAT				3,750.00
	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation				40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
C	**FOR 1 No. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**
		Grand Total(A+B+C)			**1,53,00,480.05**

Refer 6.3.4 of the petition

Benefit:

Reliability of Power supply wiil be improved as Single connectivity of 33/11 kV Gopalpur S/S and Dahaliabag S/S mitigated along with N-1 redundancy for Balikuda feeder.

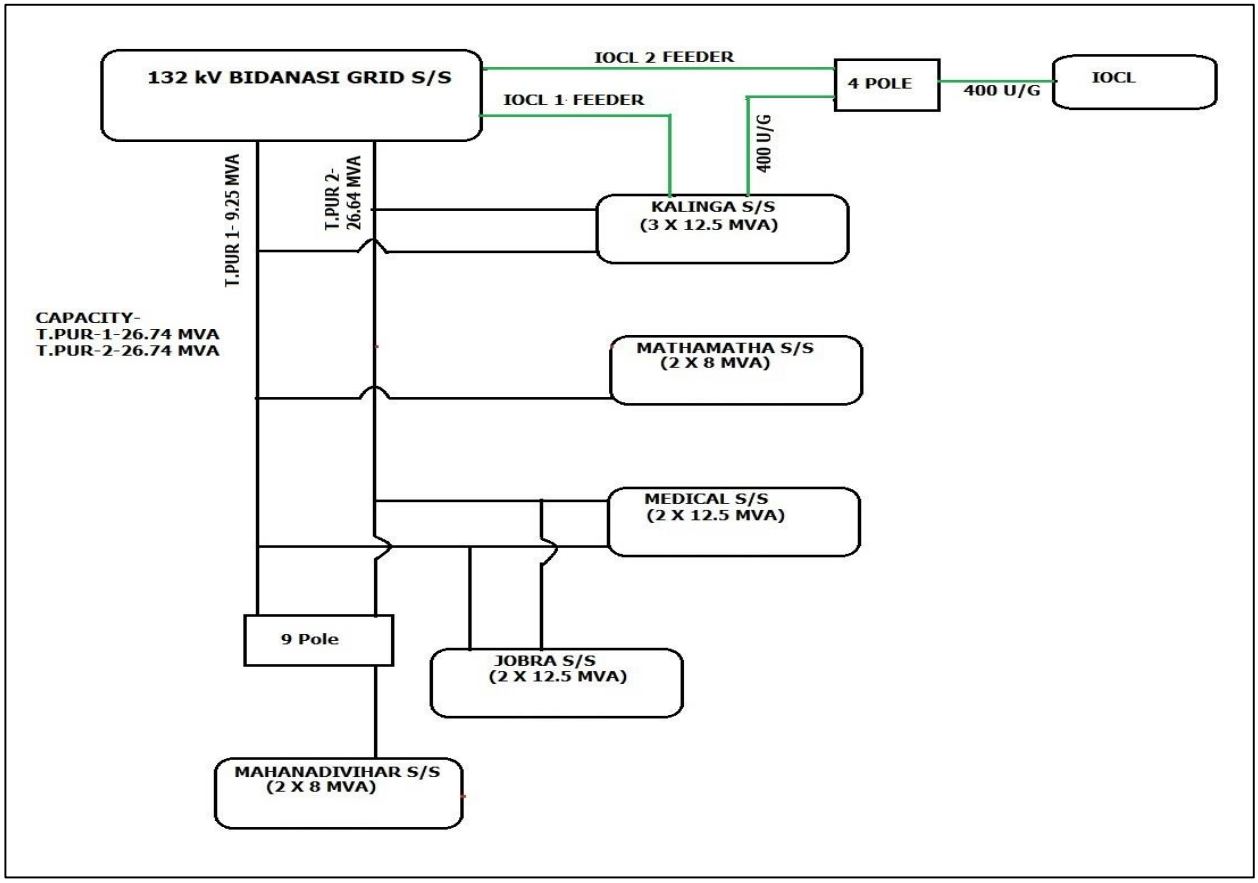
Refer 6.3.4 of the petition

6. Tulasipur Feeder 1 and Feeder 2

Proposal:
Mitigating Single connectivity of 33/11 kV Mathamatha S/S & 33/11 kV Mahanadivihar S/S.
Objective: To maintain reliability of Power Supply by mitigating Single connectivity.
Existing Scenario:

- At present, 33/11 kV Mathamatha S/S is connected only from Tulsipur-1 feeder & there is no second 33KV source available.Similarly 33/11 kV Mahanadivihar S/S is connected only from Tulsipur-2 feeder is not having any second source. In case of the main 33KV Source Tulshipur-I breakdown all the consumers fed from Matamatha will remain in shutdown & similarly for Tilshipur-II feeder breakdown all the consumers fed from Mahanadi vihar will remain in shutdown since no alteranate 33KV supply is available.

Existing SLD (Summer'20):

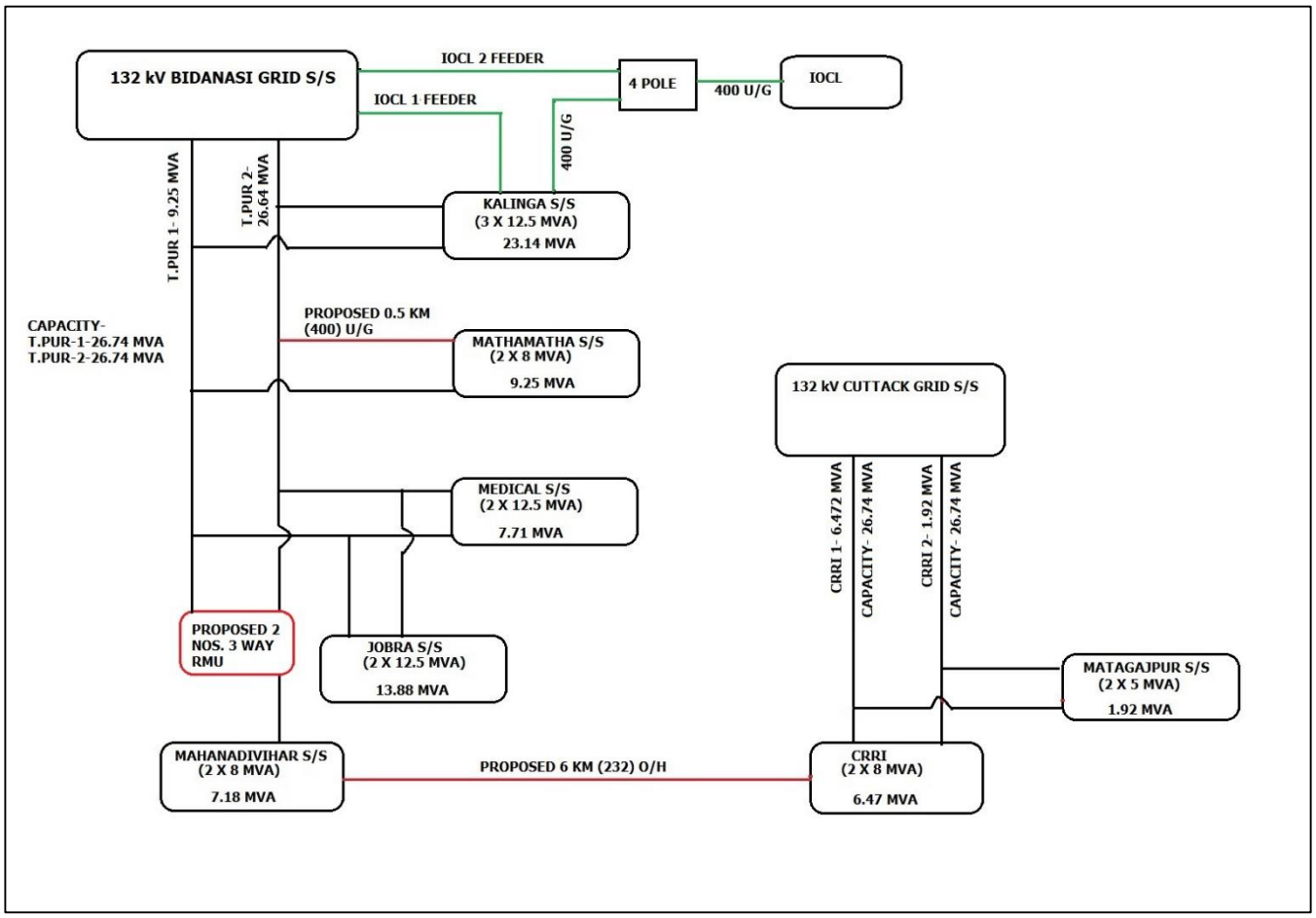


Proposed Scenario:

- New 0.5 KM (400 sq.mm.) U/G line proposed from T-off of Tulsipur-2 feeder to Mathamatha S/S. So, Single connectivity for Mathamatha S/S will be mitigated.
- New 6 KM (232 sq.mm., AAAC) O/H line proposed from 33/11 kV CRRI S/S to Mahanadivihar S/S. So, Single connectivity for Mahanadivihar S/S will be mitigated.

Refer 6.3.4 of the petition

Proposed SLD (Summer'22):



Detailed Scope of Work:

New U/G Line:0.5 KM (400 sq.mm.) U/G line proposed from T-off of Tulsipur-2 feeder to Mathamatha S/S.

New O/H Line: 6 KM new O/H line (232 sq.mm., AAAC) proposed from CRRI S/S to Mahanadivihar S/S.

33kV Line Bay:1) Construction of 1 no. Line Bay at Mathamatha S/S.
2) Construction of 1 no. Line Bay at Mahanadivihar S/S.

33 kV RMU: 2 nos. 3 Way RMU proposed at 9 pole near Mahanadivihar S/S.

BOQ:

A) For Mitigating Single connectivity of 33/11 kV Mathamatha S/S:

Refer 6.3.4 of the petition

6.3.4.6- Proposal- Addition of New line from Tulsipur-2 feeder to Mathamatha S/S.

Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	√o/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	o/Kg 4/1799	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48

Refer 6.3.4 of the petition

	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC				
29	slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
O	Grand Total (I+J+K+L+M+N)				93,61,866.19
A	**For 0.5 KM U/G**				**46,80,933.09**
	33KV BAY ADDITION COST-1NO.			**13,00,000.00**	
	Total Estimated Capital cost			1300000	
	Stock ,Storage &Insurance			39,000.00	
	Sub Total (A+B)			13,39,000.00	
	2% T & P charges of (A+B)			26,780.00	
	3% Contigency of (A+B)			40,170.00	
	7.5% Transportation charges of (A+B)			1,00,425.00	
	10% Errection Charges of (A+B)			1,33,900.00	
	Sub total (A to F)			16,40,275.00	
	Other over head (Including 6%) supervision charges of G			98,416.50	
	Total Estimated Capital cost (G+H)			17,38,691.50	
	GST @ 18% of H			3,12,964.47	
	CESS @1% of I			17,386.92	
	Inspection Fee			5575	
B	**Grand Total (I+J+K+L+M+N)**			**20,74,617.89**	
	Grand Total(A+B)			**67,55,550.98**	

Refer 6.3.4 of the petition

B) For Mitigating Single connectivity of 33/11 kV Mahanadivihar S/S:

6.3.4.6- Proposal- Addition of New 33 kV line from CRRI to Mahanadivihar						
Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**17,60,044.51**
	B	Stock & Storage @ 3% of A				52801.3353
	C	Sub - Total (A+B)				18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
	E	Sub - Total (C+D)				22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E				1,33,244.17
	G	Total estimated Capital Cost (E+F)				23,53,980.33
	H	GST 18% of G				4,23,716.46
	I	CESS 1% of G				23,539.80
	J	**Total Cost**				**28,01,236.59**
A		**For 33 kV New Line-6 kM**				**1,68,07,419.56**

Refer 6.3.4 of the petition

	33KV BAY ADDITION COST-1NO.				**13,00,000.00**
	Total Estimated Capital cost				1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
B	**Grand Total (I+J+K+L+M+N)**				**20,74,617.89**
	FOR 3 WAY RMU				
	Description of Materials	**Unit**	**Qty**	**Rate**	**Amount**
	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
	50X6 FLAT	KG	50	75	3,750.00
	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
C	**FOR 2 Nos. of 3 way RMU**	**No**	**2**	**38,63,995.98**	**77,27,991.96**
	Grand Total(A+B+C)				**2,66,10,029.40**

Benefit:

Reliability of Power supply wiil be improved as Single connectivity for 33/11 kV Mathamatha S/S and Mahanadivihar S/S mitigated.

Refer 6.3.4 of the petition

7. <u>Choudwar Feeder & Jagatpur Feeder</u>

Proposal:

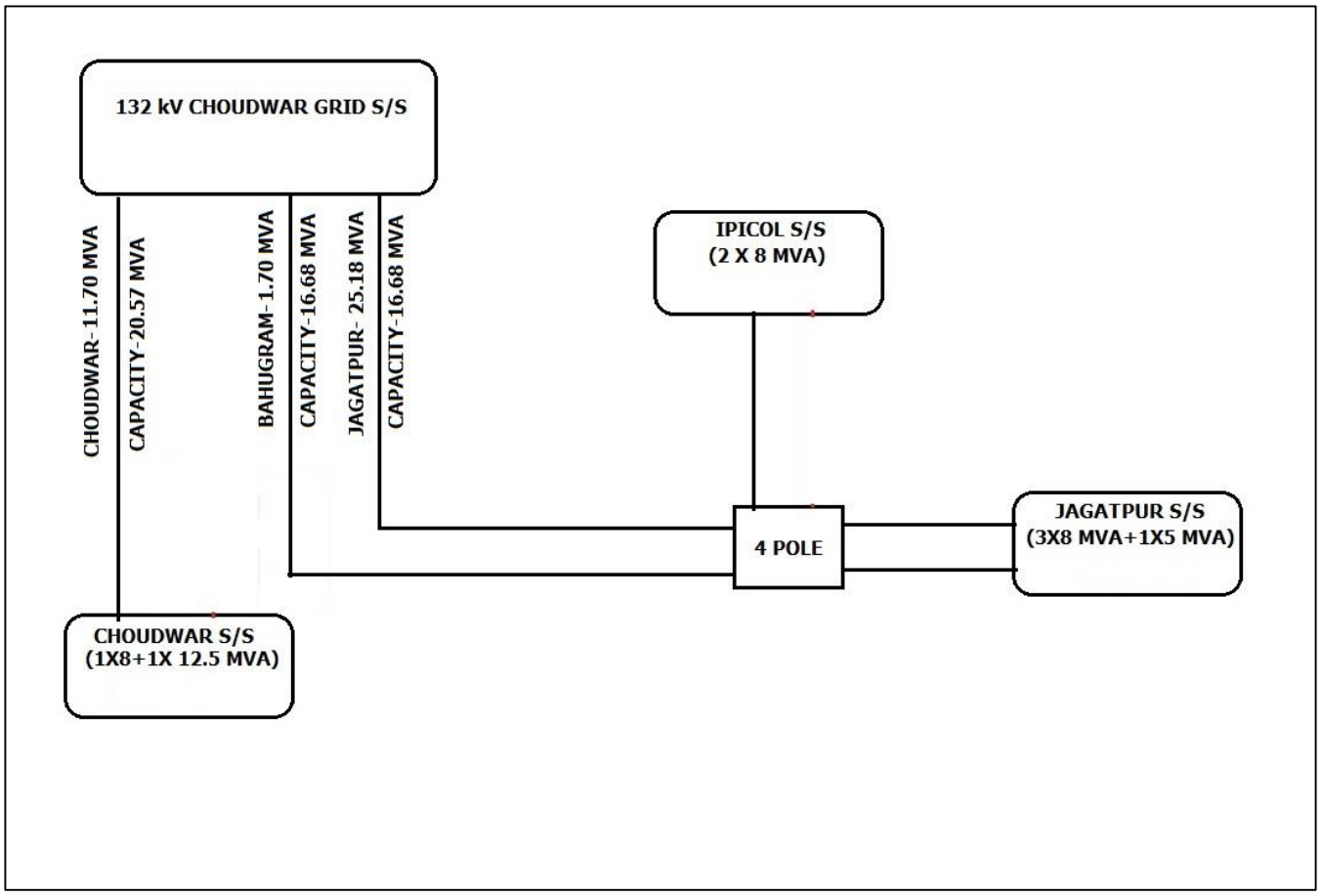
Mitigation of 33KV Jagatpur feeder overloading , Single connectivity of 33/11 kV Choudwar S/S & 33/11 kV Jagatpur(IPICOL) S/S.

Objective: To maintain reliability of Power Supply by mitigating Single connectivity and Overloading.

<u>Existing Scenario:</u>

- At present, 33/11 kV Choudwar S/S is connected through Choudwar feeder from 132 kV Choudwar Grid S/S and peak load in this feeder is 11.10 MVA. Single connectivity exists for Choudwar S/S.
- Also, 33/11 kV Jagatpur(IPICOL) S/S is connected through Jagatpur feeder from 132 kV Choudwar Grid S/S. Single connectivity exists for Jagatpur(IPICOL) S/S.
- Peak load in Jagatpur feeder is 25.18 MVA and conductor size of this feeder is 100 sq.mm. So, Jagatpur feeder is overloaded.

<u>Existing SLD (Summer'20):</u>

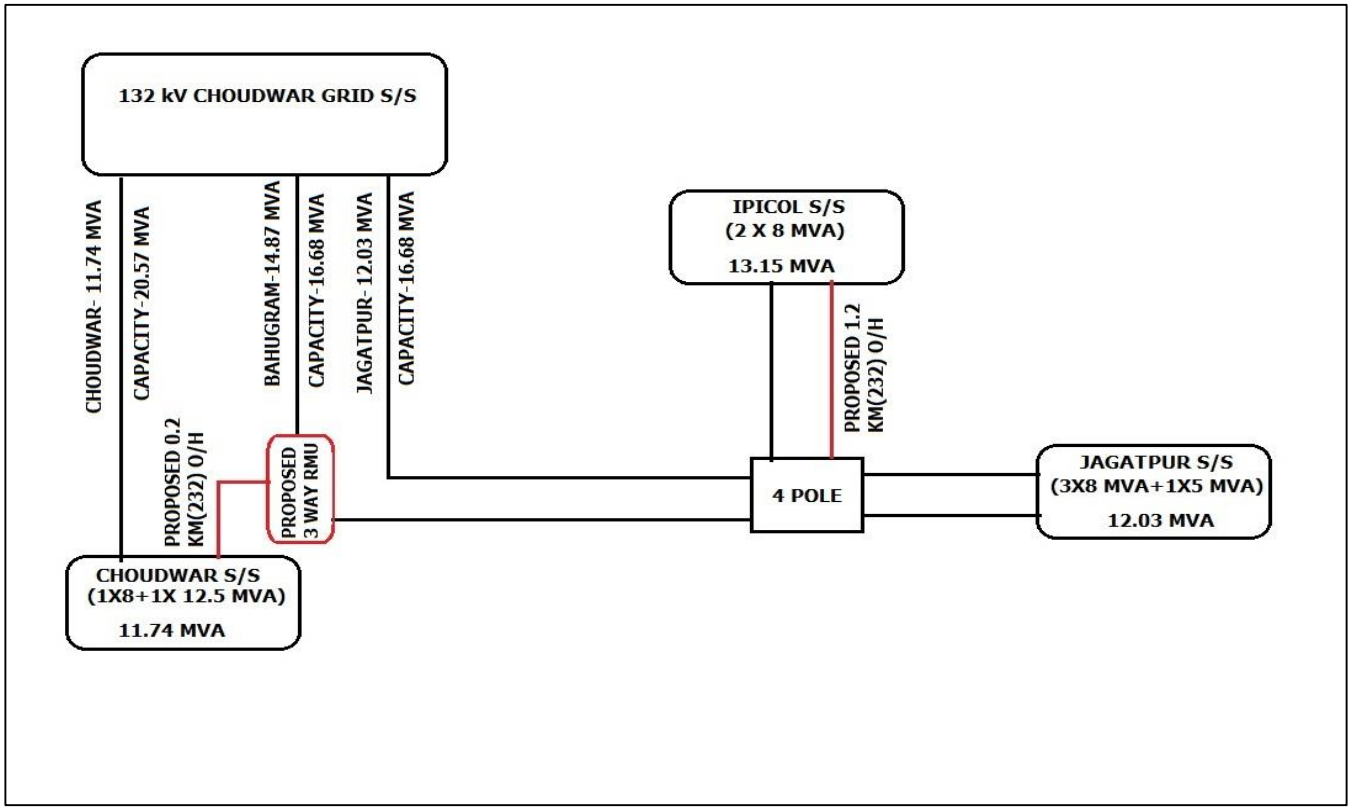


Refer 6.3.4 of the petition

Proposed Scenario:

- New 0.2 KM (232 sq.mm.,AAAC) O/H line proposed from T-off of Bahugram feeder. Also, 3 Way RMU proposed at T-off point. So, Single connectivity for Choudwar S/S will be mitigated.
- New 1.2 KM (232 sq.mm.,AAAC) O/H line proposed from Bahugram feeder from 4 Pole to Jagatpur(IPICOL) S/S. So, Single connectivity for Jagatpur(IPICOL) S/S will be mitigated.
- If Jagatpur(IPICOL) S/S is normally closed(NC) from proposed new line (From Bahugram feeder), 13.15 MVA load will be shifted to Bahugram feeder. Now load in Jagatpur feeder will be 12.03 MVA only. So, mitigation of overloading of Jagatpur feeder can be possible.

Proposed SLD (Summer'22):



Detailed Scope of Work:

New O/H Line:

1) 0.2 KM 33 kV O/H(232 sq.mm., AAAC) line proposed from T-off of Bahugram feeder to 33/11 kV Choudwar S/S.
2) 1.2 KM 33 kV O/H(232 sq.mm., AAAC) line proposed from 4 Pole to 33/11 kV Jagatpur(IPICOL) S/S.

33 kV RMU:

1 no. 3 Way 33 kV RMU proposed at 4 pole at T-off point of Bahugram feeder.

33 kV Line Bay:

3) Construction of 1 no. 33 kV Line Bay at Choudwar S/S.

Refer 6.3.4 of the petition

4) Construction of 1 no. 33 kV Line Bay at Jagatpur(IPICOL) S/S.

BOQ:

A) For Mitigating Single connectivity of 33/11 kV Choudwar S/S:

6.3.4.7- Propoal- For Mitigating Single connectivity of 33/11 kV Choudwar S/S.					
1	**Items**	**UOM**	Quantity	Rate	13,00,000.00
	Total Estimated Capital cost -BAY ADDITION	EA	1	1300000	1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
A	**Grand Total (I+J+K+L+M+N)**				**20,74,617.89**

Refer 6.3.4 of the petition

	ITEMS	UOM	QUANTITY	RATE	AMOUNT
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
2	Design & constraction of RCC foundation structure	EA	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
4	50X6 FLAT (20KG * 75)	KG	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
B	**Grand Total (I+J+K+L+M+N)**				**38,63,995.98**

Refer 6.3.4 of the petition

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-

Refer 6.3.4 of the petition

	A	**Total Cost of materials.**		**17,60,044.51**
	B	Stock & Storage @ 3% of A		52801.3353
	C	Sub - Total (A+B)		18,12,845.85
	D	Contingency @ 3 %+T&P Charges		4,07,890.32
	E	Sub - Total (C+D)		22,20,736.16
	F	Other Overheads including supervision		1,33,244.17
	G	Total estimated Capital Cost (E+F)		23,53,980.33
	H	GST 18% of G		4,23,716.46
	I	CESS 1% of G		23,539.80
	J	**Total Cost**		**28,01,236.59**
C			**For 0.2 KM New 33 kV Line**	**5,60,247.32**
		Grand Total(A+B+C)		**64,98,861.18**

A) <u>For Mitigating Single connectivity of 33/11 kV Jagatpur(IPICOL) S/S and mitigating overloading in Jagatpur feeder of 132 kV Choudwar Grid S/S</u>

Refer 6.3.4 of the petition

6.3.4.7- Proposal- For Mitigating Single connectivity of 33/11 kV Jagatpur(IPICOL) S/S and mitigating overloading in Jagatpur feeder of 132 kV Choudwar Grid S/S

	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
2	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
4	50X6 FLAT	KG	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
A	**For 1 Nos. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**
	For 33 kV Isolator without Earth Switch				
1	33 kV Isolator with Earth Switch	No	1	67500	67500
	Total Estimated Capital cost				67,500.00
	Stock ,Storage &Insurance				2,025.00
	Sub Total (A+B)				69,525.00
	2% T & P charges of (A+B)				1,390.50
	3% Contigency of (A+B)				2,085.75
	7.5% Transportation charges of (A+B)				5,214.38
	10% Errection Charges of (A+B)				6,952.50
	Sub total (A to F)				85,168.13
	Other over head (Including 6%) supervision charges of G				5,110.09
	Total Estimated Capital cost (G+H)				90,278.21
	GST @ 18% of H				16,250.08
	CESS @1% of I				902.78
	Inspection Fee				5575
B	**Grand Total**				**1,13,006.07**

Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	√o/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468

Refer 6.3.4 of the petition

Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	o/Kg 4/1799	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48

Refer 6.3.4 of the petition

	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC				
29	slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
O	Grand Total (I+J+K+L+M+N)				93,61,866.19
C	**For 0.2 KM U/G**	**KM**		**9361866.186**	**18,72,373.24**
	Grand Total(A+B+C)				**58,49,375.29**

Benefit:

1) Improve reliability of Power Supply by mitigating Single connectivity of Choudwar S/S and Jagatpur(IPICOL) S/S.
2) Mitigation of overloading on Jagatpur feeder.

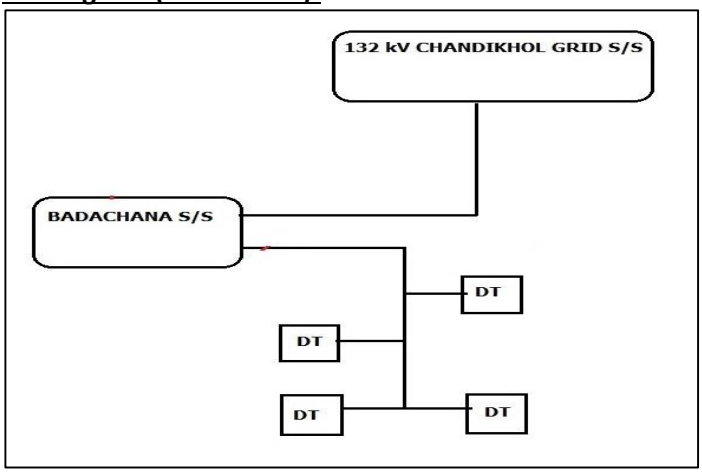
Refer 6.3.4 of the petition

8. Industrial Feeder of Badachana

Proposal: Agumantation of Conductor from 55 sq.mm. to 100 sq.mm. length of 8 KM for 33 kV Industrial feeder from Badachana S/S to 33KV Consumer.
Objective: To maintain reliability of Power Supply by mitigating lower conductor size.
Existing Scenario:

- 8 KM 33 kV Industrial feeder (55 sq.mm.) with rusted conductor exists from Badachana S/S.

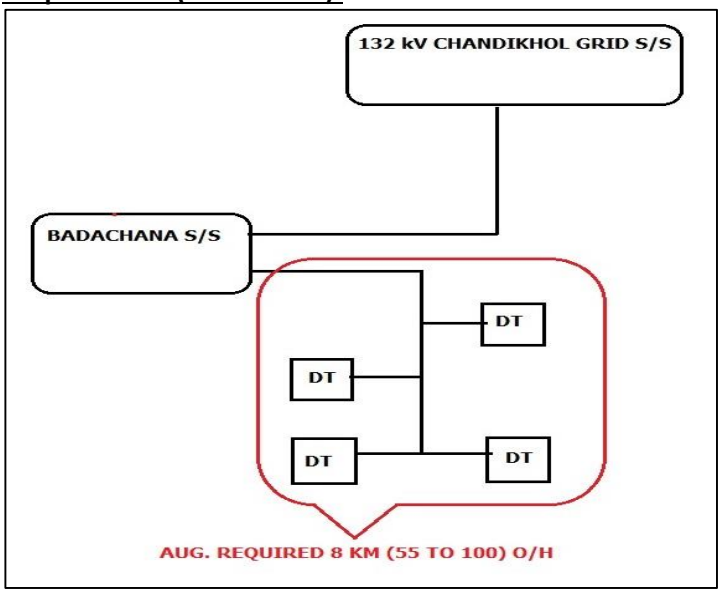
Existing SLD (Summer'20):



Proposed Scenario:

- Augmentation required from 55 sq.mm. to 100 sq.mm. for 8 KM 33 kV Industrial feeder from Badachana S/S due to bad conductor (rusted conductor) condition.

Proposed SLD (Summer'22):



Detailed Scope of Work:

Augmentation of O/H line: Augmentation of 8 KM 33 kV Industrial feeder proposed from Badachana S/S.

BOQ:

Mitigating 8 KM lower conductor size from Badachana S/S:

Refer 6.3.4 of the petition

6.3.4.8- Augmentation of line from 55 sq.mm.to 100 sq.mm. AT Badachana

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	468	2,808.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
12	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
13	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
14	MSGI37	Earthing Coil	No.	10	166	1,660.00
15		100 sq.mm. AAAC conductor		3.09	55,000	1,69,950.00
21	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
22	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
23	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
24	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
25	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**5,29,298.00**
	B	Stock & Storage @ 3% of A				15878.94
	C	Sub - Total (A+B)				5,45,176.94
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,22,664.81
	E	Sub - Total (C+D)				6,67,841.75
	F	Other Overheads including supervision charges @ 6% of E				40,070.51
	G	Total estimated Capital Cost (E+F)				7,07,912.26
	H	GST 18% of G				1,27,424.21
	I	CESS 1% of G				7,079.12
	J	**Total Cost**				**8,42,415.59**
		Augmentation for 8 KM 33 kV Line				**67,39,324.68**

Benefit:

Augmentation of 8 KM 33 kV line (from 55 Sq.mm. to 100 Sq.mm.) will strengthen the 33 kV network from Badachana S/S.

Refer 6.3.4 of the petition

9. Adaspur S/S Single Connectivity (Damodarpur Feeder)

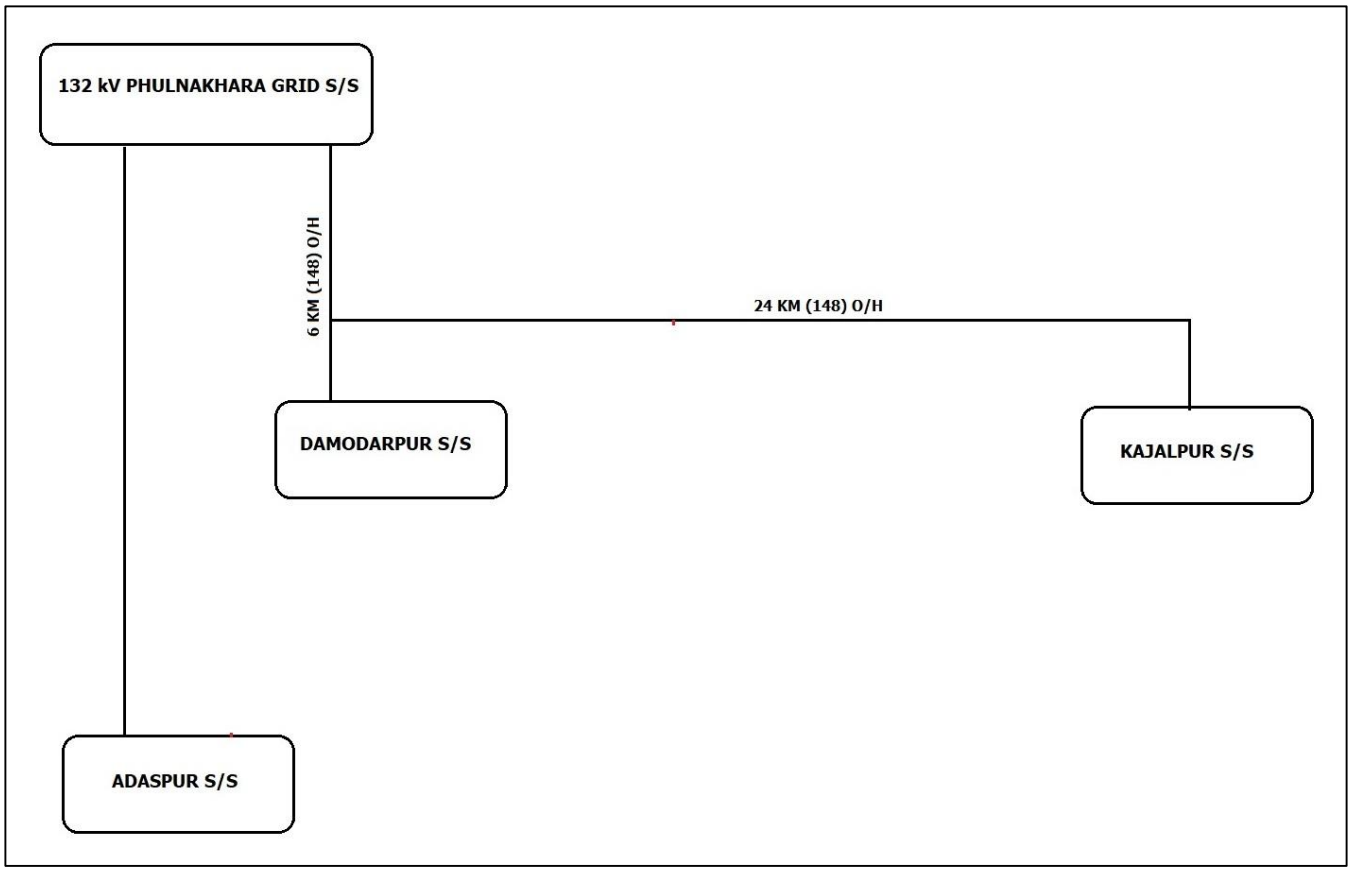
Proposal: Provison of second 33KV connectivity to 33/11 kV Adaspur S/S from Kajalpur Feeder.

Objective: To maintain reliability of Power Supply by mitigating Single connectivity.

Existing Scenario:

- At present, 33/11 kV Adaspur S/S is connected from 132 kV Phulnakhra Grid S/S. Single connectivity exists for Adaspur S/S.

Existing SLD (Summer'20):

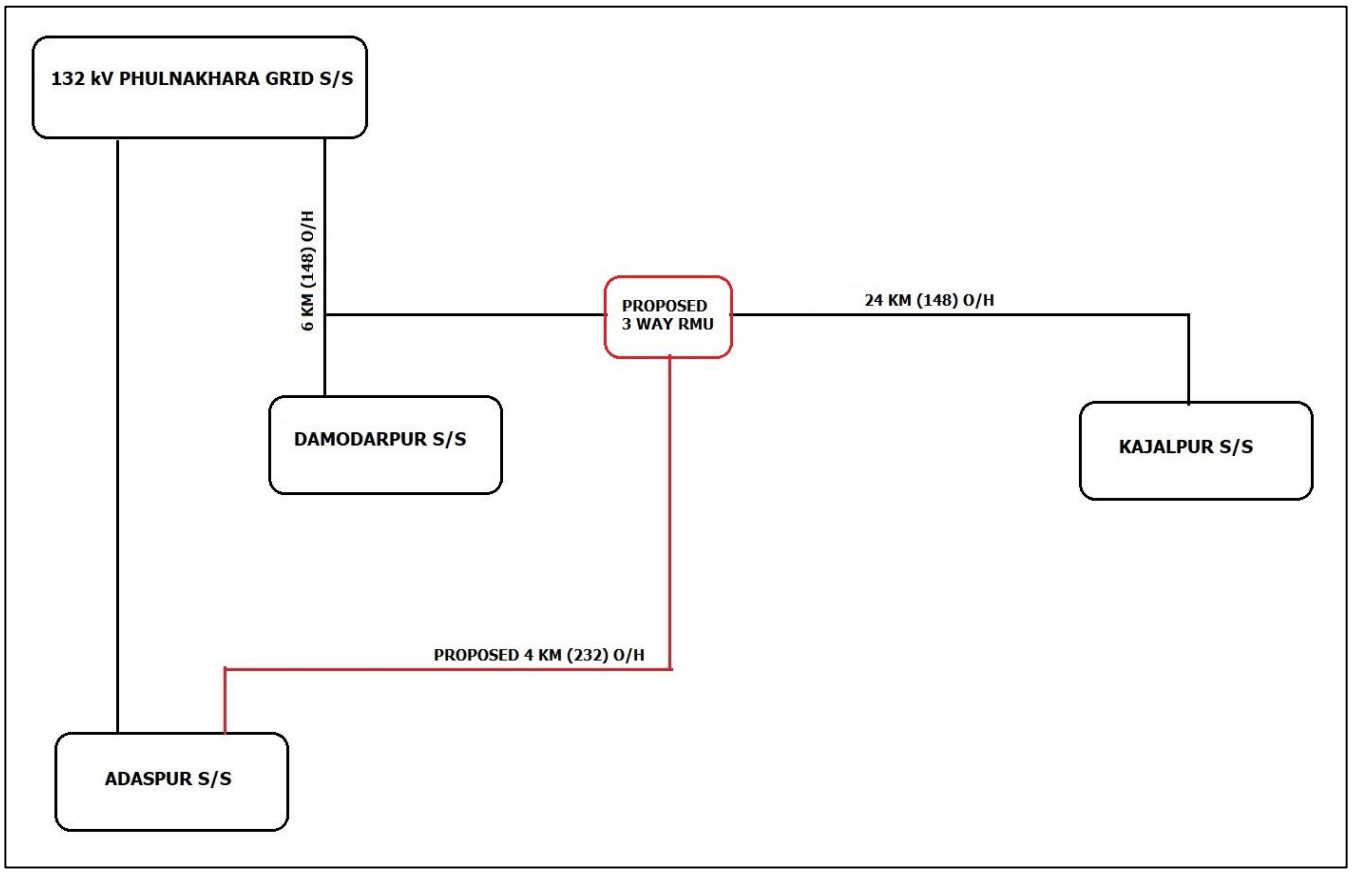


Proposed Scenario:

- New 4 KM, O/H (232 sq.mm., AAAC) line proposed to construct from T-off from 33 kV Kajalpur line which will mitigate the Single connectivity of Adaspur S/S .
- 1 no. 3 Way 33 kV RMU proposed at T-off point for flexible operation.

Refer 6.3.4 of the petition

Proposed SLD (Summer'22):



Detailed Scope of Work:

New O/H Line:
4 KM new O/H line (232 sq.mm., AAAC) proposed from T-off from 33 kV Kajalpur line.

33 kV RMU:
1 no. 3 Way 33 kV RMU proposed at T-off point of Kajalpur line.

33 kV Line Bay:
Construction of 1 no. 33 kV Line Bay at Adaspur S/S.

BOQ:

Refer 6.3.4 of the petition

6.3.4.9- Addition of New line by LILO from Damodarpur feeder to Adaspur					
	Description of Materials	Unit	Qty	Rate	Amount
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
2	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
4	50X6 FLAT	KG	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
A	**For 1 Nos. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**

Refer 6.3.4 of the petition

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-

Refer 6.3.4 of the petition

	A	**Total Cost of materials.**		**17,60,044.51**
	B	Stock & Storage @ 3% of A		52801.3353
	C	Sub - Total (A+B)		18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C		4,07,890.32
	E	Sub - Total (C+D)		22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E		1,33,244.17
	G	Total estimated Capital Cost (E+F)		23,53,980.33
	H	GST 18% of G		4,23,716.46
	I	CESS 1% of G		23,539.80
	J	**Total Cost**		**28,01,236.59**
B		**For 33 kV New Line-4 kM**		**1,12,04,946.37**
		BAY ADDITION	**13,00,000.00**	
		Total Estimated Capital cost	1300000	
		Stock ,Storage &Insurance	39,000.00	
		Sub Total (A+B)	13,39,000.00	
		2% T & P charges of (A+B)	26,780.00	
		3% Contigency of (A+B)	40,170.00	
		7.5% Transportation charges of (A+B)	1,00,425.00	
		10% Errection Charges of (A+B)	1,33,900.00	
		Sub total (A to F)	16,40,275.00	
		Other over head (Including 6%) supervision charges of G	98,416.50	
		Total Estimated Capital cost (G+H)	17,38,691.50	
		GST @ 18% of H	3,12,964.47	
		CESS @1% of I	17,386.92	
		Inspection Fee	5575	
C		**Grand Total (I+J+K+L+M+N)**	**20,74,617.89**	
		Grand Total	**1,71,43,560.23**	

Benefit:

Reliability of power supply will be improved for the consumers of 33/11 kV Adaspur S/S, Damodarpur S/S and Kajalpur S/S.

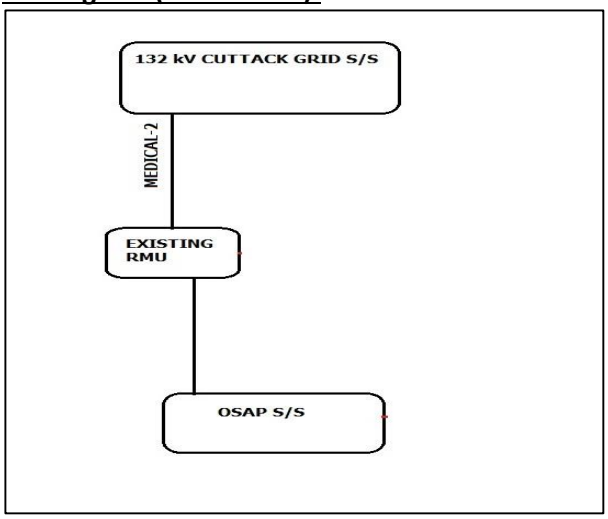
Refer 6.3.4 of the petition

10. Single Connectivity of 33/11KV OSAP S/S

Proposal: Provison of second 33KV connectivity of 33/11 kV OSAP S/S by installing 33KV RMU in Medical feeder.
Objective: To maintain reliability of Power Supply by mitigating Single connectivity.
Existing Scenario:

- At present, 33/11 kV OSAP S/S is connected from 132 kV Cuttack Grid S/S through Medical 2 feeder. Single connectivity exists for OSAP S/S.

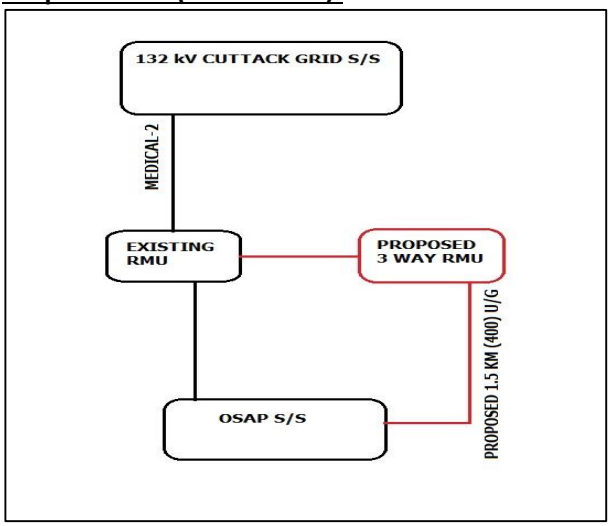
Existing SLD (Summer'20):



Proposed Scenario:

- New 1.5 KM U/G (400 sq.mm.) line proposed from Proposed 3 Way RMU beside Existing RMU. So, Single connectivity of OSAP S/S will be mitigated.

Proposed SLD (Summer'22):



Detailed Scope of Work:

New U/G Line:
1.5 KM new U/G line (400 sq.mm.) proposed from Proposed 3 Way RMU beside Existing RMU.
33 kV RMU:
1 no. 3 Way 33 kV RMU proposed beside existing RMU.
33 kV Line Bay:

Refer 6.3.4 of the petition

Construction of 1 no. 33 kV Line Bay at OSAP S/S.

BOQ:

Refer 6.3.4 of the petition

6.3.4.10- Addition of New Line from Proposed RMU beside existing RMU for OSAP S/S

Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092

Refer 6.3.4 of the petition

A	Total cost of Material as per 2018-19 Cost Data	5878649.8
B	Stock ,Storage &Insurance	176359.494
	Sub Total (A+B)	6055009.294
C	2% T & P charges of (A+B)	121100.1859
D	3% Contigency of (A+B)	181650.2788
E	7.5% Transportation charges of (A+B)	454125.6971
F	10% Errection Charges of (A+B)	605500.9294
G	Sub total (A to F)	7417386.385
H	Other over head (Including 6%) supervision charges of G	445043.1831
I	Total Estimated Capital cost (G+H)	7862429.568
J	GST @ 18% of H	1415237.322
K	CESS @1% of I	78624.29568
N	Inspection Fee	5575
	Grand Total (I+J+K+L+M+N)	**93,61,866.19**
A	**For 1.5 KM U/G**	**1,40,42,799.28**

	Material	**UOM**	**QUANTITY**	**RATE**	**AMOUNT**
	Total Estimated Capital cost -BAY ADDITION				1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
B	**Grand Total (I+J+K+L+M+N)**				**20,74,617.89**

Refer 6.3.4 of the petition

	Materials	Unit	Qty	Rate	Amount
	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	EA	1	23,47,300.00	23,47,300.00
	Design & construction of RCC foundation structure	LS	1	30,083.86	30,083.86
	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
	50X6 FLAT	Kg	50	75	3,750.00
	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	LS	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
C	**FOR 1 No. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**
		Grand Total(A+B+C)			**1,99,81,413.14**

Benefit:

Mitigation of Single connectivity will improve the reliability of Power supply for OSAP S/S.

Refer 6.3.4 of the petition

11. Narangabasta Feeder

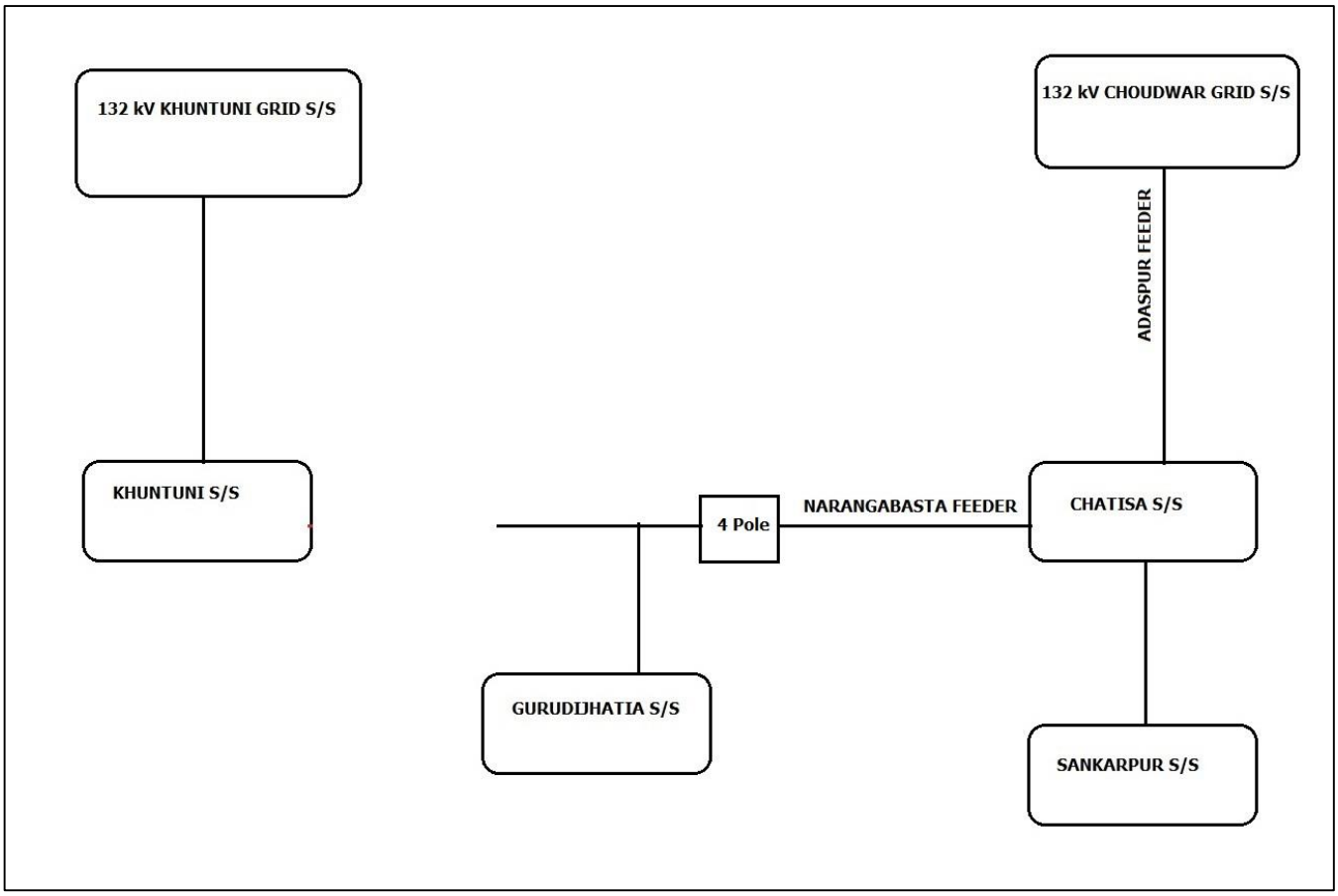
Proposal: For Mitigating N-1 for 33 kV Narangabasta feeder.

Objective: To maintain reliability of Power Supply by mitigating N-1.

Existing Scenario:

- At present, there no connectivity exists between 33 kV Narangbasta feeder and Khuntuni S/S.

Existing SLD (Summer'20):

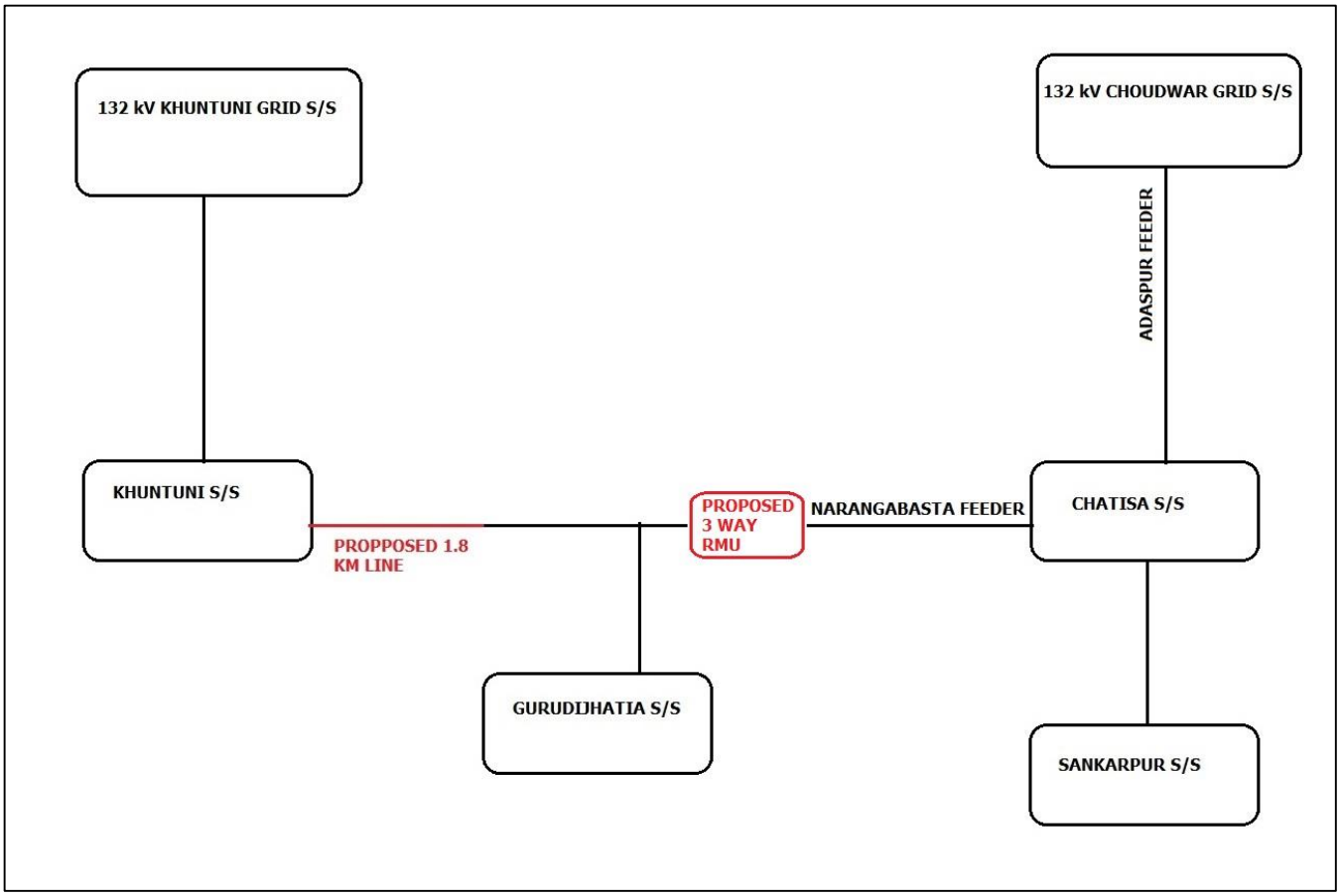


Proposed Scenario:

- New 1.8 KM line proposed from Khuntuni S/S to existing 33 kV Narangabasta Feeder. So, N-1 for 33 kV Naragabasta feeder will be mitigated.

Refer 6.3.4 of the petition

Proposed SLD (Summer'22):



Detailed Scope of Work:

New O/H Line:
1.6 KM new (232 sq.mm., AAAC) line proposed from Khuntuni S/S to existing 33 kV Narangabasta Feeder.

New U/G Line:
0.2 KM new U/G line (400 sq.mm.) proposed for road crossing.

33 kV RMU:
1 no. 3 Way 33 kV RMU at 4 Pole near Gurudijhatia S/S.

BOQ:

Refer 6.3.4 of the petition

6.3.4.11- Addition of New Line upto 33 kV Narangabasata feeder from Khuntuni S/S					
	Description of Materials	Unit	Qty	Rate	Amount
1	3 WAY 33 kV RMU with 3CX400 sq.mm. XLPE Cable and accessories	LS	1	23,47,300.00	23,47,300.00
2	Design & construction of RCC foundation structure	EA	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
4	50X6 FLAT	Kg	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	LS	1	40,000.00	40,000.00
	Total Estimated Capital cost				24,24,283.86
	Stock ,Storage &Insurance				72,728.52
	Sub Total (A+B)				24,97,012.38
	2% T & P charges of (A+B)				49,940.25
	3% Contigency of (A+B)				74,910.37
	7.5% Transportation charges of (A+B)				1,87,275.93
	10% Errection Charges of (A+B)				2,49,701.24
	Sub total (A to F)				30,58,840.16
	Other over head (Including 6%) supervision charges of G				1,83,530.41
	Total Estimated Capital cost (G+H)				32,42,370.57
	GST @ 18% of H				5,83,626.70
	CESS @1% of I				32,423.71
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				38,63,995.98
A	**Total Cost For 1 Nos. of 3 way RMU**	**No**	**1**	**38,63,995.98**	**38,63,995.98**

Refer 6.3.4 of the petition

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
2	P6	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3		Concreting of pole	No	29	2,639.18	76,536.22
4		Couping of pole	No	29	676.37	19,614.73
5	MSGI9	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	INS30	33KV G I pin	No.	0	192	-
9	INS2	33KV pin insulator polymer	No.	78	480	37,440.00
10	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	INS10	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	MSGI20	Stay Set 18mm	No	8	1,050	8,400.00
13	INS17	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	MSGI37	Earthing Coil	No.	23	166	3,818.00
17	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20		Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21		50x6 flat	kg	60	75	4,500.00
22		GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23		No.6 GI Wire	K.g.	40	75.00	3,000.00
24		40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25		33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26		Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81

Refer 6.3.4 of the petition

27	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
		No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
		No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
28	MSGI46	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
29	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**17,60,044.51**
	B	Stock & Storage @ 3% of A				52801.3353
	C	Sub - Total (A+B)				18,12,845.85
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
	E	Sub - Total (C+D)				22,20,736.16
	F	Other Overheads including supervision charges @ 6% of E				1,33,244.17
	G	Total estimated Capital Cost (E+F)				23,53,980.33
	H	GST 18% of G				4,23,716.46
	I	CESS 1% of G				23,539.80
	J	**Total Cost**				**28,01,236.59**
B		**Total Cost For 33 kV New Line-1.6 kM**				**44,81,978.55**

Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
4	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
5	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
5	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	√o/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
9	13mtr long 150x150 RS joist pole	o/Kg 4/1799	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040

Refer 6.3.4 of the petition

12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520
19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				5878649.8
B	Stock ,Storage &Insurance				176359.494
	Sub Total (A+B)				6055009.294
C	2% T & P charges of (A+B)				121100.1859
D	3% Contigency of (A+B)				181650.2788
E	7.5% Transportation charges of (A+B)				454125.6971
F	10% Errection Charges of (A+B)				605500.9294
G	Sub total (A to F)				7417386.385
H	Other over head (Including 6%) supervision charges of G				445043.1831
I	Total Estimated Capital cost (G+H)				7862429.568
J	GST @ 18% of H				1415237.322
K	CESS @1% of I				78624.29568
N	Inspection Fee				5575
A	**Grand Total (I+J+K+L+M+N)**				**93,61,866.19**
C	**Toatl cost For 0.2 KM U/G**				**18,72,373.24**
	Grand Total(A+B+C)				**1,02,18,347.76**

Refer 6.3.4 of the petition

Benefit:

Reliability of Power Supply improved for 33 kV consumers feeding from 33 kV Naragabasta feeder.

Refer 6.3.4 of the petition

12. Badambadi Feeder

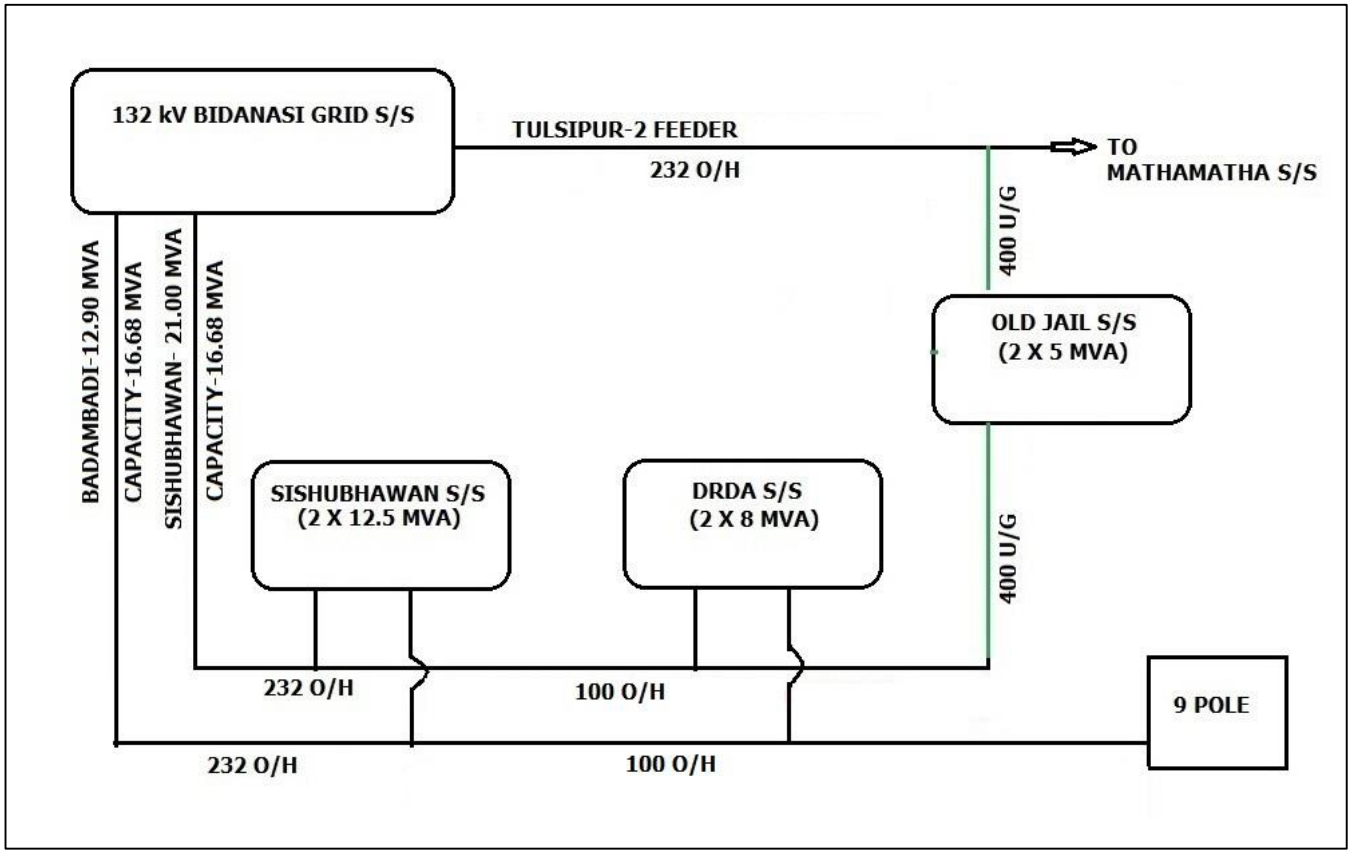
Proposal: Strenthening of existing 33 kV Badambai feeder from 33/11 kV Sishubhawan S/S to 9 Pole via DRDA S/S by agumenting conductor from 100 sq.mm. to 232 sq.mm.

Objective: To maintain reliability of Power Supply by mitigating lower conductor size.

Existing Scenario:

- At present, 33/11 kV Badambadi S/S is connected from Badambadi feeder from 132 kV Bidanasi Grid S/S.
- Only from 132 kV Bidanasi Grid to Sishubhawan S/S, O/H conductor size is 232 sq.mm. But the conductor size from Sishubhawan S/S to 9 pole via DRDA S/S is 100 sq.mm (approx.3.4 KM).

Existing SLD (Summer'20):



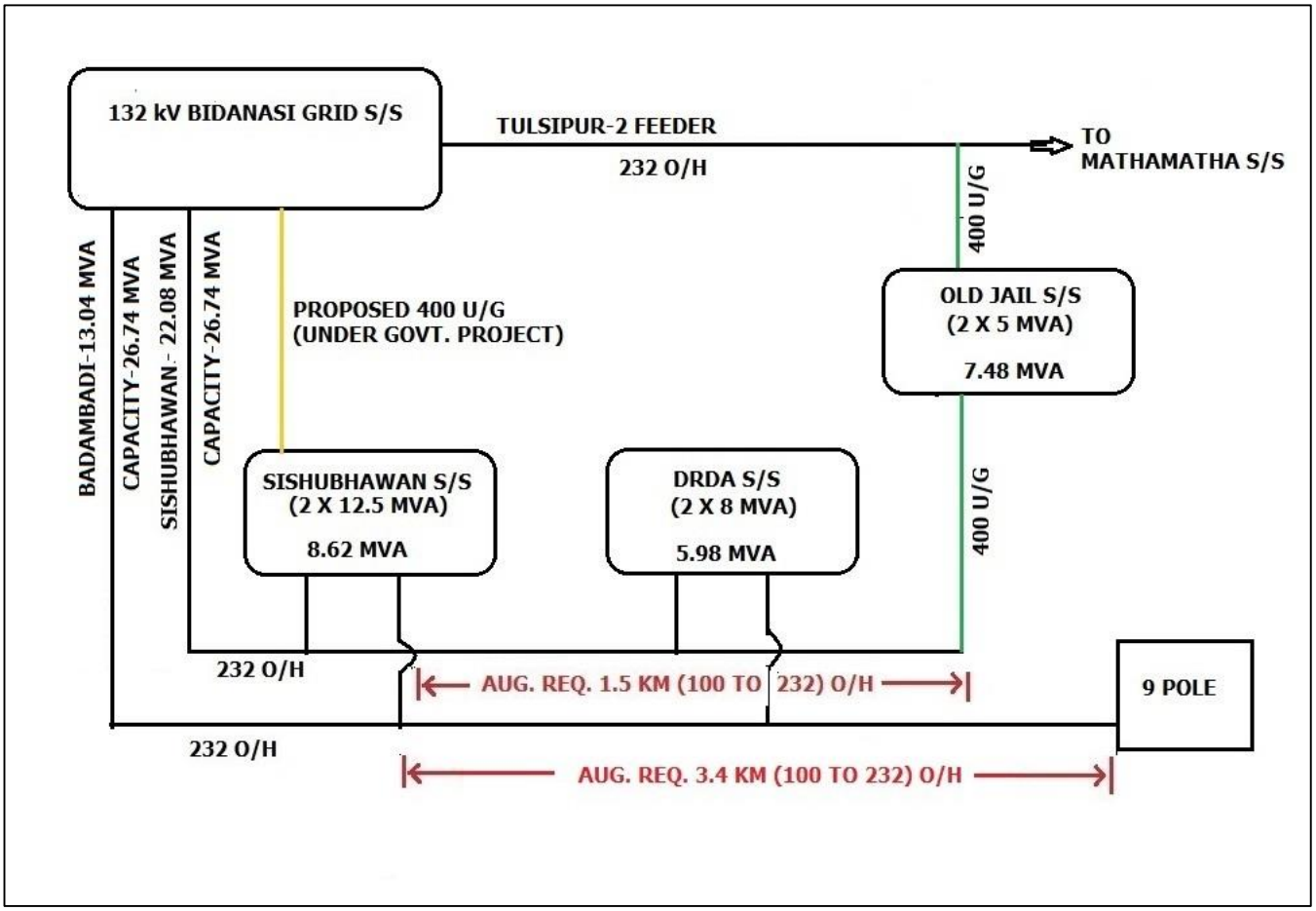
Proposed Scenario:

- Augmentation has already proposed for Sishubhawan feeder from 100 sq.mm. to 232 sq.mm., 1.5 KM (approx.) using Double pole from Sishubhawan S/S to Blue lagoon Hotel (Near T-off to Old Jail) via DRDA S/S. This is double circuit line with Badambadi feeder.
- So, augmentation of Badambadi feeder also proposed from 1.5 KM (approx.) from Sishubhawan S/S to Blue lagoon Hotel (Near T-off to Old Jail) via DRDA S/S along with Sishubhawan feeder at which only conductor and hardware fittings will be required.

Refer 6.3.4 of the petition

- From Blue Lagoon hotel to 9 pole, Augmentation of 2 KM line is proposed. In this scenario, Badambadi feeder will be strengthened and the capacity of whole feeder will be 26.74 MVA.

Proposed SLD (Summer'22):



Detailed Scope of Work:

Augmentation of O/H Line:

1) Augmentation of conductor from 100 sq.mm. to 232 sq.mm., 1.5 KM (approx.) from 33/11 kV Sishubhawan S/S to Blue Lagoon Hotel (Near T-off to Old Jail) via DRDA S/S along with Sishubhawan feeder.
2) Augmentation of 2 KM(approx.) line from 100 sq.mm. to 232 sq.mm. from Blue Lagoon Hotel to 9 Pole.

BOQ:

Refer 6.3.4 of the petition

6.3.4.12- Augmentation of line required for Badamnadi feeder(100 sq.mm. to 232 sq.mm.) from Sishubhawan S/S to 6 pole

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
12	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
13	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
14	MSGI37	Earthing Coil	No.	10	166	1,660.00
15	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
21	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
22	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
23	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
24	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
25	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
	A	**Total Cost of materials.**				**8,43,125.00**
	B	Stock & Storage @ 3% of A				25293.75
	C	Sub - Total (A+B)				8,68,418.75
	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,95,394.22
	E	Sub - Total (C+D)				10,63,812.97
	F	Other Overheads including supervision charges @ 6% of E				63,828.78
	G	Total estimated Capital Cost (E+F)				11,27,641.75
	H	GST 18% of G				2,02,975.51
	I	CESS 1% of G				11,276.42
	J	**Total Cost**				**13,41,893.68**
		Total cost for Augmentation of 3.4 kM 33 kV line				45,62,438.51

Benefit:

Reliability of Power Supply will be improved for the consumers of Sishubhawan S/S and DRDA S/S.

Refer 6.3.4 of the petition

13. C.S Pur-1 33KV Connectivity

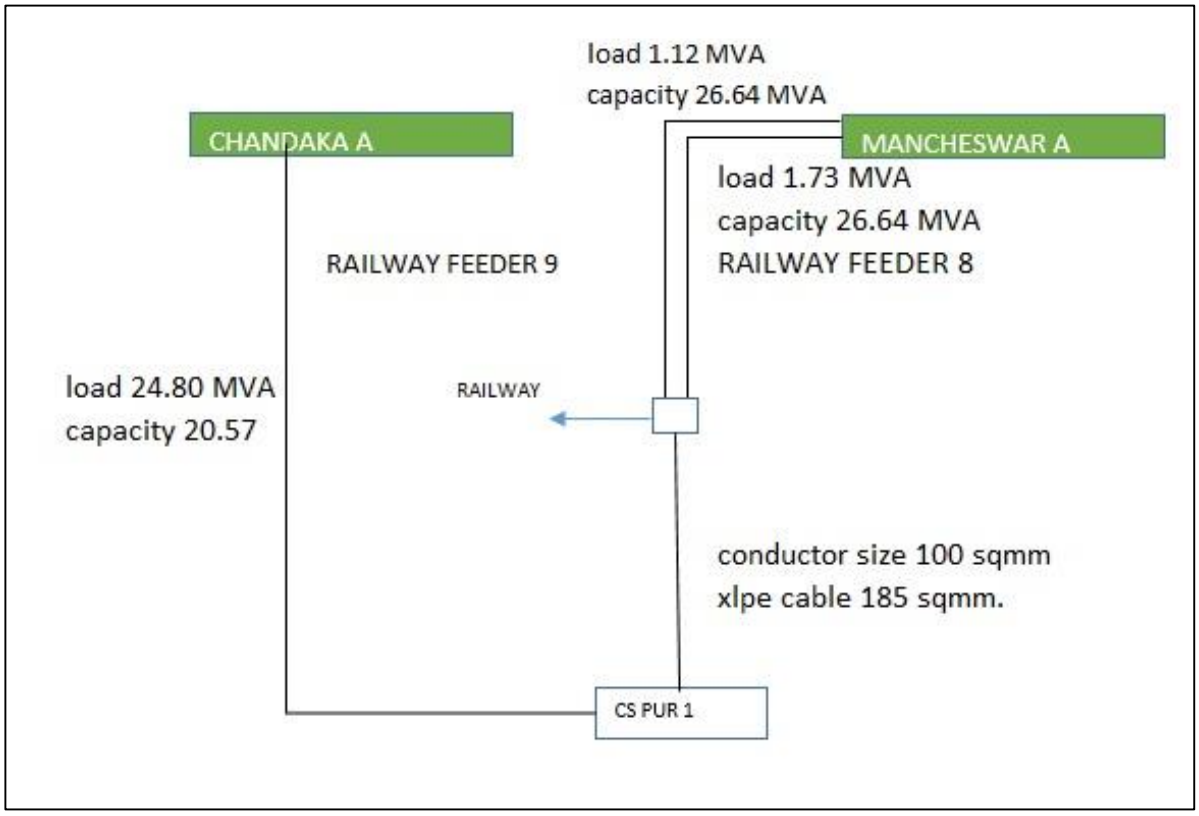
Proposal:
For strenthening the CS PUR 1 33kv connectivity from Mancheswar A grid by installation of new 5-way 33kv RMU.

Objective: To maintain reliability of Power Supply by mitigating overload condition.

Existing Scenario:

- At present, 33/11kv CS PUR 1 structure is connected through CS PUR 1 feeder from Chandaka A grid and Mancheswar A OPTCL Grid through railway feeder 8 and 9.
- Now CS PUR 1 structure feeding from Chandaka A has feeder length of 5.6 km on 400 sqmm UG cable. The current carrying capacity of 400 sqmm UG cable is 20.57 MVA. The maximum peak of CS pur-1 feeder is 24.80 MVA. In this scenario, CS PUR 1 feeder is in overloaded condition. and any interruption in this feeder will cause interruption to entire consumers connected on 33/11 kV CS pur 1 Structure.
- Sources from Mancheswar A grid through feeder 8 and 9 is dedicated feeder to Railway and it is connected to CS pur 1 through 4 pole but CS pur 1 is not feeding from feeder 8 and 9 due to defect in 4 pole (arrangement of 4 pole). Conductor size from Mancheswar A grid to 4 pole (refer diagram) is 232 sqmm but from 4 pole to CS PUR 1 structure the O/H conductor size is 100 sqmm (approximately 0.300 km) and UG cable is 185 sqmm (approximately 0.150 km). FY20 load on feeder-8 is 1.73MVA and feeder-9 is 1.12MVA.To use feeder 8 and 9 we need to propose 5 way 33 kv RMU at 4 pole.

Existing SLD (summer'20):

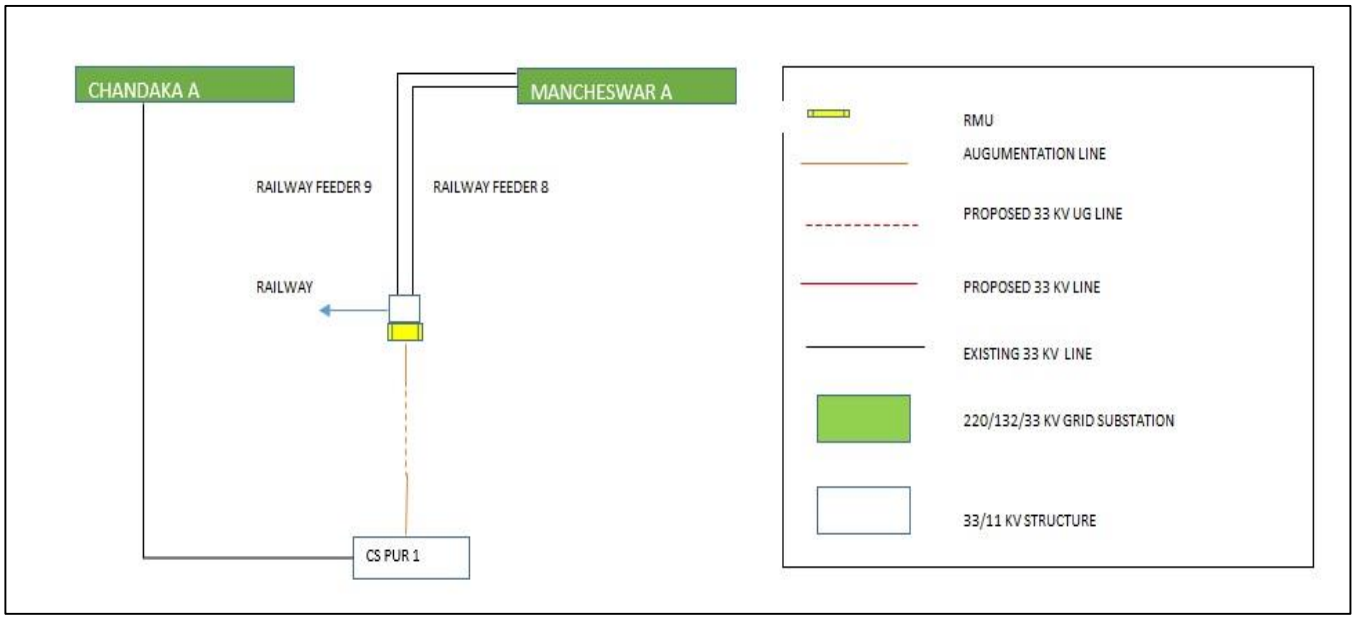


Refer 6.3.4 of the petition

Proposed Scenario:-

- Peak load for FY'22 are is 2 MVA on Feeder 8 and 2MVA on feeder 9, considering load growth of 6.83%.
- Propose 33 KV 5W RMU at 4 pole. Incoming feeder 8 and 9 and outgoing railway and CS PUR 1 to be kept on Isolator and one RMU compartment to be kept spare.
- Augmentation from 100 sqmm to 232 sqmm, approximately length is 0.300 CKM using mid span pole from 4 pole to CS PUR 1 structure.
- Augmentation from 185 sqmm UG cable to 3Cx400 sqmm, approximately length is 0.150 KM from 4 pole to CS PUR 1 structure.
- We can shift load of 33/11 kv CS PUR 1 structure from Chandaka-A Grid to Mancheswar-A feeder 8 and 9 using RMU operation.

Proposed SLD (summer'22):



Detailed Scope of Work:

A. RMU Proposed at 4 pole:

- Propose RMU at 4 pole for smooth operation and reliability for Railway feeder, and Railway will get another source from Chandaka A grid via CS pur 1 feeder.
- The existing 4 pole is used for connectivity.

B. Augmentation of O/H and UG cable.

Using existing network with mid-span pole augmentation can be done from 4 pole to 33/11 KV CS PUR 1 section. For UG cable, augmentation is required from 185 sqmm to 400 sqmm from 4 pole to CS PUR 1 structure.

Refer 6.3.4 of the petition

BOQ FOR THIS PROPOSAL:

6.3.4. 13- Line Augmentation from 100 sq.mm to 232 sq.mm Overhead & UG 185 to 400 sq.mm, also one proposed RMU installation at 4 pole from existing CS Pur 1 structure to 4 Pole at Omfed square					
Sl.No.	Description of Materials	Unit	Qty	Rate	Amount
1	2	3	4	5	6
1	13 MTR 449.8 KG R JOIST POLE	No.	3	29,232	87,696.00
2	33KV V cross arm (22 Kg.)	No.	3	1,580	4,740.00
3	Top bracket 75x40mm MS channel (1.3kg each)/	No	3	100	300.00
4	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	3	150	450.00
5	33KV G I pin	No.	0	192	-
6	33KV pin insulator polymer	No.	9	480	4,320.00
7	33KV H W fitting(B&S)90KN, 4Bolt	Set	3	500	1,500.00
8	Disc insulator (B&S) 120KN Polymer	No.	3	1,440	4,320.00
9	Stay Set 18mm	No	3	1,050	3,150.00
10	HT stay insulator(140x85 mm)	No.	3	50	150.00
11	HT Stay Clamp (1.9Kg / Pair)	Pair	3	125	375.00
12	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	30	75	2,250.00
13	Earthing Coil	No.	3	166	498.00
14	232mm2 All Aluminium Aloy Conductor. AAAC	KM	0.927	1,56,500	1,45,075.50
15	Barbed wire/Anticlimbing device with ddugjy sign board	set	3	703	2,109.00
16	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
17	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
18	Nuts & Bolts of Assorted size	Kg..	10	78	780.00
19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-

Refer 6.3.4 of the petition

20	FOR AUGUMENTATION OF 0.150 KM BY 3CX400 SQMM				
21	Description of Materials	Unit	Quantity	Rate (Rs)	
22	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	150	2032	304800
23	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	0	68594	0
24	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
25	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	0	26000	0
26	High presure testing of 33KV XLPE Cable	Nos	1	5000	5000
27	Placement of 33KV cable Rootmarker	Nos	3	2000	6000
28	Cable laying, excavation and backfilling	MTR	150	3000	450000
29	Hosting of 33KV Cable	Nos	2	5000	10000
30	6" dia PVC pipe for cable bracing	Mo/ mtr 4/2	2	250	500
31	Clamp for brassing	Nos	4	117	468
32					
33	13mtr long 150x150 RS joist pole	ɔ/Kg 4/179	1799.2	65	116948
34	10x50x6 mm GI channel	Kg	206	78	16068
35	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
36	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
37	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
38	No.6 GI Wire	K.g.	40	75	3000
39	40x6mm GI Flat for nutral	K.g.	40	75	3000
40	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
41	33KV LA	No	6	10350	62100
42	33KVHG fuse	No	2	13760	27520

Refer 6.3.4 of the petition

43	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
44	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
45	4 Bolt single tension H/W fitting	Nos	12	3460	41520
46	HT Stay Set Complete	Set	4	1050	4200
47	HT Stay insulator	No.	4	50	200
48	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
49	7/10 Stay Wire	Kg	40	75	3000
50	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
51	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
52	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
53	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
54	Al. binding wire/tape	Kg	20	420	8400
55	Al. Cable socket diff. size	No	24	45	1080
56	Danger Board	No	4	80	320
57	100mm2 AAAC for jumpering	Km	0.08	30000	2400

Refer 6.3.4 of the petition

58	Red Oxide paint	Ltr	8	150	1200
59	All. Paint	Ltr	8	200	1600
60	Black Paint	Ltr	6	220	1320
61	Ms Nut , Bolt & Washer	K.g.	20	71	1420
62	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
63	FOR 33 KV 5 WAY RMU				
64	Description of Materials	Unit	Quantity	RATE	Amount
65	5 WAY RMU FOR 33 KV with 100 meter 4cx400 xlpe cable(with 2 set end joint kit) and DP(13 mtr R Joist pole)	LS	1	33,47,300.00	33,47,300.00
66	Design & constraction of Rcc foundation structure	EA	1	30,083.86	30,083.86
67	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
68	50X6 FLAT	EA	50	75	3,750.00
69	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	EA	1	40,000.00	40,000.00
70	Total Estimated cost				49,50,665.16
71	Stock ,Storage &Insurance				1,48,519.95
72	Sub Total (A+B)				50,99,185.11
73	2% T & P charges of (A+B)				1,01,983.70
74	3% Contigency of (A+B)				1,52,975.55
75	7.5% Transportation charges of (A+B)				3,82,438.88
76	10% Errection Charges of (A+B)				5,09,918.51
77	Sub total (A to F)				62,46,501.77
78	Other over head (Including 6%) supervision charges of G				3,74,790.11
79	Total Estimated Capital cost (G+H)				66,21,291.87
80	GST @ 18% of H				11,91,832.54
81	CESS @1% of I				66,212.92
82	Inspection Fee				5575
	Grand Total				78,84,912.33

Benefits of this proposals:

1. Mitigate the over load of CS Pur 1 feeder.
2. To increase reliabilities of Railway.
3. Strengthening the connectivity between 4 pole to CS PUR 1.
4. Utilization of feeder 8 and 9 from Mancheswar A.

Refer 6.3.4 of the petition

14. Unit-8 Feeder-1 for C.S Pur-2 Structure

Proposal:

Strengthening existing 33 kV Network connectivity of CS PUR 2 Structure by constructing of New 33 kV line from from UNIT 8 FEEDER 1 of Chandaka A Grid S/S.

Objective:

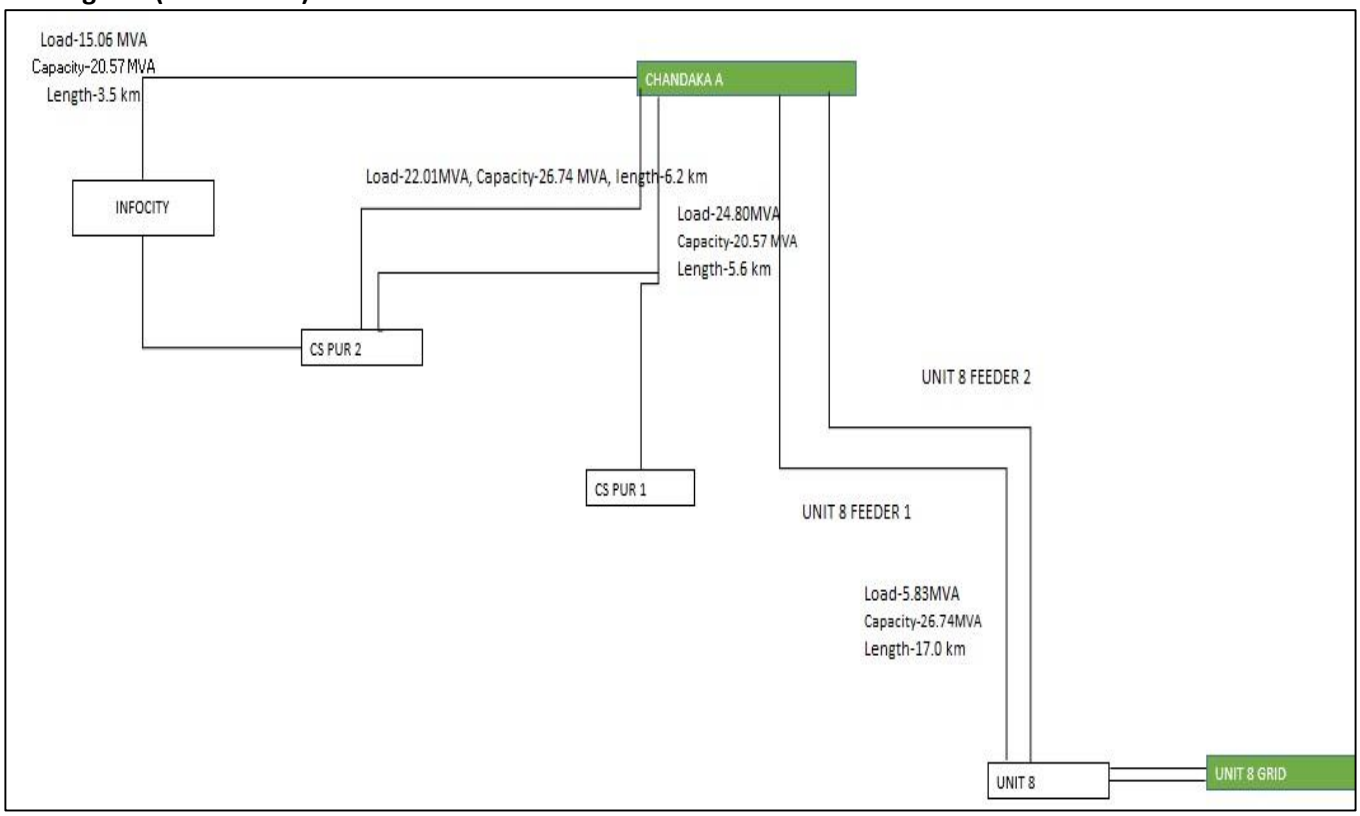
To maintain of Power Supply by mitigating N-1 condition.

Existing Scenario:

- At present, 33/11kv CS PUR 2 structure is connected through CS PUR-2 feeder from Chandaka A OPTCL grid.
- Now CS PUR 2 structure feeding from Chandaka A grid has conductor size 232 sq.mm. overhead line. The maximum peak load of CS PUR-2 feeder is 25.12 MVA. If CS PUR-2 feeder breakdown, then we can't shift the load of CS PUR 2 to CHANDRASEKHARPUR-1 feeder because CHANDRASEKHARPUR-1 feeder already running in overloaded condition. In this scenario, N-1 for CHANDRASEKHARPUR-2 feeder will not be possible.

- UNIT-8 FDR-1 from Chandaka A OPTCL grid experienced maximum peak of 5.83 MVA. To achieve N-1, Unit 8 feeder 1 can be connected to CS pur 2.

Existing SLD (summer'20):

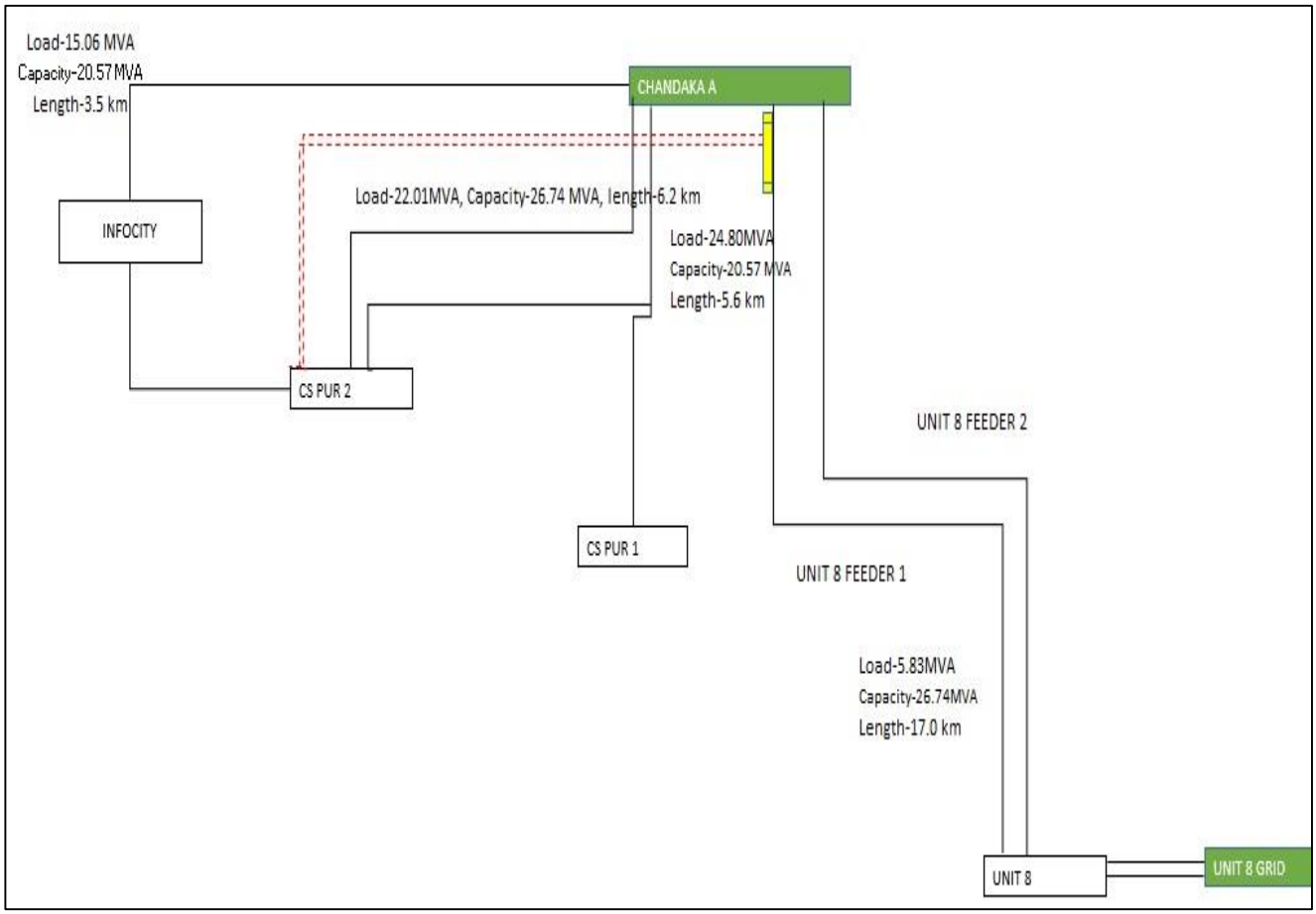


Refer 6.3.4 of the petition

Proposed Scenario: -

Proposed double circuit 33KV UG cable (3 core 400 sq.mm XLPE cable) having length 0.5x2R km from nearest tapping point and proposed 33 KV 3 way RMU at tapping point.

Proposed SLD (summer'22):



Detailed Scope of Work:

Proposed ug cable:

Proposed double circuit 33 KV UG cable (3 core 400 sqmm) having length 0.5x2R km from nearest tapping point with 2 no's double pole.

Proposed RMU:

Proposed 33 KV 3 way RMU at Tapping point for ON-LOAD Operation & Isolation.

Refer 6.3.4 of the petition

6.3.4.14- Addition of 33 kv line from CS PUR 2 to Unit 8 feeder 1(Chandaka A).

FOR NEW LINE OF 1(0.5x2) KM BY 3CX400 SQMM

1	Description of Materials	Unit	Quantity	Rate (Rs)	Amount
2	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
3	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
4	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
5	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
6	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
7	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
8	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
9	Hosting of 33KV Cable	Nos	2	5000	10000
10	6" dia PVC pipe for cable bracing	ło/ mtr 4/2	2	250	500
11	Clamp for brassing	Nos	4	117	468
12					
13	13mtr long 150x150 RS joist pole	ɔ/Kg 4/179	1799.2	65	116948
14	10x50x6 mm GI channel	Kg	206	78	16068
15	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
16	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
17	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
18	No.6 GI Wire	K.g.	40	75	3000
19	40x6mm GI Flat for nutral	K.g.	40	75	3000
20	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
21	33KV LA	No	6	10350	62100
22	33KVHG fuse	No	2	13760	27520
23	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
24	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
25	4 Bolt single tension H/W fitting	Nos	12	3460	41520
26	HT Stay Set Complete	Set	4	1050	4200
27	HT Stay insulator	No.	4	50	200
28	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
29	7/10 Stay Wire	Kg	40	75	3000

Refer 6.3.4 of the petition

30	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
31	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
32	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
33	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
34	Al. binding wire/tape	Kg	20	420	8400
35	Al. Cable socket diff. size	No	24	45	1080
36	Danger Board	No	4	80	320
37	100mm2 AAAC for jumpering	Km	0.08	30000	2400
38	Red Oxide paint	Ltr	8	150	1200
39	All. Paint	Ltr	8	200	1600
40	Black Paint	Ltr	6	220	1320
41	Ms Nut , Bolt & Washer	K.g.	20	71	1420
42	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092

Refer 6.3.4 of the petition

	FOR 33 KV 3 WAY RMU				
44	Description of Materials				
45	3 WAY RMU FOR 33 KV with 100 meter 4cx400 xlpe cable(with 2 set	LS	1	23,47,300.00	23,47,300.00
46	Design & constraction of Rcc foundation structure	EA	1	30,083.86	30,083.86
47	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3 1050		3,150.00
48	50X6 FLAT	KG	50	75	3,750.00
49	Design & providing Galvenised	EA	1	40,000.00	40,000.00
50	Total Estimated cost				83,02,933.66
51	Stock ,Storage &Insurance				2,49,088.01
52	Sub Total (A+B)				85,52,021.67
53	2% T & P charges of (A+B)				1,71,040.43
54	3% Contigency of (A+B)				2,56,560.65
55	7.5% Transportation charges of (A+B)				6,41,401.63
56	10% Errection Charges of (A+B)				8,55,202.17
57	Sub total (A to F)				1,04,76,226.55
58	Other over head (Including 6%) supervision charges of G				6,28,573.59
59	Total Estimated Capital cost (G+H)				1,11,04,800.14
60	GST @ 18% of H				19,98,864.02
61	CESS @1% of I				1,11,048.00
62	Inspection Fee				5575
	Total				1,32,20,287.16
	33 KV BAY ADDITION				1300000
	Total Estimated Capital cost				1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
	Total				20,74,617.89
	Grand Total				1,52,94,905.05

Benefit of proposals:

1. Mitigation of N-1 for CS PUR 2.
2. Utilization of Unit 8 feeder 1.

Refer 6.3.4 of the petition

15. Xavier Feeder Strenthening

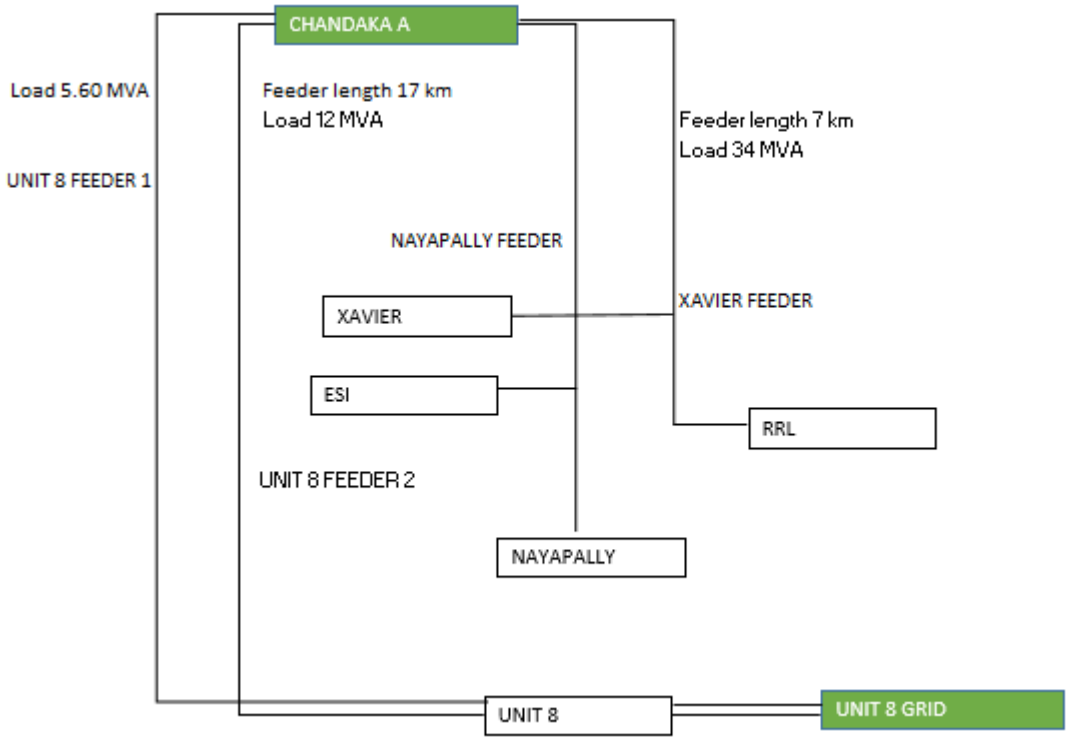
Proposal: For strenthening the 33kv connectivity of Xavier feeder by tapping from unit 8 feeder 2.

Objective: To maintain reliability of Power Supply by mitigating overload,N-1 and single structure connectivity.

Existing Scenario:

- At present, 33/11kv Xavier, RRL, Kananvihar structure is connected through Xavier feeder from Chandaka A OPTCL Grid.
- Now Xavier,RRL,Kananvihar structure feeding from Chandaka A has feeder length of 7 km on 232 sqmm O/H. The maximum peak of Xavier feeder is 34 MVA. In this scenario, Xavier feeder is in overloaded condition.
- 33/11 kv unit 8 structure feeding from unit 8 feeder 1 and unit 8 feeder 2(Rajbhaban) having circuit length 17 km on 232 Sqmm.The maximum pick of unit 8 feeder 2(Rajbhaban) is 12 MVA.To achieve N-1 ,single connectivity and overloaded condition we need to connect Xavier feeder to Unit 8 feeder 2.

Existing SLD (summer'20):



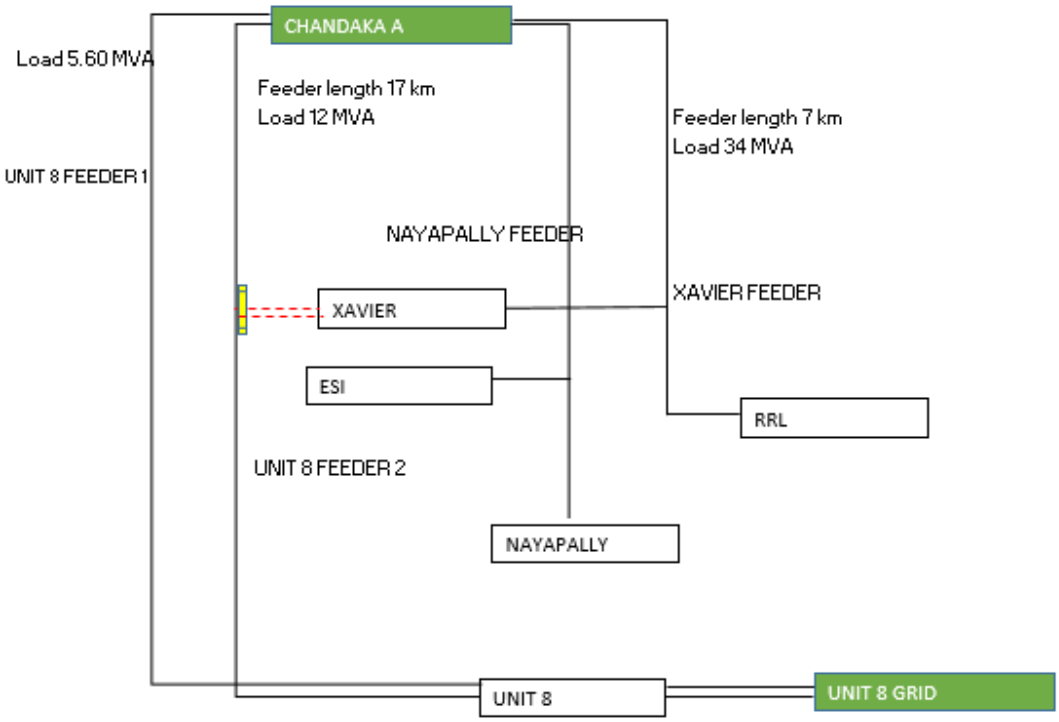
Proposed Scenario: -

- Peak load for FY'22 is 12.49MVA on Unit 8 feeder 2(Rajbhaban), considering load growth.
- Propose 4 way RMU at tapping point (refer drawing).

Refer 6.3.4 of the petition

- Propose double circuit 1 km 3cx400 sq.mm UG cable from tapping point to 33/11 KV Xavier structure to achieve overloading, N-1, and single connectivity for 33/11 KV Xavier structure.

Proposed SLD (summer'22):



Detailed Scope of Work:

A. <u>RMU Proposed at tapping point:</u>

- Proposed 4 way 33 kv RMU at tapping point for smooth operation and reliability for Xavier feeder and 33/11 KV Xavier structure, and Xavier structure will get another source from unit 8 feeder 2(Rajbhaban).
-

B. <u>Double circuit UG cable.</u>

Double circuit 3 core 400 sqmm ug cable is laid from tapping point to Xavier Structure using existing trench.

BOQ for this proposal

Refer 6.3.4 of the petition

6.3.4.15- Addition 33 KV line from UNIT 8 Feeder 2(Chandaka A) to 33/11 KV Xavier structure.					
	FOR NEW LINE OF 1 KM BY 3CX400 SQMM				
1	Description of Materials	Unit	Quantity	Rate (Rs)	Amount
2	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	2000	2032	4064000
3	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	7	68594	480158
4	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
5	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	7	26000	182000
6	High presure testing of 33KV XLPE Cable	Nos	8	5000	40000
7	Placement of 33KV cable Rootmarker	Nos	40	2000	80000
8	Cable laying, excavation and backfilling	MTR	2000	3000	6000000
9	Hosting of 33KV Cable	Nos	2	5000	10000
10	6" dia PVC pipe for cable bracing	Mo/ mtr 4/2	2	250	500
11	Clamp for brassing	Nos	4	117	468
12					
13	13mtr long 150x150 RS joist pole	o/Kg 4/179	1799.2	65	116948
14	10x50x6 mm GI channel	Kg	206	78	16068
15	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
16	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
17	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
18	No.6 GI Wire	K.g.	40	75	3000
19	40x6mm GI Flat for nutral	K.g.	40	75	3000
20	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
21	33KV LA	No	6	10350	62100
22	33KVHG fuse	No	2	13760	27520
23	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
24	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
25	4 Bolt single tension H/W fitting	Nos	12	3460	41520
26	HT Stay Set Complete	Set	4	1050	4200
27	HT Stay insulator	No.	4	50	200

Refer 6.3.4 of the petition

28	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
29	7/10 Stay Wire	Kg	40	75	3000
30	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
31	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
32	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
33	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
34	Al. binding wire/tape	Kg	20	420	8400
35	Al. Cable socket diff. size	No	24	45	1080
36	Danger Board	No	4	80	320
37	100mm2 AAAC for jumpering	Km	0.08	30000	2400
38	Red Oxide paint	Ltr	8	150	1200
39	All. Paint	Ltr	8	200	1600
40	Black Paint	Ltr	6	220	1320
41	Ms Nut , Bolt & Washer	K.g.	20	71	1420
42	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092

Refer 6.3.4 of the petition

43	FOR 33 KV 3 WAY RMU				
44	Materials	Unit	Quantity	Rate (Rs)	AMOUNT
45	4 WAY RMU FOR 33 KV with 3core 400 sqmm XLPE cable and accessoires	LS	1	27,47,300.00	27,47,300.00
46	33 kv bay addition	EA	1	13,00,000.00	13,00,000.00
47	Design & constraction of Rcc foundation structure	EA	1	30,083.86	30,083.86
48	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	EA	3	1050	3,150.00
49	50X6 FLAT	KG	50	75	3,750.00
50	Design & providing Galvenised	EA	1	40,000.00	40,000.00
51	Total Estimated cost				1,54,73,309.66
52	Stock ,Storage &Insurance				4,64,199.29
53	Sub Total (A+B)				1,59,37,508.95
54	2% T & P charges of (A+B)				3,18,750.18
55	3% Contigency of (A+B)				4,78,125.27
56	7.5% Transportation charges of (A+B)				11,95,313.17
57	10% Errection Charges of (A+B)				15,93,750.89
58	Sub total (A to F)				1,95,23,448.46
59	Other over head (Including 6%) supervision charges of G				11,71,406.91
60	Total Estimated Capital cost (G+H)				2,06,94,855.37
61	GST @ 18% of H				37,25,073.97
62	CESS @1% of I				2,06,948.55
63	Inspection Fee				5575
	Grand Total				***2,46,32,452.89***

Benefit of this projects:

1. Mitigate over load for Xavier feeder.
2. Achieve single connectivity issue for 33/11 KV Xavier structure.
3. Achieve N-1 for Xavier feeder.
4. Utilization of unit 8 feeder 2.

Refer 6.3.4 of the petition

16. Stengthening of 33/11kV ESIC Structure

Proposal: For strenthening the 33/11kv ESIC structure from Chandaka A grid by proposed new line from XAVIER Feeder.

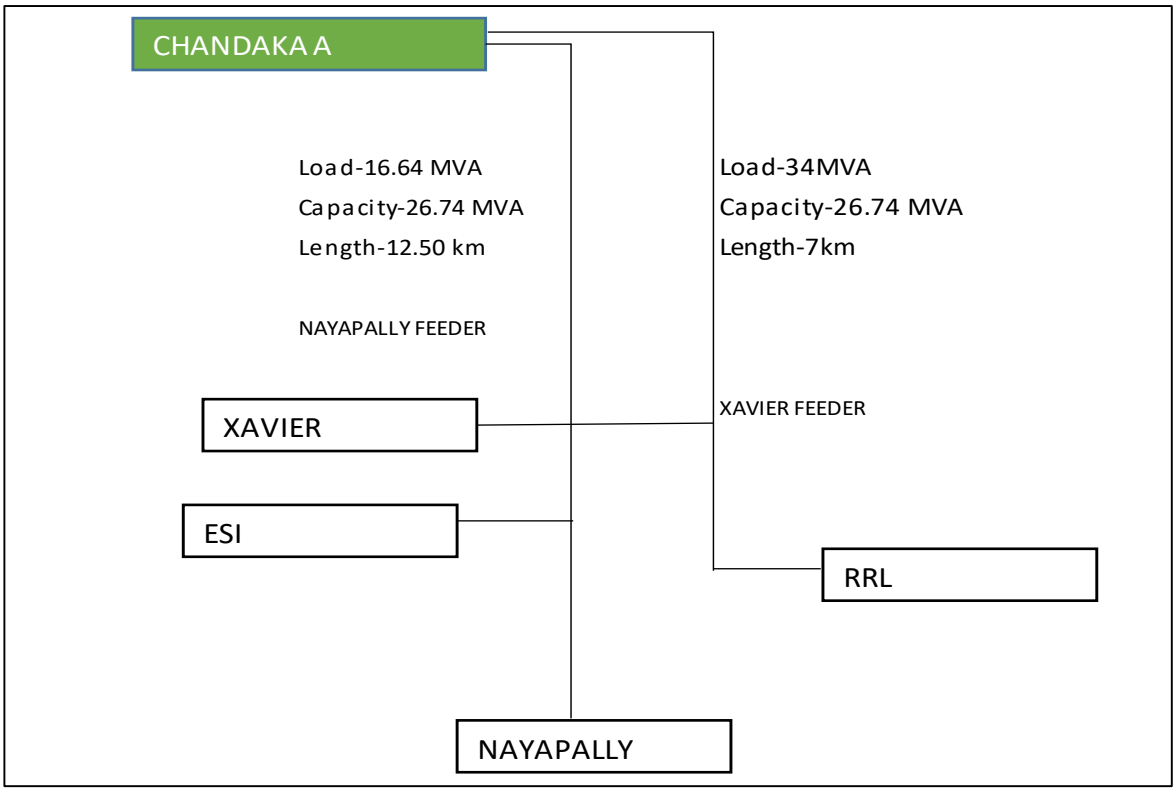
Objective: To maintain reliability of Power Supply by mitigating N-1 and single connectivity condition.

Existing Scenario:

- At present, 33/11kv ESIC structure is connected through NAYAPALLY feeder from Chandaka A OPTCL grid.
- Now ESI structure feeding from Chandaka A grid, has conductor size 232 sqmm overhead line.The maximum peak load of NAYAPALLY feeder is 16.64 MVA. If NAYAPALLY feeder breakdown, then no other backup source is there for 33/11 kv ESI structure. In this scenario, ESI structure is N-1 fail and remains single connectivity condition.

- Feeder from Chandaka A grid named as XAVIER feeder has feeder length 7.0 km on 232 sqmm. the maximum peak of XAVIER feeder is 34 MVA.

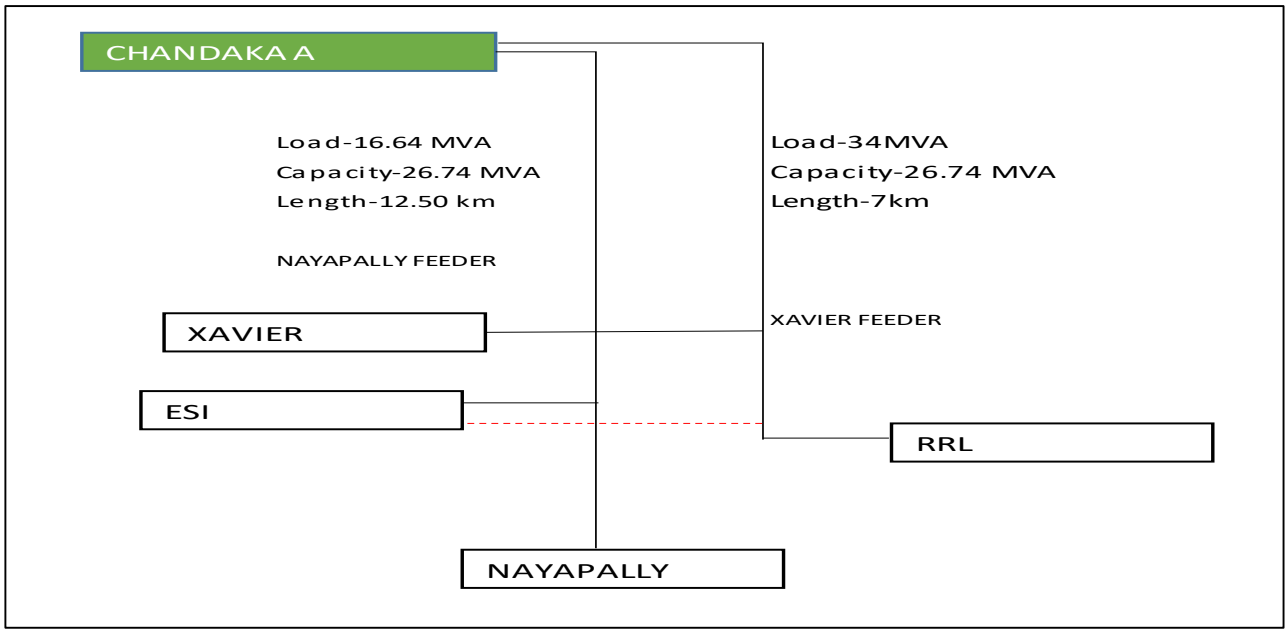
Existing SLD (summer'20):



Refer 6.3.4 of the petition

Proposed Scenario: -
Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point.

Proposed SLD (summer'22):



Detailed Scope of Work:

A. **Proposed ug cable:**

Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point to ESI structure with two no of DP .

B. **Proposed Breaker and bay:**

Proposed incoming 33kv Bay arrangement at ESI structure.

BOQ of Proposal:

Refer 6.3.4 of the petition

6.3.4.16- Addition of 33 KV line from Nayapally feeder from chandaka A to 33/11 KV ESI structure.					
FOR 100 METER 3CX400 SQMM UG CABLE WITH 2 NOS DP STRUCTURE					
Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	100	2032	203200
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set		68594	0
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos		26000	0
4	High presure testing of 33KV XLPE Cable	Nos	1	5000	5000
5	Placement of 33KV cable Rootmarker	Nos	1	2000	2000
5	Cable laying, excavation and backfilling	MTR	100	3000	300000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
	Construction of DP=2Nos.				
9	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2	65	116948
10	10x50x6 mm GI channel	Kg	206	78	16068
11	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
12	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
13	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
14	No.6 GI Wire	K.g.	40	75	3000
15	40x6mm GI Flat for nutral	K.g.	40	75	3000
16	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
17	33KV LA	No	6	10350	62100
18	33KVHG fuse	No	2	13760	27520

Refer 6.3.4 of the petition

19	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
20	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
21	4 Bolt single tension H/W fitting	Nos	12	3460	41520
22	HT Stay Set Complete	Set	4	1050	4200
23	HT Stay insulator	No.	4	50	200
24	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
25	7/10 Stay Wire	Kg	40	75	3000
26	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
27	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
28	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
29	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
30	Al. binding wire/tape	Kg	20	420	8400
31	Al. Cable socket diff. size	No	24	45	1080
32	Danger Board	No	4	80	320
33	100mm2 AAAC for jumpering	Km	0.08	30000	2400
34	Red Oxide paint	Ltr	8	150	1200
35	All. Paint	Ltr	8	200	1600
36	Black Paint	Ltr	6	220	1320
37	Ms Nut , Bolt & Washer	K.g.	20	71	1420
38	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
A	Total cost of Material as per 2018-19 Cost Data				1013067.8
B	Stock ,Storage &Insurance				30392.034
	Sub Total (A+B)				1043459.834
C	2% T & P charges of (A+B)				20869.19668
D	3% Contigency of (A+B)				31303.79502
E	7.5% Transportation charges of (A+B)				78259.48755
F	10% Errection Charges of (A+B)				104345.9834
G	Sub total (A to F)				1278238.297
H	Other over head (Including 6%) supervision charges of G				76694.2978
I	Total Estimated Capital cost (G+H)				1354932.594
J	GST @ 18% of H				243887.867
K	CESS @1% of I				13549.32594
N	Inspection Fee				5575
O	Grand Total (I+J+K+L+M+N)				16,17,944.79

Refer 6.3.4 of the petition

BAY ADDITION	1300000
Total Estimated Capital cost	1300000
Stock ,Storage &Insurance	39,000.00
Sub Total (A+B)	13,39,000.00
2% T & P charges of (A+B)	26,780.00
3% Contigency of (A+B)	40,170.00
7.5% Transportation charges of (A+B)	1,00,425.00
10% Errection Charges of (A+B)	1,33,900.00
Sub total (A to F)	16,40,275.00
Other over head (Including 6%) supervision charges of G	98,416.50
Total Estimated Capital cost (G+H)	17,38,691.50
GST @ 18% of H	3,12,964.47
CESS @1% of I	17,386.92
Inspection Fee	5575
Grand Total (I+J+K+L+M+N)	20,74,617.89
TOTAL COST	36,92,562.67

Benefits from this Proposal:

33/11 KV ESIC structure will overcome from single connectivity structure and N-1 issue.

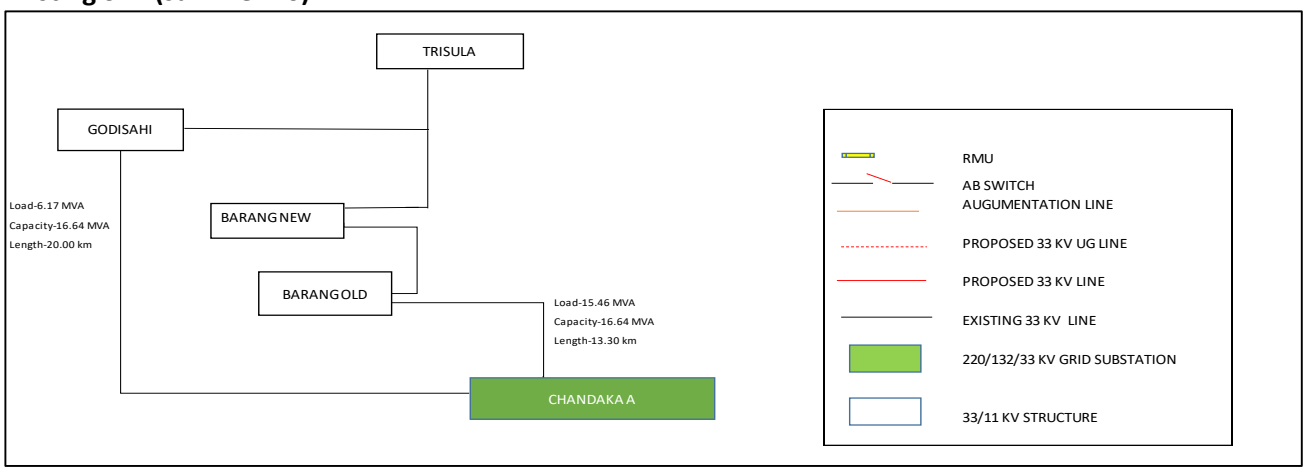
Refer 6.3.4 of the petition

17. Isolator proposed for strenthening of Baranga feeder

Proposal: For strenthening the Baranga and Naraj feeder from Chandaka A grid by propose 33 KV AB switch
Objective: To maintain reliability of Power Supply for Baranga and Naraj feeder.
Existing Scenario:

- At present, 33/11kv Old Baranga, New baranga,Trisulia,and godisahi structure is connected through Baranga feeder from CHANDAKA A OPTCL Grid.
- Now NARAJ feeder has conductor size on 100 sqmm overhead line. The maximum peak of NARAJ feeder is 6.17 MVA. If NARAJ feeder breakdown, then there is only baranaga feeder for back feeding.
- By using AB switch at 33/11 kv New baranga structure we can distribute the load among both the feeders and can back feeding can be possible when required.

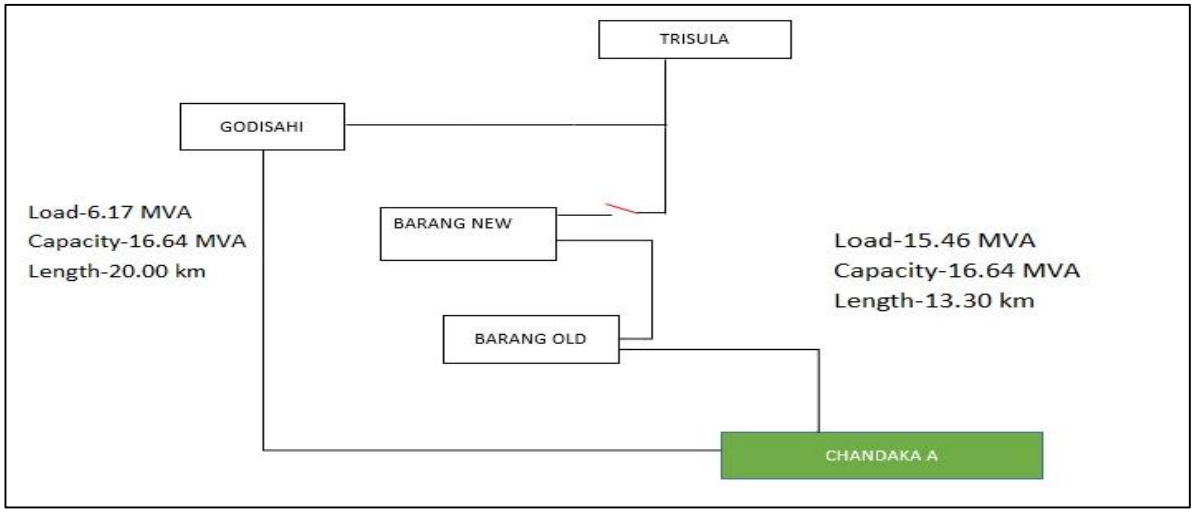
Existing SLD (summer'20):



Proposed Scenari

- Proposed new DP with AB switch at new baranga structure.

Proposed SLD (summer'22):



Detailed Scope of Work

Refer 6.3.4 of the petition

Proposed AB switch with DP: Proposed AB switch with double pole structure at 33/11 KV New baranga structure.

BOQ for this proposal:

6.3.4.17- Isolator proposed at 33/11 KV New baranga structure.

ESTIMATE B - Cost analysis of materials for construction of Intermediate 1.5mtr width DP Structure with AB Switch .

Sl. No.	Description of Materials	Unit	Quantity	Rate	Amount
1	2	3	4	5	6
1	150X150 GI Joist (13Mtr. Long) (34.6kg/meter) (Each 449.8kg.)	KG	899.6	65.00	58,474.00
2	Pressure Channel 100 x 50 x 6mm GI channel each (4mtr.x144nosx9.2Kg) (3 mtr.	K.g.	142.6	65.00	9,269.00
3	S/S DP bressing chhanel 75 x 40 x 6mm GI channel each 1.5 mtr. Long(6.8 K.g. per	K.g.	129.2	65.00	8,398.00
4	AB switch Mounting Channel 100x50x6 -4mtr.long,x 2nos.(9.2K.g. per mtr.	K.g.	73.6	65.00	4,784.00
5	S/S DP bracing Angle 50 x 50 x 6 mm - 6 mtr. Long 2 nos.(4.5 K.g. per mtr.) with side	K.g.	54	65.00	3,510.00
6	33 K.V. Polymer type Insulator with Pin	No.	3	480.00	1,440.00
7	33 K.V. DISC Insulator (B & S) 90KN Polymer	No.	6	1150.00	6,900.00
8	PG Clamp for 148 mm2 Conductor for jumpering	No	2	620.00	1,240.00
9	33KV AB Switch 400Amp 3pole	Set	1	19070.00	19,070.00
10	H.T.stay set (Complete)	Set	4	700.00	2,800.00
11	H.T. Stay Insulator	No.	4	40.00	160.00
12	H.T. Stay clamp (1.95 K.g./ Pair)	Pair	4	146.25	585.00
13	7/8 SWG Stay Wire	K.g.	48	90.00	4,320.00
14	GI Pipe Earthing 40 Dia Medium gage 3 mtrs. Long	No.	2	1500.00	3,000.00
15	40x6mm GI Flat for earthing	K.g.	40	60.00	2,400.00
16	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6	No.	2	0.00	-
17	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5.5'x2'x2' = 22CFT =	NO	2	0.00	-
18	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0'	Nos	2	0.00	-
19	Materials for Massonary work for Earth Pit,Charcoal, Salt etc including	No.	2	0.00	-
20	Black Paint	Ltr	2	85.00	170.00
21	Ms Nut , Bolt & Washer	K.g.	10	75.00	750.00
22	Sundries for survey , PVC tape, Ampire tape,Danger Board, small size nut & Bolt	LS	1		-
A.	Total cost of materials for the year 2018-19				1,27,270.00
B.	Stock,Storage & Insurance = 3% of (A.)				3,818.10
C	Sub total (A+B)				1,31,088.10
I.	T & P charges = 2% of (C)				2,621.76
II.	Contigency = 3% of (C.)				3,932.64
III.	Transportation Charges = 7.5% of (C.)				9,831.61
	Erection Charges for PSC Pole @ 20%				0.00
IV.	Erection Charges for Other Materials @ 10%				4,565.58
	Errection Charges for TFR, Breaker & Joist Pole @ 5%				3,011.41
D.	Sub Total				1,55,051.10
E	Over Head Charges = 6% of (D.)				
F	Total Estimated Capital Cost (D+E)				1,55,051.10
G	GST 18% of (D)				27,909.20
H	GST 18% of (E)				0.00
I	CESS = 1% of (F.)				1550.51
J	Inspection Fee				1000.00
	Total				1,85,510.81

Benefits of this project:

Refer 6.3.4 of the petition

1. Achieve N-1 for Naraj feeder.
2. Baranga will partly share load with Naraj feeder.

Refer 6.3.4 of the petition

18. Strenthening of 33kV network of Dumduma

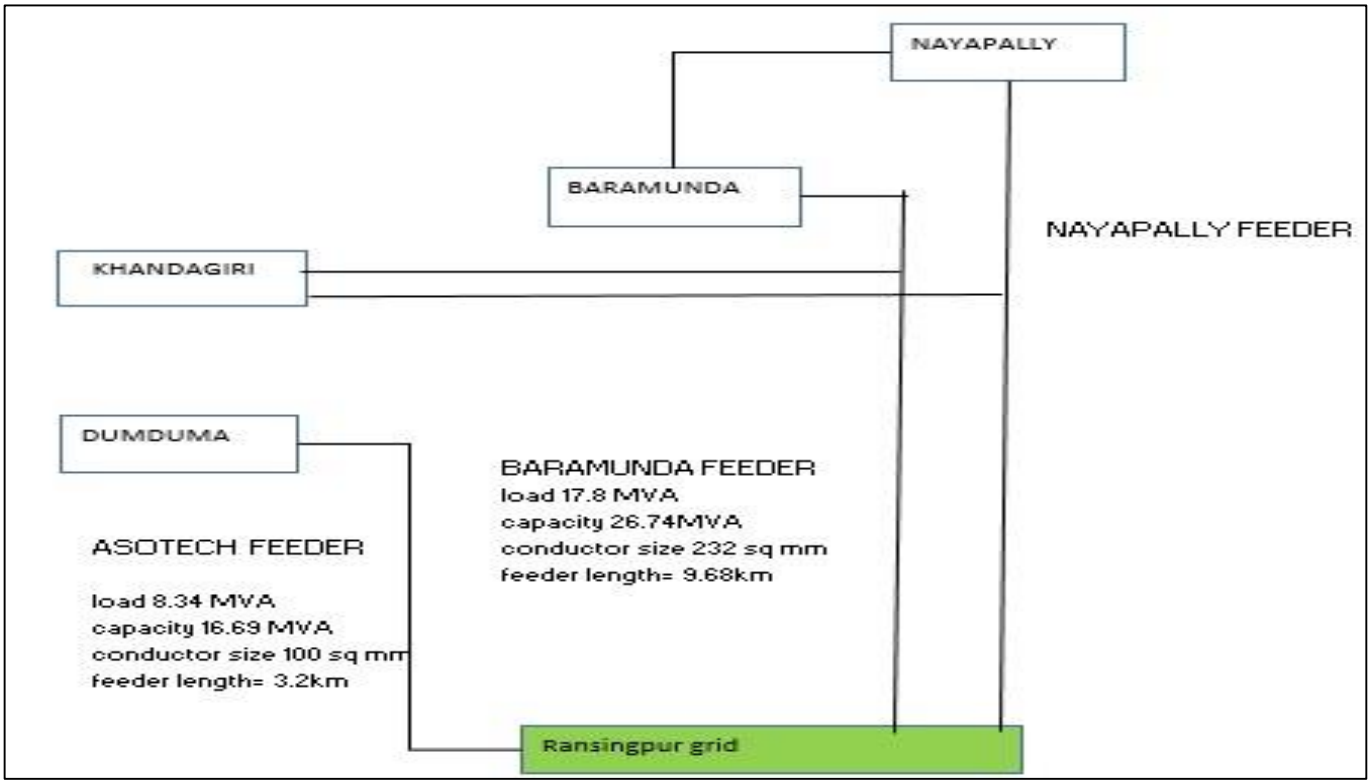
Proposal:
For strenthening the 33kv network of Dumduma structure due to single connectivity, by proposing a new line from Baramunda/Nayapally feeder

Objective:
To maintain reliability of Power Supply by mitigating N-1 and single structure connectivity.

Existing Scenario:

- At present, 33/11kV Dumduma structure is connected to Asotech feeder from Ransinghpur Grid.
- Asotech from Ransinghpur Grid, is of 3.2 km and 100 sq mm O/H. The maximum peak of Asotech feeder is 8.34 MVA . In this scenario, though Asotech feeder is not overloaded however there exists only one source of 33kV line from Ransinghpur Grid, therefore if Asotech feeder fails, Dumduma cannot be charged due absence of second 33kV source to Dumduma structure.
- 33/11kV Khandagiri, Bharatipur and Baramunda structures are being fed by 33kV Baramunda feeder from Ransinghpur Grid. Baramunda feeder and Nayapalli feeder is having circuit length 9.68 km and 12.5 km and cross-section of 232 Sq mm(both). The maximum peak of Baramunda feeder is 17.8MVA and that of Nayapalli feeder is 24.30 MVA.

Existing SLD (summer'20):

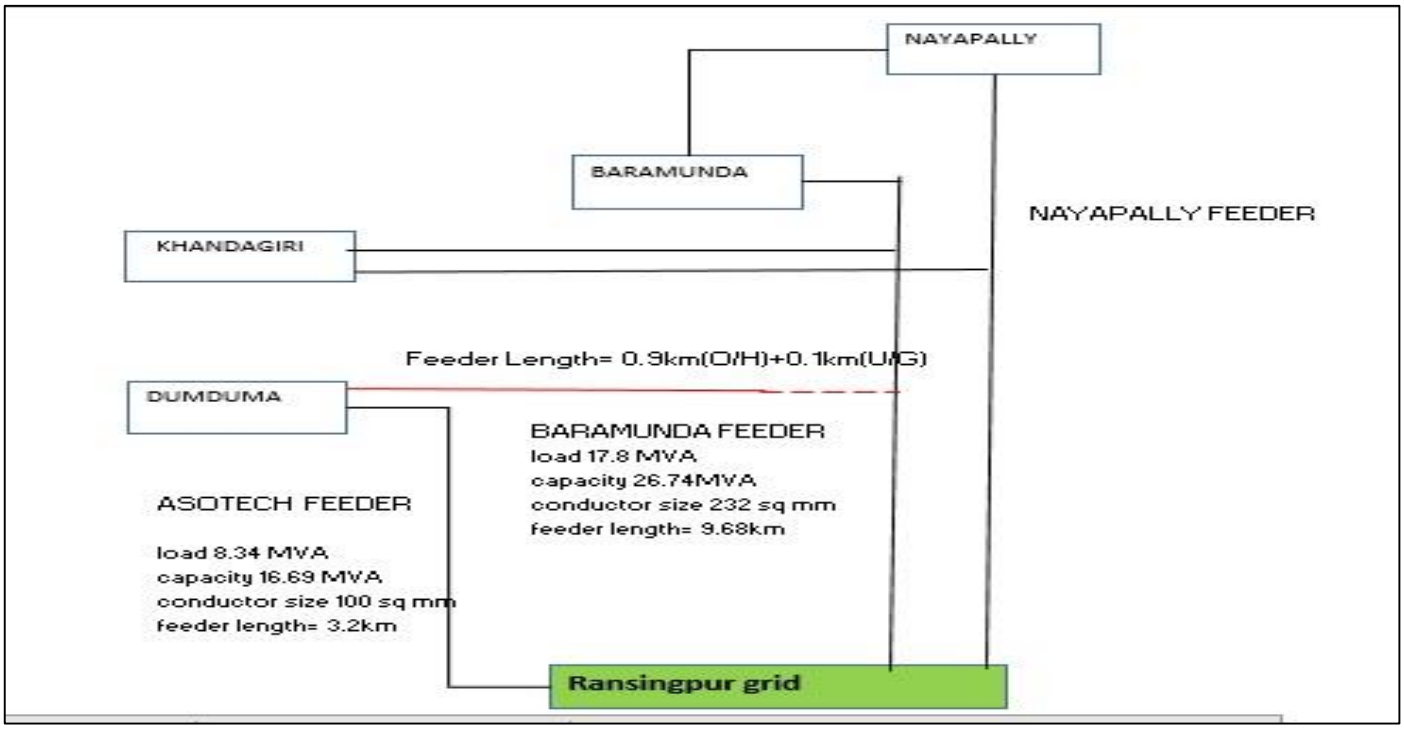


Proposed Scenario: -

Refer 6.3.4 of the petition

- To ensure N-1 reliability at source level for Dumduma structure, and to avoid single connectivity, an 1 km combined overhead and under-ground 33kV line is proposed from Baramunda feeder to Dumduma Structure.

Proposed SLD (summer'22):



Detailed Scope of Work:

A. <u>New line proposed by taking tapping from existing :</u>

1 km of 232 sq mm conductor and 100 m of 3 core 400 sq mm UG cable is proposed for execution of the project.

BOQ for this proposal:

Refer 6.3.4 of the petition

6.3.4.18- Addition of 33 KV line from Baramunda or Nayapally feeder from Ransingpur Grid.

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.

Sl.No.	Description of Materials	Unit	Qty	Rate	Amount
1	2	3	4	5	6
2	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3	Concreting of pole	No	29	2,639.18	76,536.22
4	Couping of pole	No	29	676.37	19,614.73
5	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	33KV G I pin	No.	0	192	-
9	33KV pin insulator polymer	No.	78	480	37,440.00
10	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	Stay Set 18mm	No	8	1,050	8,400.00
13	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	Earthing Coil	No.	23	166	3,818.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21	50x6 flat	kg	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23	No.6 GI Wire	K.g.	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00

Refer 6.3.4 of the petition

25	33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC	No.	3	2270.27	6,810.81
27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
30	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
32	**For 0.1 km UG 3Cx400 sqmm with 2 nos DP with 33 KV line bay**				
33	Description of Materials	Unit	Quantity	Rate (Rs)	
34	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	100	2032	203200
35	33 kv incoming bay	set	1	1300000	1300000
36	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	0	68594	0
37	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
38	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	0	26000	0
39	High presure testing of 33KV XLPE Cable	Nos	1	5000	5000
40	Placement of 33KV cable Rootmarker	Nos	2	2000	4000
41	Cable laying, excavation and backfilling	MTR	100	3000	300000
42	Hosting of 33KV Cable	Nos	2	5000	10000
43	6" dia PVC pipe for cable bracing	√o/ mtr 4/24	2	250	500
44	Clamp for brassing	Nos	4	117	468
45	13mtr long 150x150 RS joist pole	o/Kg 4/1799	1799.2	65	116948
46	10x50x6 mm GI channel	Kg	206	78	16068
47	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
48	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
49	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
50	No.6 GI Wire	K.g.	40	75	3000

Refer 6.3.4 of the petition

51	40x6mm GI Flat for nutral	K.g.	40	75	3000
52	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
53	33KV LA	No	6	10350	62100
54	33KVHG fuse	No	2	13760	27520
55	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC	No.	4	2270.27	9081.08
56	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
57	4 Bolt single tension H/W fitting	Nos	12	3460	41520
58	HT Stay Set Complete	Set	4	1050	4200
59	HT Stay insulator	No.	4	50	200
60	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
61	7/10 Stay Wire	Kg	40	75	3000
62	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG	No.	4	2315.15	9260.6
63	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081	No.	4	2840.89	11363.56
64	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal	No.	4	676.37	2705.48
65	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC	No.	4	2270.27	9081.08
66	Al. binding wire/tape	Kg	20	420	8400
67	Al. Cable socket diff. size	No	24	45	1080
68	Danger Board	No	4	80	320
69	100mm2 AAAC for jumpering	Km	0.08	30000	2400
70	Red Oxide paint	Ltr	8	150	1200

Refer 6.3.4 of the petition

71	All. Paint	Ltr	8	200	1600
72	Black Paint	Ltr	6	220	1320
73	Ms Nut , Bolt & Washer	K.g.	20	71	1420
74	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
75	**Total Cost of materials.**				**40,75,112.31**
76	Stock & Storage @ 3% of A				122253.3693
77	Sub - Total (A+B)				41,97,365.68
78	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				9,44,407.28
79	Sub - Total (C+D)				51,41,772.96
80	Other Overheads including supervision charges @ 6% of E				3,08,506.38
81	Total estimated Capital Cost (E+F)				54,50,279.33
82	GST 18% of G				9,81,050.28
83	CESS 1% of G				54,502.79
	Total Cost				**64,85,832.41**

Benefit of this project:

1. Dumduma Structure will resolve single connectivity and N-1 issue.

Refer 6.3.4 of the petition

19. <u>Augmentation of Unit-8 Feeder-3</u>

&

20. <u>Strenthening the 33kv network of Delta structure</u>

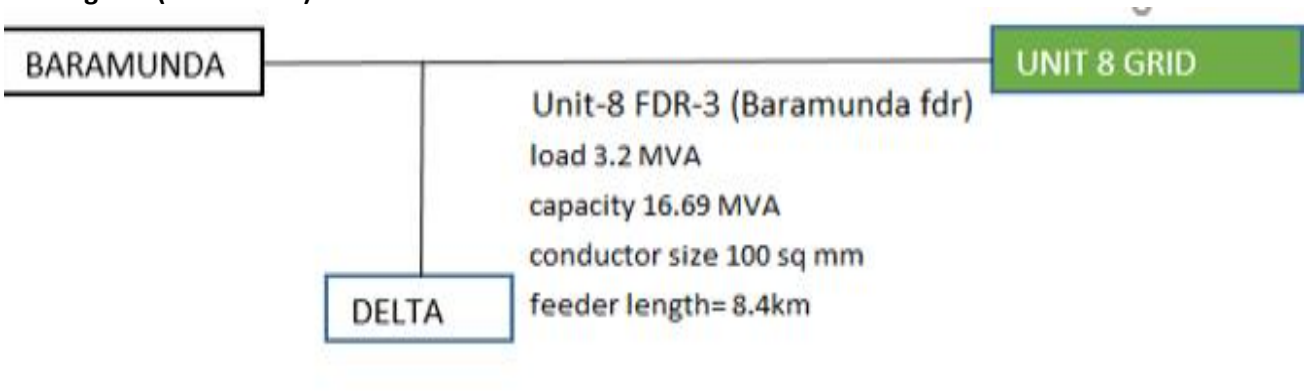
Proposal: For strenthening the 33kv network of Delta structure, due to single connectivity, new line proposed by taking tapping from T-off of Unit-8 GIS Feeder-3 and augmentation of existing line from 80 sq mm to 232 sq mm.

Objective: To maintain reliability & continuity of Power Supply by mitigating ,N-1 and single structure connectivity.

Existing Scenario:

- At present, 33/11kV Delta structure is connected to Unit-8 GIS Feeder-3 (Baramunda Feeder) from Unit-8 GIS Grid.
- Unit-8 GIS Feeder-3 is giving supply to Delta structure, having circuit length of 8.4 km of 80 sq.mm(minimum conductor size) with maximum load of 5.62 MVA.
- Delta structure is thus having single connectivity from Unit-8 GIS Grid. Failure of Unit-8 GIS Feeder-3 will lead into shutdown of Delta structure without any back-feeding.

Existing SLD (summer'20):

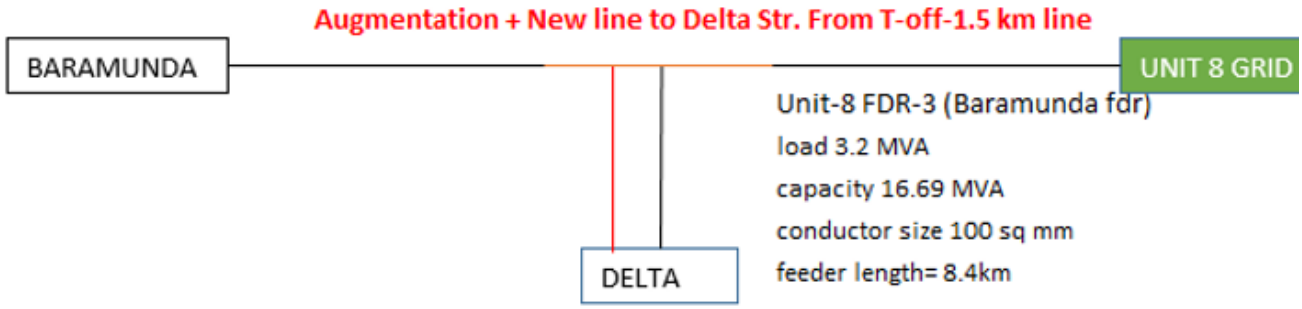


<u>Proposed Scenario</u>:-

- To make Baramunda Feeder from Unit-8 GIS Grid capable of feeding Baramunda and Nayapalli structure in future, augmentation of 1.5 km (from 80 sq mm to 232 sqmm) line is proposed.
- To overcome single connectivity issue of Delta, a new line of 1.5 km is proposed from T-off of Unit-8 GIS Feeder-3.

Proposed SLD (summer'22):

Refer 6.3.4 of the petition



Detailed Scope of Work:

A. <u>New line proposed from Tapping point :</u>

1.5 km of new line of 232 sq mm is proposed from T-off of Unit-8 GIS Feeder-3 to 33/11 KV Delta structure.

B. <u>Augmentation of Existing Line :</u>

To make existing feeder capable of carrying load of existing Structures in future, augmentation of 1.5 km of line from 80 sq mm to 232 sq mm is proposed.

BOQ for this proposal:

Refer 6.3.4 of the petition

6.3.4.19- Augmentation of 1.5 km from 80 sqmm to 232 sqmm for Unit 8 feeder 3.

AUGUMENTATION LINE BY 232 SQMM WITH 10 NOS NEW POLE AND OTHERS ACCESARIES

NEW POLE 10 ,13 MTR R JOIST POLE .(449.8 KG /POLE)

Sl.No.	Mtr Code	Description of Materials	Unit	Qty	Rate	Amount
1		2	3	4	5	6
1	P6	13 MTR 449.8 KG R JOIST POLE	No.	10	29,232	2,92,320.00
2	MSGI9	33KV V cross arm (22 Kg.)	No.	10	1,580	15,800.00
3	MSGI39	Top bracket 75x40mm MS channel (1.3kg each)/	No	10	100	1,000.00
4	MSGI36	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	10	150	1,500.00
5	INS30	33KV G I pin	No.	0	192	-
6	INS2	33KV pin insulator polymer	No.	30	480	14,400.00
7	INS19	33KV H W fitting(B&S)90KN, 4Bolt	Set	6	500	3,000.00
8	INS10	Disc insulator (B&S) 120KN Polymer	No.	6	1,440	8,640.00
9	MSGI20	Stay Set 18mm	No	6	1,050	6,300.00
10	INS17	HT stay insulator(140x85 mm)	No.	6	50	300.00
11	MSGI43	HT Stay Clamp (1.9Kg / Pair)	Pair	6	125	750.00
12	MSGI17	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	60	75	4,500.00
13	MSGI37	Earthing Coil	No.	10	166	1,660.00
14	AAAC7	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
15	MSGI25	Barbed wire/Anticlimbing device with ddugjy sign board	set	10	703	7,030.00
16	MSGI8	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	0	65	-
17	MSGI5	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	0	65	-
18	MSGI46	Nuts & Bolts of Assorted size	Kg..	30	78	2,340.00
19	ACS19	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
20	A	**Total Cost of materials.**				**8,43,125.00**
21	B	Stock & Storage @ 3% of A				25293.75
22	C	Sub - Total (A+B)				8,68,418.75
23	D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				1,95,394.22
24	E	Sub - Total (C+D)				10,63,812.97
25	F	Other Overheads including supervision charges @ 6% of E				63,828.78
26	G	Total estimated Capital Cost (E+F)				11,27,641.75
27	H	GST 18% of G				2,02,975.51
28	I	CESS 1% of G				11,276.42
29	J	**Total Cost**				**13,41,893.68**
		FOR 1.5 CKM				***20,12,840.52***

Refer 6.3.4 of the petition

6.3.4.21- Addition 33 KV line from T-point to 33/11 KV Delta structure.

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH with 33 kv incoming

Sl.No.	Description of Materials	Unit	Qty	Rate	Amount
1	2	3	4	5	6
2	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3	Concreting of pole	No	29	2,639.18	76,536.22
4	Couping of pole	No	29	676.37	19,614.73
5	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	33KV G I pin	No.	0	192	-
9	33KV pin insulator polymer	No.	78	480	37,440.00
10	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	Stay Set 18mm	No	8	1,050	8,400.00
13	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	Earthing Coil	No.	23	166	3,818.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00

Refer 6.3.4 of the petition

20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21	50x6 flat	kg	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23	No.6 GI Wire	K.g.	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25	33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
30	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
32	33 kv BAY addition				
33	**Total Cost of materials.**				**17,60,044.51**
34	Stock & Storage @ 3% of A				52801.3353
35	Sub - Total (A+B)				18,12,845.85
36	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
37	Sub - Total (C+D)				22,20,736.16
38	Other Overheads including supervision charges @ 6% of E				1,33,244.17
39	Total estimated Capital Cost (E+F)				23,53,980.33
40	GST 18% of G				4,23,716.46
41	CESS 1% of G				23,539.80
42	**Total Cost**				**28,01,236.59**
	Total cost FOR 1.5 CKT KM line				42,01,854.89

Total cost for new line and augmentation			62,14,695.41

Benefits of this projects:

1.Delta will be overcoming from single connectivity issue.
2. Strenthening 33 KV unit 8 feeder 3.
3.By strenthening the unit 8 feeder 3 ,we can shift the load of 33/11 KV Baramunda to unit 8 feeder 3.

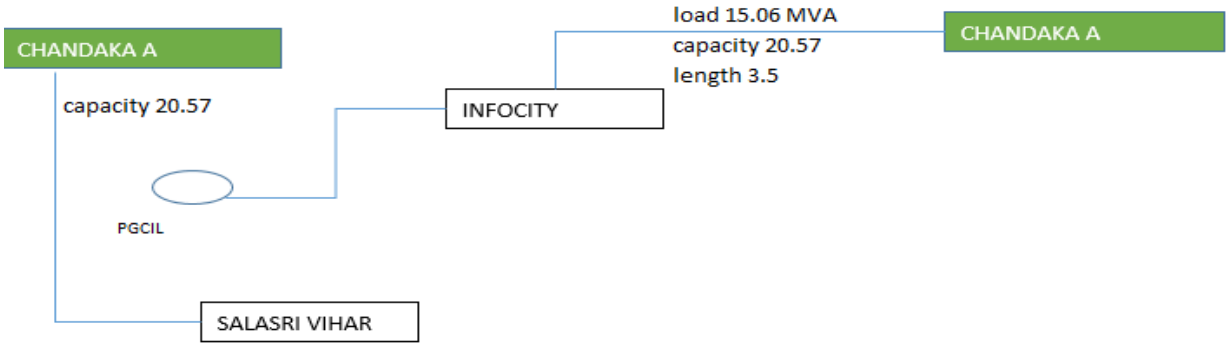
Refer 6.3.4 of the petition

21. Strenthening of 33/11kV Sailashree Vihar Structure

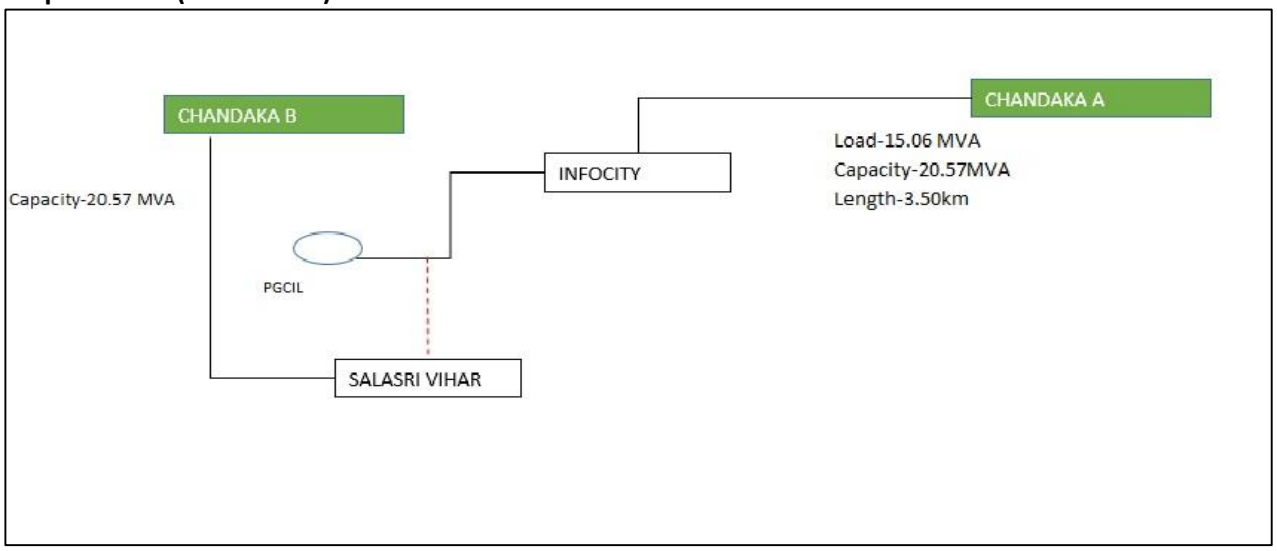
Proposal: For strenthening the proposed 33/11kv Sailashree Vihar structure from Chandaka A grid by proposed new line from INFOCITY(PGCIL) Feeder.
Objective: To maintain reliability of Power Supply by mitigating N-1 and single connectivity condition.
Existing Scenario:

- A proposed Sailashree vihar structure will connect through sailashree vihar feeder from Chandaka B OPTCL grid.
- sailashree vihar structure will get feeding from Chandaka B grid, conductor size 400 sqmm UG cable. If sailasri vihar feeder breakdown, then no other backup source is there for 33/11 kv sailashree vihar structure. In this scenario sailashree vihar structure is N-1 fail and remains single connectivity condition.
- Feeder from Chandaka A grid named as INFOCITY feeder has feeder length 3.5 km on 148 sqmm. the maximum peak of INFOCITY feeder is 15.06 MVA.

Existing SLD (summer'20):



Proposed Scenario: -
Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point.
Proposed SLD (summer'22):



Refer 6.3.4 of the petition

Detailed Scope of Work:

C. <u>Proposed ug cable:</u>

Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point with two nos. DP of sailashree vihar structure.

BOQ of Proposal

6.3.4.20- Addition of 33 KV new line from PGCIL feeder to 33/11 KV Sailashree Vihar structure					
FOR 100 METER 3CX400 SQMM UG CABLE					
Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	100	2032	203200
	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set		68594	0
2	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
3	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos		26000	0
4	High presure testing of 33KV XLPE Cable	Nos	1	5000	5000
5	Placement of 33KV cable Rootmarker	Nos	1	2000	2000
5	Cable laying, excavation and backfilling	MTR	100	3000	300000
6	Hosting of 33KV Cable	Nos	2	5000	10000
7	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
8	Clamp for brassing	Nos	4	117	468
	Construction of DP 2Nos and 33kv BAY Addition				
9	33 KV Bay addition				
10	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2	65	116948
11	10x50x6 mm GI channel	Kg	206	78	16068
12	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
13	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
14	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
15	No.6 GI Wire	K.g.	40	75	3000
16	40x6mm GI Flat for nutral	K.g.	40	75	3000
17	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
18	33KV LA	No	6	10350	62100
19	33KVHG fuse	No	2	13760	27520
20	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
21	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
22	4 Bolt single tension H/W fitting	Nos	12	3460	41520
23	HT Stay Set Complete	Set	4	1050	4200

Refer 6.3.4 of the petition

24	HT Stay insulator	No.	4	50	200
25	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
26	7/10 Stay Wire	Kg	40	75	3000
27	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
28	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
29	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
30	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
31	Al. binding wire/tape	Kg	20	420	8400
32	Al. Cable socket diff. size	No	24	45	1080
33	Danger Board	No	4	80	320
34	100mm2 AAAC for jumpering	Km	0.08	30000	2400
35	Red Oxide paint	Ltr	8	150	1200
36	All. Paint	Ltr	8	200	1600
37	Black Paint	Ltr	6	220	1320
38	Ms Nut , Bolt & Washer	K.g.	20	71	1420
39	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
40	Total cost of Material as per 2018-19 Cost Data				1013067.8
41	Stock ,Storage &Insurance				30392.034
42	Sub Total (A+B)				1043459.834
43	2% T & P charges of (A+B)				20869.19668
44	3% Contigency of (A+B)				31303.79502
45	7.5% Transportation charges of (A+B)				78259.48755
46	10% Errection Charges of (A+B)				104345.9834
47	Sub total (A to F)				1278238.297
48	Other over head (Including 6%) supervision charges of G				76694.2978
49	Total Estimated Capital cost (G+H)				1354932.594
50	GST @ 18% of H				243887.867
51	CESS @1% of I				13549.32594
52	Inspection Fee				5575
	Grand Total				16,17,944.79

Benefits of proposals:

1. Proposed 33/11 KV sailasree vihar structure will overcome from single connectivity and n-1 issue.
2. PGCIL feeder can draw the load from 33/11 KV Sailasree vihar structure.

Refer 6.3.4 of the petition

22. Strenthening of 33/11kV RRL Structure

Proposal: For strenthening the 33/11kv RRL structure from Chandaka A grid by proposed new line from NAYAPALLY Feeder.

Objective: To maintain reliability of Power Supply by mitigating N-1 and single connectivity condition.

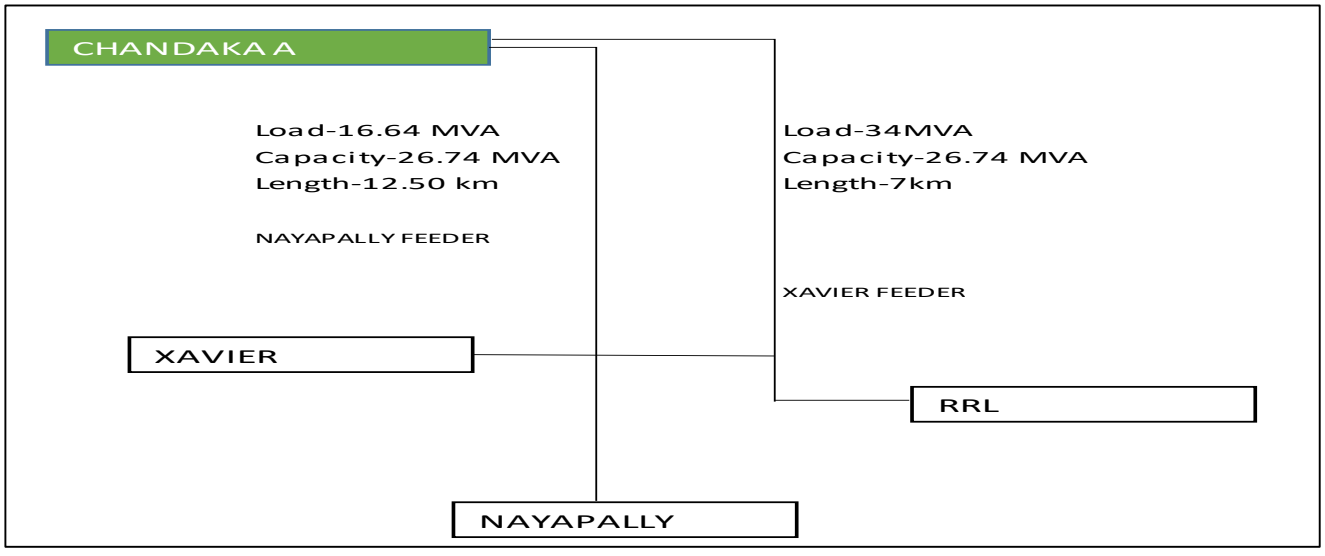
Existing Scenario:

- At present, 33/11kv RRL structure is connected through XAVIER feeder from Chandaka A OPTCL grid.
- Now RRL structure feeding from Chandaka A grid has conductor size 232 sqmm overhead line. The maximum peak load of XAVIER feeder is 34.00 MVA. If XAVIER feeder breakdown, then no other backup source is there for 33/11 kv RRL structure. In this scenario, RRL structure is N-1 fail and remains single connectivity condition.

- Feeder from Chandaka A grid named as NAYAPALLI feeder has feeder length 12.5 km on 232 sqmm. the maximum peak of NAYAPALLI feeder is 16.64 MVA.

- To achieve single connectivity and N-1 for RRL we proposed new line from Nayapally feeder.

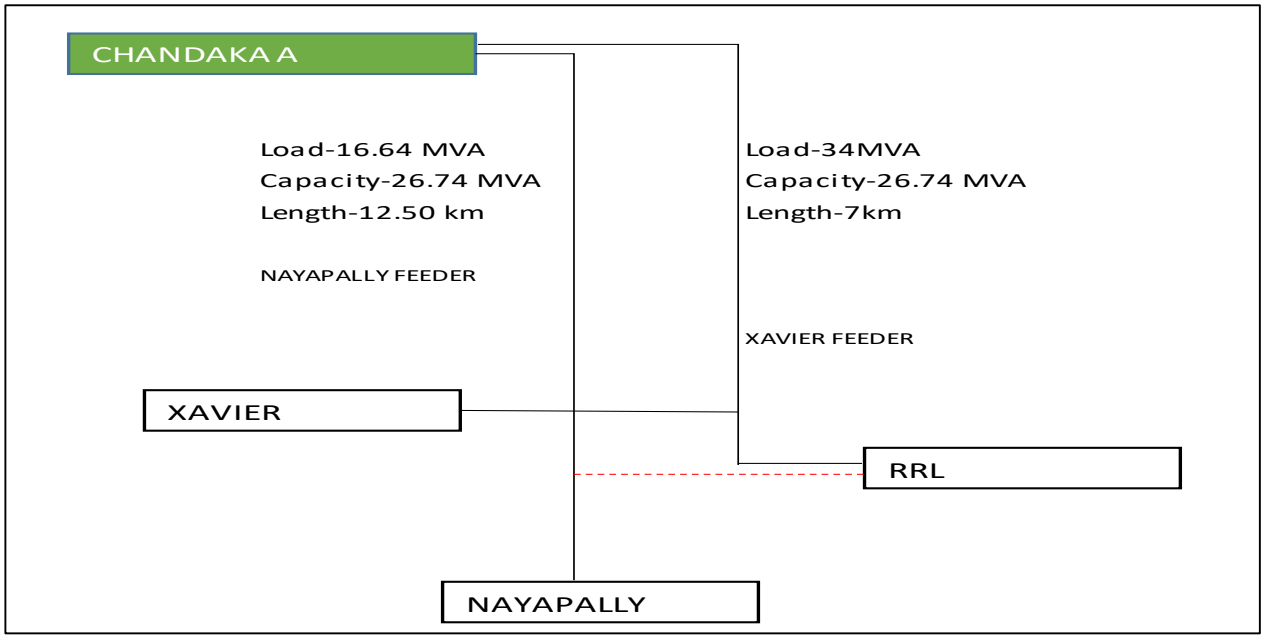
Existing SLD (summer'20):



Proposed Scenario: -
Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point.

Proposed SLD (summer'22):

Refer 6.3.4 of the petition



Detailed Scope of Work:

B. <u>Proposed ug cable:</u>

Proposed single circuit UG cable (3 core 400 sqmm) having length 0.1 km from tapping point with two nos double pole structure for 33/11 KV RRL structure.

C. **<u>Bay addition</u>**:

Proposed one bay at RRL structure.

BOQ :

Refer 6.3.4 of the petition

6.3.4.22- Addition 33 KV new line from Nayapally feeder to 33/11 KV RRL structure.

FOR NEW LINE OF 0.100 KM BY 3CX400 SQMM

1	Description of Materials	Unit	Quantity	Rate (Rs)	
2	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	100	2032	203200
3	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	0	68594	0
4	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
5	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	0	26000	0
6	High presure testing of 33KV XLPE Cable	Nos	1	5000	5000
7	Placement of 33KV cable Rootmarker	Nos	2	2000	4000
8	Cable laying, excavation and backfilling	MTR	100	3000	300000
9	Hosting of 33KV Cable	Nos	2	5000	10000
10	6" dia PVC pipe for cable bracing	Mo/ mtr 4/2	2	250	500
11	Clamp for brassing	Nos	4	117	468
12					
13	13mtr long 150x150 RS joist pole	o/Kg 4/179	1799.2	65	116948
14	10x50x6 mm GI channel	Kg	206	78	16068
15	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
16	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
17	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
18	No.6 GI Wire	K.g.	40	75	3000
19	40x6mm GI Flat for nutral	K.g.	40	75	3000
20	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
21	33KV LA	No	6	10350	62100
22	33KVHG fuse	No	2	13760	27520
23	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
24	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
25	4 Bolt single tension H/W fitting	Nos	12	3460	41520
26	HT Stay Set Complete	Set	4	1050	4200
27	HT Stay insulator	No.	4	50	200

Refer 6.3.4 of the petition

28	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
29	7/10 Stay Wire	Kg	40	75	3000
30	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
31	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
32	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
33	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
34	Al. binding wire/tape	Kg	20	420	8400
35	Al. Cable socket diff. size	No	24	45	1080
36	Danger Board	No	4	80	320
37	100mm2 AAAC for jumpering	Km	0.08	30000	2400
38	Red Oxide paint	Ltr	8	150	1200
39	All. Paint	Ltr	8	200	1600
40	Black Paint	Ltr	6	220	1320
41	Ms Nut , Bolt & Washer	K.g.	20	71	1420
42	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
43	Bay addition	set	1	1300000	1300000
44			Total Estimated cost		23,15,067.80
45			Stock ,Storage &Insurance		69,452.03

Refer 6.3.4 of the petition

46	Sub Total (A+B)	23,84,519.83
47	2% T & P charges of (A+B)	47,690.40
48	3% Contigency of (A+B)	71,535.60
49	7.5% Transportation charges of (A+B)	1,78,838.99
50	10% Errection Charges of (A+B)	2,38,451.98
51	Sub total (A to F)	29,21,036.80
52	Other over head (Including 6%) supervision charges of G	1,75,262.21
53	Total Estimated Capital cost (G+H)	30,96,299.00
54	GST @ 18% of H	5,57,333.82
55	CESS @1% of I	30,962.99
56	Inspection Fee	5575
	Grand Total	***36,90,170.82***

Benefit of this proposal:

1. Achieve n-1 and single connectivity for 33/11 KV RRL.

Refer 6.3.4 of the petition

23. Strentening of SBI Kesura 33kV connectivity

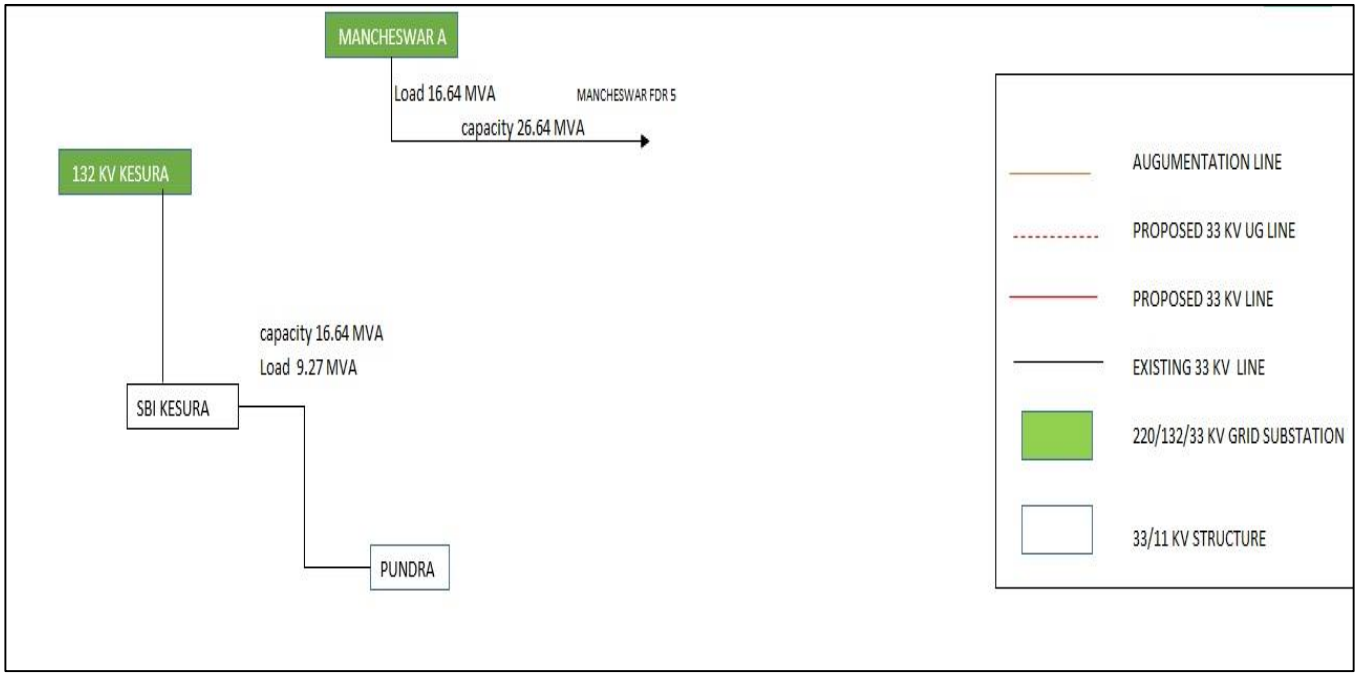
Proposal: For strenthening the Sbi kusura and Pundara 33kv connectivity from Kesura grid by proposed new line from mancheswar feeder 5(industrial).

Objective: To maintain reliability of Power Supply by mitigating N-1 and single connectivity condition.

Existing Scenario:

- At present, 33/11kv Sbi kesura,pundara structure is connected through Sbi kesura feeder from kesura OPTCL Grid .
- Now Sbi kesura and pundara structure feeding from kesura feeder has conductor size on 100 sqmm overhead line. The maximum peak of Kesura feeder is 9.29 MVA.If kesura feeder breakdown then no other backup source are there. In this scenario, Sbi kesura feeder is N-1 fail and remains single connectivity condition.
- Feeder from Mancheswar A named as industrial feeder has feeder length 14.80 km on 232 sqmm .The maximum peak of feeder 5 is 16.64 MVA.

Existing SLD (summer'20):

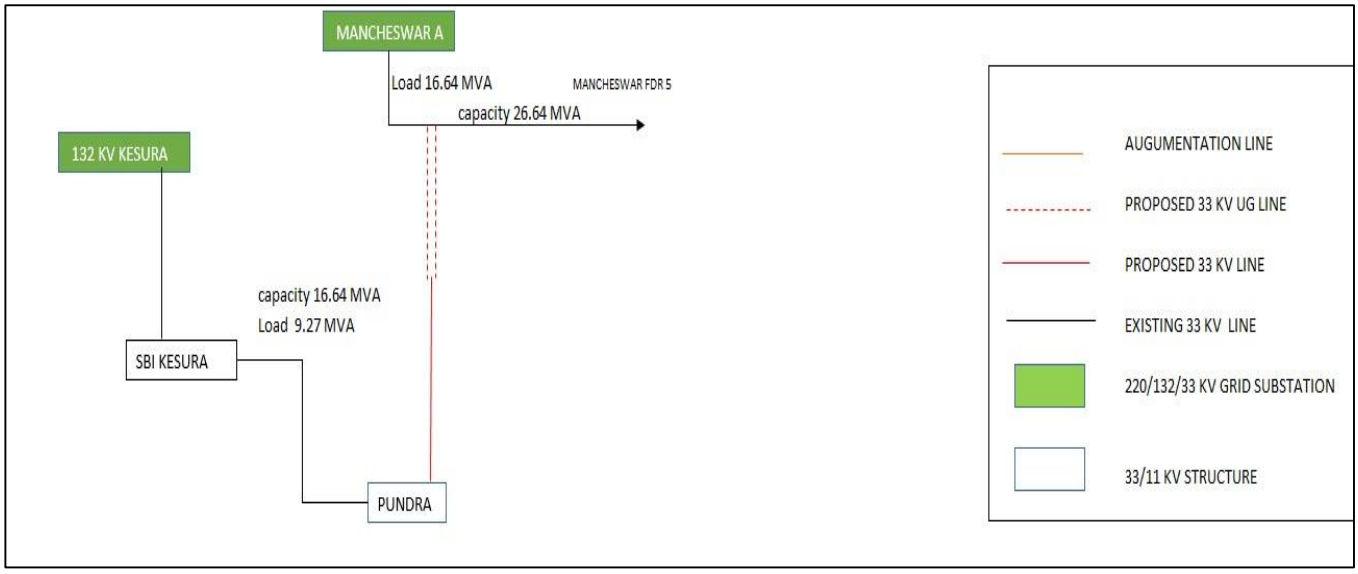


Proposed Scenario:-

- Proposed double circuit UG cable from tapping point of 0.6 km and then proposed overhead line to 33/11 KV pundara structure (Refer drawing).

Proposed SLD (summer'22):

Refer 6.3.4 of the petition



Detailed

Scope of Work:

A. <u>Proposed ug cable :</u>

Proposed double circuit UG cable(3 core 400 sqmm) having length 0.6 km from satyavihar chak .

B. <u>Propose O/H line.</u>

Proposed 1.4 ckm new line by R joist 13-meter pole for overhead 33 kv line by using 33 KV V cross arm.

BOQ for this proposal:

Refer 6.3.4 of the petition

6.3.4.23- Addition 33 KV new line from Feeder 5(Mancheswar A) to 33/11 kv Pundara structure.

Sl.No.	Description of Materials	Unit	Qty	Rate	Amount
1	2	3	4	5	6
2	13 MTR 449.8 KG R JOIST POLE	No.	33	29,232	9,64,656.00
3	Concreting of pole	No	33	2,639.18	87,092.94
4	Couping of pole	No	33	676.37	22,320.21
5	33KV V cross arm (22 Kg.)	No.	27	1,580	42,660.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	No	27	100	2,700.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	27	150	4,050.00
8	33KV G I pin	No.	0	192	-
9	33KV pin insulator polymer	No.	90	480	43,200.00
10	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	Stay Set 18mm	No	10	1,050	10,500.00
13	HT stay insulator(140x85 mm)	No.	10	50	500.00
14	HT Stay Clamp (1.9Kg / Pair)	Pair	10	125	1,250.00
15	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	100	75	7,500.00
16	Earthing Coil	No.	25	166	4,150.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.708	1,56,500	5,80,302.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	set	27	703	18,981.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	120	65	7,800.00
20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21	50x6 flat	kg	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00

Refer 6.3.4 of the petition

23	No.6 GI Wire	K.g.	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25	33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81
27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
30	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
	33 KV incoming bay	set		13,00,000	13,00,000.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
32	**Total Cost of materials.**				**33,07,515.71**
33	Stock & Storage @ 3% of A				99225.4713
34	Sub - Total (A+B)				34,06,741.18
35	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection				7,66,516.77
36	Sub - Total (C+D)				41,73,257.95
37	Other Overheads including supervision charges @				2,50,395.48
38	Total estimated Capital Cost (E+F)				44,23,653.42
39	GST 18% of G				7,96,257.62
40	CESS 1% of G				44,236.53
41	**Total Cost**				**52,64,147.57**
42	Inspection fee				Extra as per Govt notification
43					
44	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
45	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1200	2032	2438400
46	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	4	68594	274376
47	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	4	33255	133020

Refer 6.3.4 of the petition

48	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	4	26000	104000
49	High presure testing of 33KV XLPE Cable	Nos	5	5000	25000
50	Placement of 33KV cable Rootmarker	Nos	15	2000	30000
51	Cable laying, excavation and backfilling	MTR	1100	3000	3300000
52	Hosting of 33KV Cable	Nos	4	5000	20000
53	6" dia PVC pipe for cable bracing	o/ mtr 4/2	4	250	1000
54	Clamp for brassing	Nos	8	117	936
55					
56	13mtr long 150x150 RS joist pole	)/Kg 4/179	1799.2	65	116948
57	10x50x6 mm GI channel	Kg	206	78	16068
58	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
59	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
60	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
61	No.6 GI Wire	K.g.	40	75	3000
62	40x6mm GI Flat for nutral	K.g.	40	75	3000
63	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
64	33KV LA	No	6	10350	62100
65	33KVHG fuse	No	2	13760	27520
66	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08

Refer 6.3.4 of the petition

67	33KV Disc Insulator (90KN)Polymer	No	12	390	4680
68	4 Bolt single tension H/W fitting	Nos	12	3460	41520
69	HT Stay Set Complete	Set	4	1050	4200
70	HT Stay insulator	No.	4	50	200
71	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
72	7/10 Stay Wire	Kg	40	75	3000
73	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
74	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
75	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
76	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
77	Al. binding wire/tape	Kg	20	420	8400
78	Al. Cable socket diff. size	No	24	45	1080
79	Danger Board	No	4	80	320
80	100mm2 AAAC for jumpering	Km	0.08	30000	2400
81	Red Oxide paint	Ltr	8	150	1200
82	All. Paint	Ltr	8	200	1600
83	Black Paint	Ltr	6	220	1320
84	Ms Nut , Bolt & Washer	K.g.	20	71	1420

Refer 6.3.4 of the petition

85	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
86	Total cost of Material as per 2018-19 Cost Data				6740481.8
87	Stock ,Storage &Insurance				202214.454
88	Sub Total (A+B)				6942696.254
89	2% T & P charges of (A+B)				138853.9251
90	3% Contigency of (A+B)				208280.8876
91	7.5% Transportation charges of (A+B)				520702.2191
92	10% Errection Charges of (A+B)				694269.6254
93	Sub total (A to F)				8504802.911
94	Other over head (Including 6%) supervision charges of G				510288.1747
95	Total Estimated Capital cost (G+H)				9015091.086
96	GST @ 18% of H				1622716.395
97	CESS @1% of I				90150.91086
98	Inspection Fee				5575
99	Grand Total				1,07,33,533.39
	Total value				1,59,97,680.97

Benefit for this proposals:

1.33/11 KV Pundara structure will overcome from single connectivity and N-1 issue.
2.33/11 KV Sbi kesura structure will overcome from single connectivity and N-1 issue.

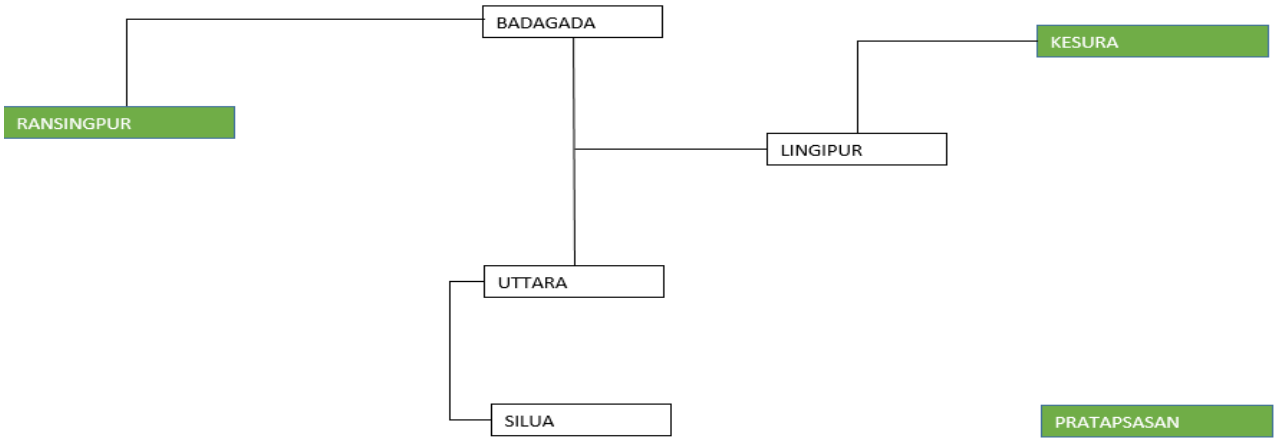
Refer 6.3.4 of the petition

24. <u>Strenthening the 33/11 KV SILUA structure from 132/33 kv pratapsasan grid</u>

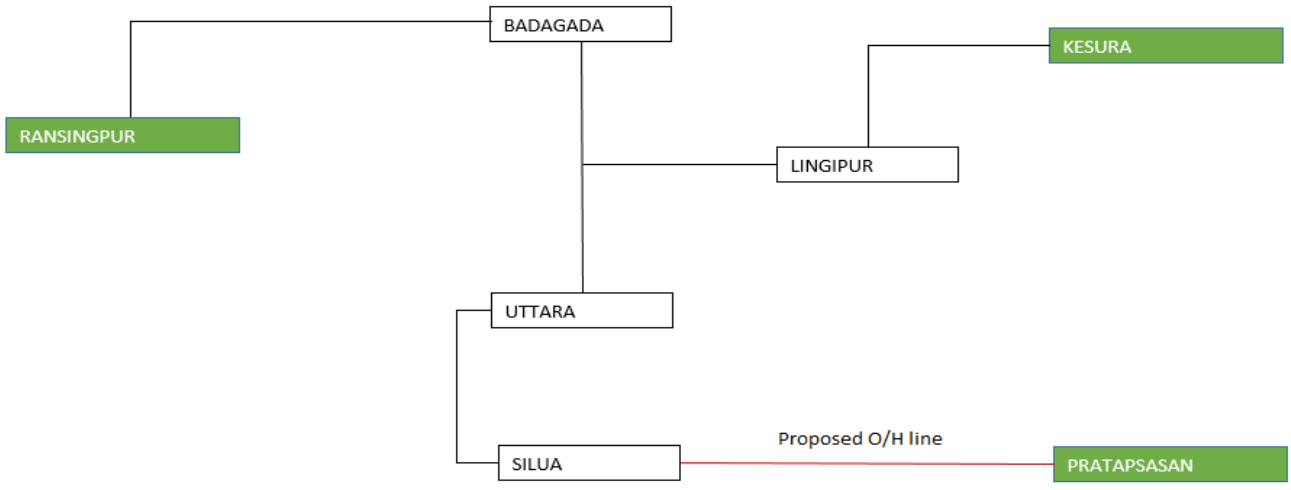
Proposal: For strenthening the 33/11 KV Silua structure from 132/33 KV Pratapsasan grid by proposed 33 kv new line
Objective: To maintain reliability of Power Supply by mitigating single connectivity condition.
Existing Scenario:

- At present, proposed 33/11kv silua structure is connected through Baragarh feeder from Ransingpur grid.
- In this scenario silua is on single connectivity.

Existing SLD (summer'20):



<u>Proposed Scenario</u>:-
New line proposed from Pratapsasan grid to proposed 33/11 silua structure by 232 sqmm to achieve single connectivity problem.
<u>Proposed SLD (summer'22):</u>



Detailed Scope of Work:

Refer 6.3.4 of the petition

A. <u>New proposed(H POLE) O/H line by 232 sqmm :</u>

Proposed 4 ckm overhead line from pratapsasan grid to 33/11 kv silua to mitigate the single connectivity by 232 sqmm .

6.3.4.24- Addition 33 KV new line from Pratapsasan OPTCL grid to 33/11 KV Silua structure.					
33 KV LINE BY 13 METER H POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.					
Sl.No.	**Description of Materials**	**Unit**	**Qty**	**Rate**	**Amount**
1	2	3	4	5	6
2	H-Pole-13 Mtr long (Galvanized) (720 Kg./each) (Cost=720kg x 75/- per kg = 54000.00 Each)	NO	29	54000	15,66,000.00
3	Concreting of pole	No	29	2,639.18	76,536.22
4	Couping of pole	No	29	676.37	19,614.73
5	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	33KV G I pin	No.	0	192	-
9	33KV pin insulator polymer	No.	78	480	37,440.00
10	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	Stay Set 18mm	No	8	1,050	8,400.00
13	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	Earthing Coil	No.	23	166	3,818.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21	50x6 flat	kg	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23	No.6 GI Wire	K.g.	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25	33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81

Refer 6.3.4 of the petition

27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
30	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
32	**Total Cost of materials.**				**24,78,316.51**
33	Stock & Storage @ 3% of A				74349.4953
34	Sub - Total (A+B)				25,52,666.01
35	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				5,74,349.85
36	Sub - Total (C+D)				31,27,015.86
37	Other Overheads including supervision charges @ 6% of E				1,87,620.95
38	Total estimated Capital Cost (E+F)				33,14,636.81
39	GST 18% of G				5,96,634.63
40	CESS 1% of G				33,146.37
41	**Total Cost**				**39,44,417.80**
42	For 4 CKM				1,73,55,438.33
43			BAY ADDITION		
44	Total Estimated Capital cost				1300000
45	Stock ,Storage &Insurance				39,000.00
46	Sub Total (A+B)				13,39,000.00
47	2% T & P charges of (A+B)				26,780.00
48	3% Contigency of (A+B)				40,170.00
49	7.5% Transportation charges of (A+B)				1,00,425.00
50	10% Errection Charges of (A+B)				1,33,900.00
51	Sub total (A to F)				16,40,275.00
52	Other over head (Including 6%) supervision charges of G				98,416.50
53	Total Estimated Capital cost (G+H)				17,38,691.50
54	GST @ 18% of H				3,12,964.47
55	CESS @1% of I				17,386.92
56	Inspection Fee				5575
57	Grand Total (I+J+K+L+M+N)				20,74,617.89
58	TOTAL COST				1,94,30,056.21

Benefit for this proposal:

33/11 KV Proposed Silua structure will overcome the single connectivity and N-1 issue.

Refer 6.3.4 of the petition

25. Power Evacuation from OPTCL Mancheswar-B Grid

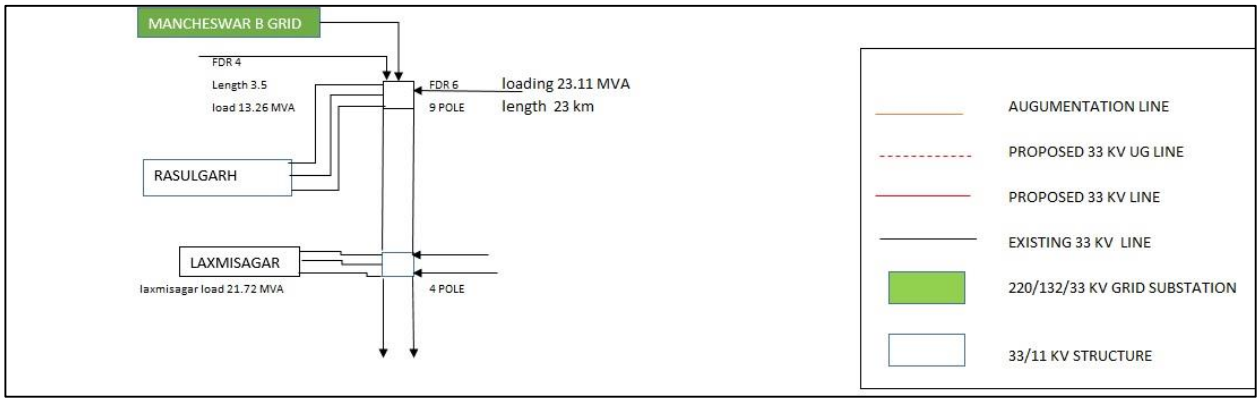
Proposal: For power evacution from Mancheswar B to 9 pole by proposed new line from Mancheswar B grid.

Objective: To maintain reliability of Power Supply by mitigating N-1 condition and power evacution.

Existing Scenario:

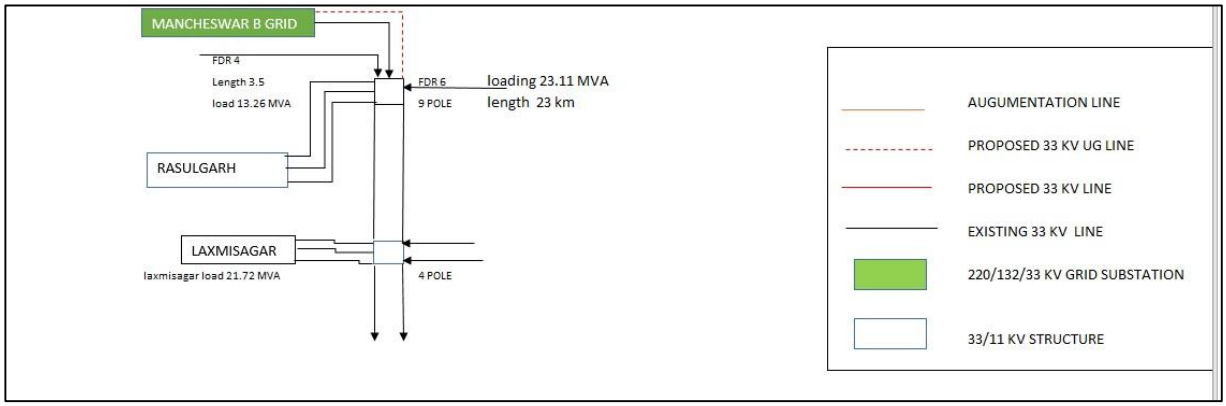
- At present,33/11 kv Rasulgarh structure is getting feed from Mancheswar A grid through 9 pole .Length of Mancheswar 4 feeder is 3.5 km .
- Now Laxmisagar Structure is getting feed from Mancheswar 6 feeder (Mancheswar-A grid) & Laxmisagar 1 feeder (Kesura Grid).
- Feeder length of Mancheswar 6 is 23 km and maximum peak of this feeder is 23.11 MVA .
- We can shift the load from Mancheswar feeder 6 to proposed new line from Mancheswar B.

Existing SLD (summer'20):



Proposed Scenario:-
Proposed new 3 core 400 sqmm ug cable from Mancheswar B grid to 9 pole.In this scenario we can share the load of mancheswar feeder 6 to proposed new feeder .
Length of Proposed new feeder from Mancheswar b to 9 pole is 3 km .

Proposed SLD (summer'22):



Detailed Scope of Work:

Proposed ug cable :

Refer 6.3.4 of the petition

Proposed single circuit UG cable(3 core 400 sqmm) having length 3 km from Mancheswar B grid to 9 pole.

BOQ of Proposal:

6.3.4.25- Addition of 33 KV new line from Mancheswar B to 9 pole.					
Sl. No.	Description of Materials	Unit	Quantity	Rate (Rs)	Amount (Rs)
1	Laying of 3x400mm² XLPE 33KV U.G. Cable through HDD system with Spare	mtr	1000	2032	2032000
2	End termination cable joint kit straight through type for 3*400 sqmm ug cable	set	3	68594	205782
3	3x400mm² 33KV XLPE cable end jointing kit (Out door) heat srinkable (Make Raychem)	set	2	33255	66510
4	Cable loop chamber (15'x15'x5') with laterite Stone with 6" base concrete in the ratio 1:2:4 & filling with sand	Nos	3	26000	78000
5	High presure testing of 33KV XLPE Cable	Nos	4	5000	20000
6	Placement of 33KV cable Rootmarker	Nos	20	2000	40000
7	Cable laying, excavation and backfilling	MTR	1000	3000	3000000
8	Hosting of 33KV Cable	Nos	2	5000	10000
9	6" dia PVC pipe for cable bracing	No/ mtr 4/24	2	250	500
10	Clamp for brassing	Nos	4	117	468
Construction of DP=2Nos.					
1	13mtr long 150x150 RS joist pole	No/Kg 4/1799.2	1799.2	65	116948
2	10x50x6 mm GI channel	Kg	206	78	16068
3	75 x 40 x 6 mm GI. Channel	Kg	180	78	14040
4	50 x 50 x 6 mm GI. Angle	Kg	145	78	11310
5	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	4	1050	4200
6	No.6 GI Wire	K.g.	40	75	3000
7	40x6mm GI Flat for nutral	K.g.	40	75	3000
8	33KV AB switch 3 Pole (400 Amp.)	Set	2	19070	38140
9	33KV LA	No	6	10350	62100
10	33KVHG fuse	No	2	13760	27520
11	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08

Refer 6.3.4 of the petition

12	33KV Disc Insulator (120KN)Polymer	No	12	1360	16320
13	4 Bolt single tension H/W fitting	Nos	12	3460	41520
14	HT Stay Set Complete	Set	4	1050	4200
15	HT Stay insulator	No.	4	50	200
16	HT stay clamp (1.95Kg/ Pair)	Pair	4	125	500
17	7/10 Stay Wire	Kg	40	75	3000
18	Fixing and concreating of stay set with 0.5Cum cement concret foundation 1:3:6 size (900mmx600mmx900mm) using 40mm BHG metal with all labour and material except stay set , stay wire, stay insulator .	No.	4	2315.15	9260.6
19	Concreting of support C.C - 1:4:8 using 40mm BHG metal size - 5'x2'x2' = 20CFT = 0.570Cum Padding 900x600x150mm =0.081 0.651Cum @ 3071.25= 1999.38each	No.	4	2840.89	11363.56
20	Couping of support section 15"x15" (3.9Cft) height 2'-6' (1' - 6" above G.L & 1' - 0' below G.L) in C.C 1:2:4 using 12mm BHG metal & curing for 5 days	No.	4	676.37	2705.48
21	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	4	2270.27	9081.08
22	Al. binding wire/tape	Kg	20	420	8400
23	Al. Cable socket diff. size	No	24	45	1080
24	Danger Board	No	4	80	320
25	100mm2 AAAC for jumpering	Km	0.08	30000	2400
26	Red Oxide paint	Ltr	8	150	1200
27	All. Paint	Ltr	8	200	1600
28	Black Paint	Ltr	6	220	1320
29	Ms Nut , Bolt & Washer	K.g.	20	71	1420
30	Sundries for survey, PVC tape, Ampire tape,Danger Board, small size nut & Bolt preparation of drawing Allm. Socket etc	LS	1	4092	4092
31	Total cost of Material as per 2018-19 Cost Data				5878649.8
32	Stock ,Storage &Insurance				176359.494
33	Sub Total (A+B)				6055009.294
34	2% T & P charges of (A+B)				121100.1859
35	3% Contigency of (A+B)				181650.2788
36	7.5% Transportation charges of (A+B)				454125.6971
37	10% Errection Charges of (A+B)				605500.9294
38	Sub total (A to F)				7417386.385
39	Other over head (Including 6%) supervision charges of G				445043.1831
40	Total Estimated Capital cost (G+H)				7862429.568
41	GST @ 18% of H				1415237.322
42	CESS @1% of I				78624.29568
43	Inspection Fee				5575
44	Grand Total (I+J+K+L+M+N)				93,61,866.19
	FOR 3 KM 3CX400 SQMM UG CABLE				***2,80,85,598.56***

Benefit for this proposal:

1.We can shift the load from Mancheswar feeder 6 to proposed new feeder from Mancheswar B grid.

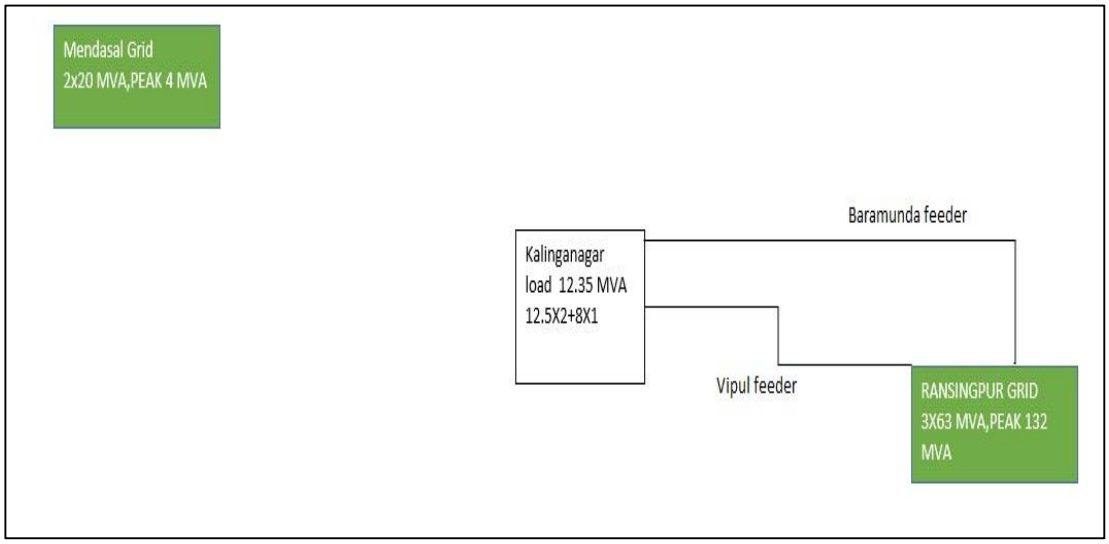
Refer 6.3.4 of the petition

26. <u>Power evacution from mendasal OPTCL grid to kalinganagar structure.</u>

Proposal: Installation of single circuit 33kv line from 132/33kv Mendasal Grid to 33/11kv kalinganagar structure .
Objective: To establish reliability to Kalinganagar structure.
Existing Scenario:

- At present, Kalinganagar is getting feed from Ransingpur Grid through Vipul and Baramunda feeder.
- The peak load of Kalinganagar is 12.35 MVA .
- If Ranasingpur grid fail, then total load of Kalinganagar structure will affected. So to get reliability we need to connect Kalinganagar structure from Mendhasal Grid by 232 sqmm overhead line.

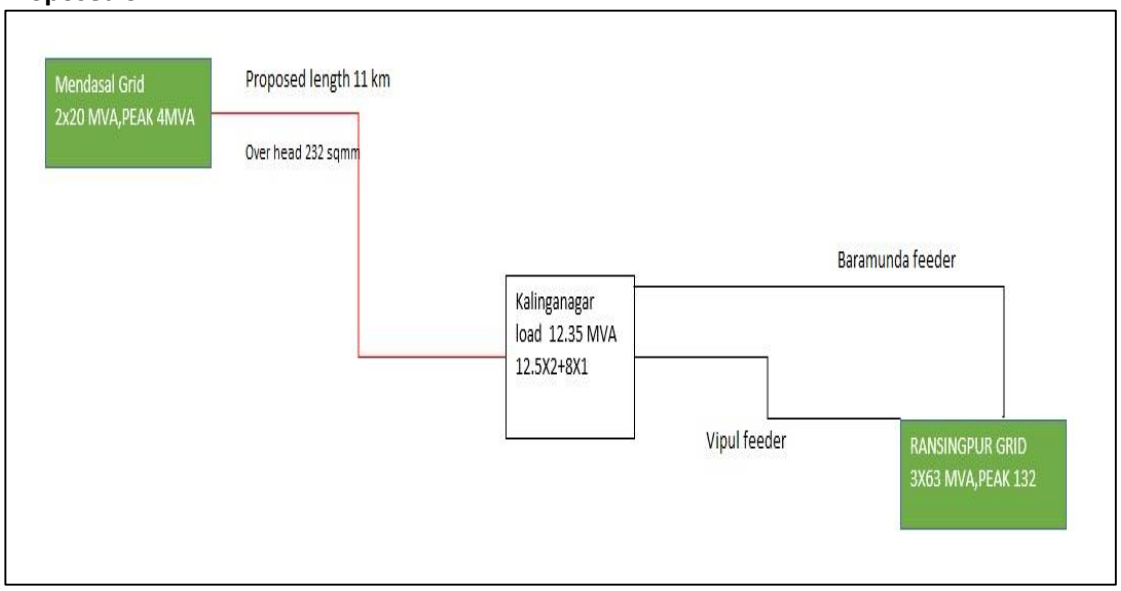
Existing SLD:



<u>Proposed Scenario</u>: -

- New line proposed from mendasal grid to kalinganagar structure by 232 sqmm overhead line .
- Proposed 33 kv incoming bay at kalinganagar structure.

Proposed SLD:



Detailed Scope of Work:

Refer 6.3.4 of the petition

- Propose 10 km 33kv new O/H line from Mendasal Grid to kalinganagar structure.

BOQ for this proposal:

6.3.4.26- Addition 10 ckm 33 KV new line from Mendasal grid to 33/11 kv Kalinganagar structure.					
33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.					
Sl.No.	Description of Materials	Unit	Qty	Rate	Amount
1	2	3	4	5	6
2	13 MTR 449.8 KG R JOIST POLE	No.	29	29,232	8,47,728.00
3	Concreting of pole	No	29	2,639.18	76,536.22
4	Couping of pole	No	29	676.37	19,614.73
5	33KV V cross arm (22 Kg.)	No.	23	1,580	36,340.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	No	23	100	2,300.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	No.	23	150	3,450.00
8	33KV G I pin	No.	0	192	-
9	33KV pin insulator polymer	No.	78	480	37,440.00
10	33KV H W fitting(B&S)90KN, 4Bolt	Set	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	No.	12	1,440	17,280.00
12	Stay Set 18mm	No	8	1,050	8,400.00
13	HT stay insulator(140x85 mm)	No.	8	50	400.00
14	HT Stay Clamp (1.9Kg / Pair)	Pair	8	125	1,000.00
15	7/8 SWG G I stay wire (10Kg. / Set)	Kg..	80	75	6,000.00
16	Earthing Coil	No.	23	166	3,818.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	KM	3.09	1,56,500	4,83,585.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	set	23	703	16,169.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	Kg..	114	65	7,410.00
20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	NO	3	30,000.00	90,000.00
21	50x6 flat	kg	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	No.	6	1,050.00	6,300.00
23	No.6 GI Wire	K.g.	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	K.g.	50	75.00	3,750.00
25	33KV AB switch 3 Pole (400 Amp.)	Set	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	No.	3	2270.27	6,810.81

Refer 6.3.4 of the petition

27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	Kg	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	Kg	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	Kg	75.00	9	687.75
30	Nuts & Bolts of Assorted size	Kg..	85	78	6,630.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	Kg.	0	10	-
32	**Total Cost of materials.**				**17,60,044.51**
33	Stock & Storage @ 3% of A				52801.3353
34	Sub - Total (A+B)				18,12,845.85
35	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				4,07,890.32
36	Sub - Total (C+D)				22,20,736.16
37	Other Overheads including supervision charges @ 6% of E				1,33,244.17
38	Total estimated Capital Cost (E+F)				23,53,980.33
39	GST 18% of G				4,23,716.46
40	CESS 1% of G				23,539.80
41	**Total Cost**				**28,01,236.59**
42	**TOTAL COST FOR 10 KM OVERHEAD LINE**				**2,80,12,365.93**
	BAY ADDITION				
	Total Estimated Capital cost FOR BAY ADDITION				1300000
	Stock ,Storage &Insurance				39,000.00
	Sub Total (A+B)				13,39,000.00
	2% T & P charges of (A+B)				26,780.00
	3% Contigency of (A+B)				40,170.00
	7.5% Transportation charges of (A+B)				1,00,425.00
	10% Errection Charges of (A+B)				1,33,900.00
	Sub total (A to F)				16,40,275.00
	Other over head (Including 6%) supervision charges of G				98,416.50
	Total Estimated Capital cost (G+H)				17,38,691.50
	GST @ 18% of H				3,12,964.47
	CESS @1% of I				17,386.92
	Inspection Fee				5575
	Grand Total (I+J+K+L+M+N)				20,74,617.89
	TOTAL COST				**3,00,86,983.81**

Benefit of this proposals:

- This proposal will help to achieve reliability issue for kalinganagar structure **.**

Refer 6.3.4 of the petition

27. <u>Mitigation of Single Connectivity of Satasankha Structure by power evacuation from Satsankha Grid</u>

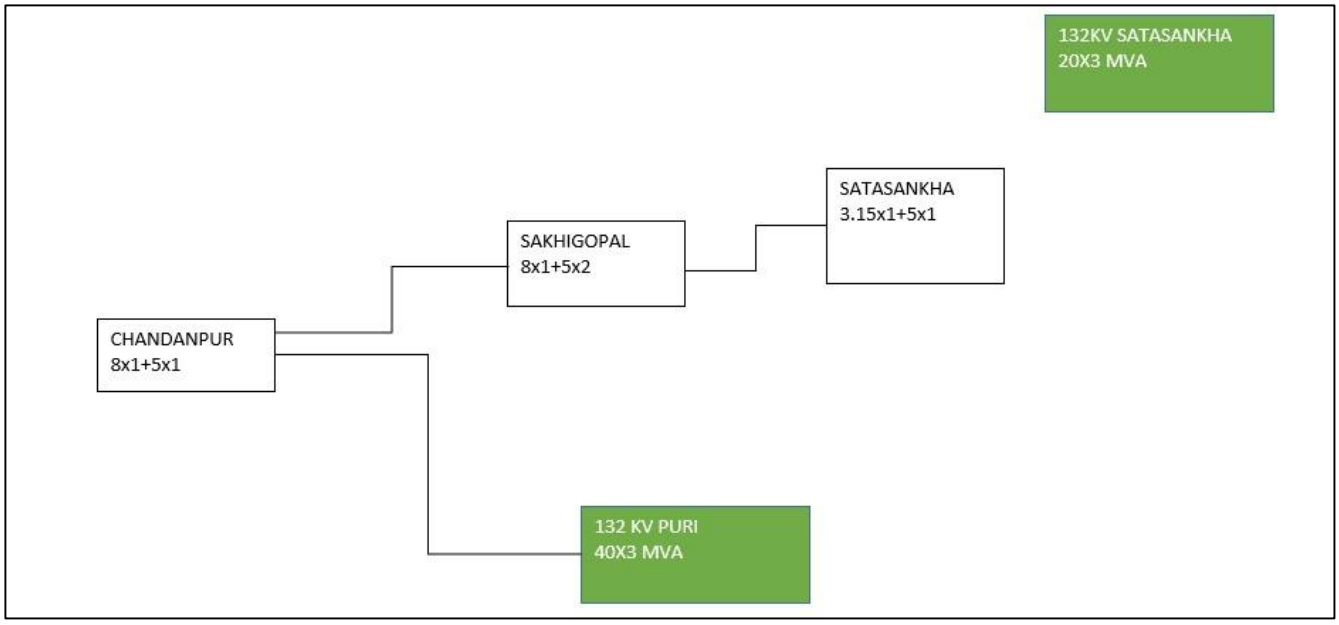
Proposal: Installation of single circuit 33kv line from 132/33kv Satsankha Grid to 33/11kv Satasankha strcuture in PED Puri Division.

Objective: To establish N-1 connectivity to Satasankha structure.

Existing Scenario:

- At present, Satasankha is getting feed from 132/33kv Puri Grid through Sakhigopal feeder. 33/11kv Satasankha structure has 2X5MVA capacity.
- The Sakhigopal feeder loading is 17MVA. Peak load of Satasankha is 3.2 MVA.
- Satasankha structure is presently Non N-1 compliant as it has single connectivity and in need of alternate supply.

Existing SLD:

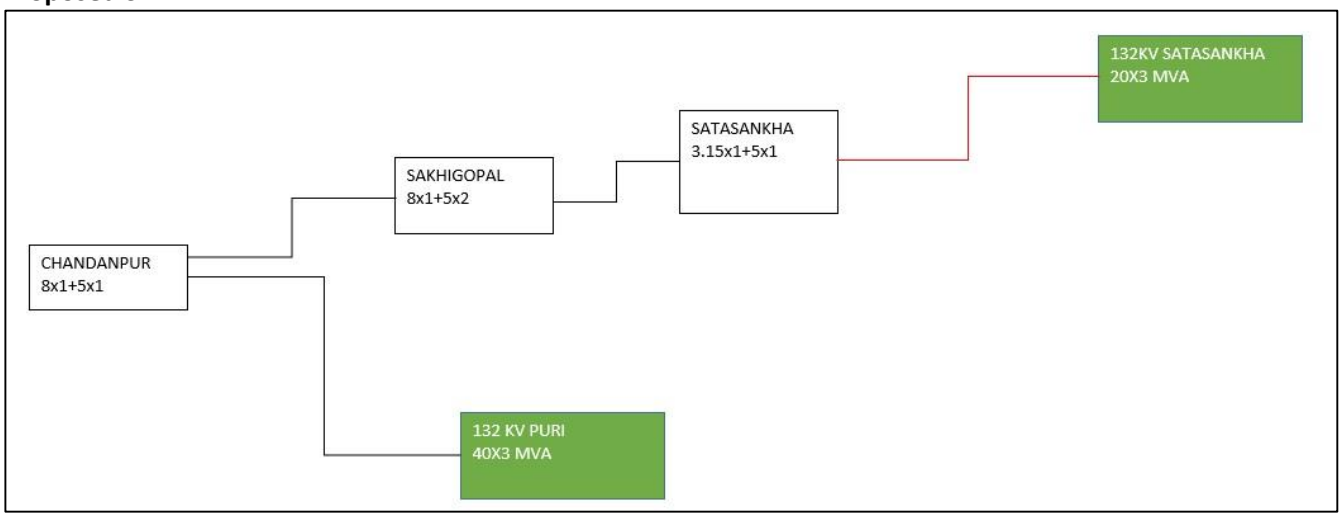


<u>Proposed Scenario</u>: -

- Now, OPTCL has commissioned 132/33kv Satasankha Grid (2X20MVA). Already there is work in progress connecting Satasankha Grid to 33/1kv Delang and Sakhigopal Structure in IPDS scheme.
- It is now proposed to connect Satasankha Grid with 33/11kv Satsankha Structure.
- N-1 of Satasankha will get compliant upon connecting with Satasankha Grid

Refer 6.3.4 of the petition

Proposed SLD:



Detailed Scope of Work:

- Propose 2.5km 33kv new O/H line from Satsankha Grid to Satasankha structure.

BOQ for this proposal:

6.3.4.27- Addition of 33 KV Overhead new line from Satsankha grid to Satsankha structure.

33 KV LINE BY 13 METER R JOIST POLE WITH 3 NOS DP AND 23 NOS SINGLE POLE WITH 40 METER SPAN LENGTH.

Sl.No.	Description of Materials	Qty	Rate	Amount
1	2	4	5	6
2	13 MTR 449.8 KG R JOIST POLE	29	29,232	8,47,728.00
3	Concreting of pole	29	2,639.18	76,536.22
4	Couping of pole	29	676.37	19,614.73
5	33KV V cross arm (22 Kg.)	23	1,580	36,340.00
6	Top bracket 75x40mm MS channel (1.3kg each)/	23	100	2,300.00
7	Back Clamp for V cross arm(33KV) 1.7 kg each 950*8 Flat)	23	150	3,450.00
8	33KV G I pin	0	192	-
9	33KV pin insulator polymer	78	480	37,440.00
10	33KV H W fitting(B&S)90KN, 4Bolt	12	500	6,000.00
11	Disc insulator (B&S) 120KN Polymer	12	1,440	17,280.00
12	Stay Set 18mm	8	1,050	8,400.00
13	HT stay insulator(140x85 mm)	8	50	400.00
14	HT Stay Clamp (1.9Kg / Pair)	8	125	1,000.00
15	7/8 SWG G I stay wire (10Kg. / Set)	80	75	6,000.00
16	Earthing Coil	23	166	3,818.00
17	232mm2 All Aluminium Aloy Conductor. AAAC	3.09	1,56,500	4,83,585.00
18	Barbed wire/Anticlimbing device with ddugjy sign board	23	703	16,169.00
19	100x50x6 mm MS Channel (9.2Kg. / Mtr)	114	65	7,410.00

Refer 6.3.4 of the petition

20	Design & providing Galvenised fencing around DP to prevent public coming in contact with DP	3	30,000.00	90,000.00
21	50x6 flat	60	75	4,500.00
22	GI Pipe Earthing 40 Dia Medium gage 3mtr Long	6	1,050.00	6,300.00
23	No.6 GI Wire	40	75.00	3,000.00
24	40x6mm GI Flat for nutral	50	75.00	3,750.00
25	33KV AB switch 3 Pole (400 Amp.)	3	19,070.00	57,210.00
26	Materials for Machinery work for Earth Pit,Charcoal, Salt etc including construction of earthing chamber (Size: 2'x2') and RCC slab cover	3	2270.27	6,810.81
27	50x50x6 mm M.S Angle (4.50Kg. / Mtr)	85	65	5,525.00
28	No-6 G I wire(Dia 4.8mm)	75.00	29	2,160.00
29	No-8 G I wire(Dia 4.6 mm)	75.00	9	687.75
30	Nuts & Bolts of Assorted size	85	78	6,630.00
31	Additional amount for fabrication and galvanisation with transportation to galvanising plant	0	10	-
32	**Total Cost of materials.**			**17,60,044.51**
33	Stock & Storage @ 3% of A			52801.3353
34	Sub - Total (A+B)			18,12,845.85
35	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C			4,07,890.32
36	Sub - Total (C+D)			22,20,736.16
37	Other Overheads including supervision charges @ 6% of E			1,33,244.17
38	Total estimated Capital Cost (E+F)			23,53,980.33
39	GST 18% of G			4,23,716.46
40	CESS 1% of G			23,539.80
41	**Total Cost**			**28,01,236.59**
42	For 2.5 CKM New line by 232 Sqmm			70,03,091.48

Benefit of this proposals:

- This proposal will help overcome from single connectivity and N-1 issue.

Refer 6.3.5 of the petition

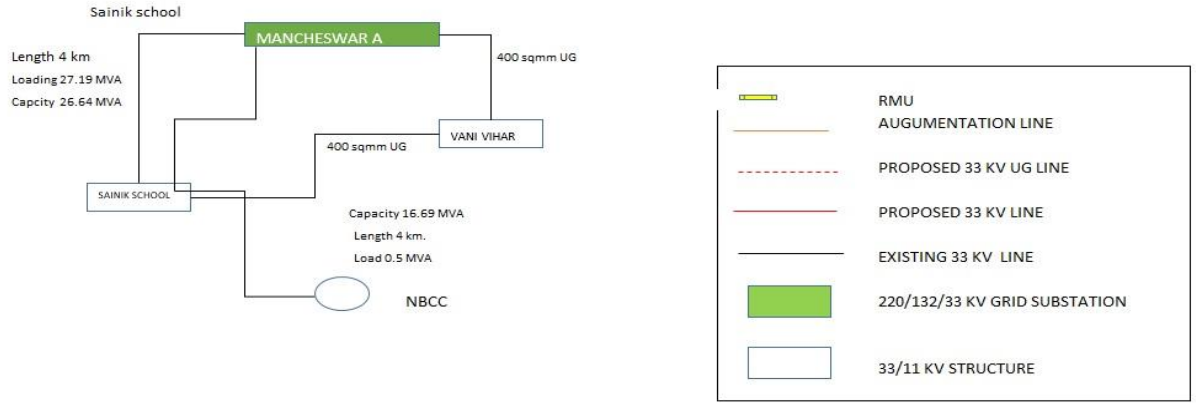
1. **Proposal:** For strenthening the 33kv connectivity of Sainik school feeder by instalation of 33 KV RMU .

Objective: To maintain reliability of Power Supply by mitigating overload.

Existing Scenario:

- At present, 33/11kv sainik school, unit 4, unit 2 structure is connected through sainik school feeder from Chandaka A OPTCL Grid.
- Now 33/11 KV sainik school , unit 4,unit 2 structure feeding from Chandaka A has feeder length of 4 km on 232 sqmm O/H. The maximum peak of sainik school feeder is 27.19 MVA. In this scenario, sainik school feeder is in overloaded condition.
- 33 KV NBCC feeder having circuit length 4 km on 100 Sqmm. The maximum peak of NBCC feeder is 0.5 MVA and capacity is 16.69 MVA.To mitigate overloading of sainik school feeder we need to use NBCC feeder by propose a 33 kv 3 way RMU at 33/11 kv Sainik school.

Existing SLD (summer'20):

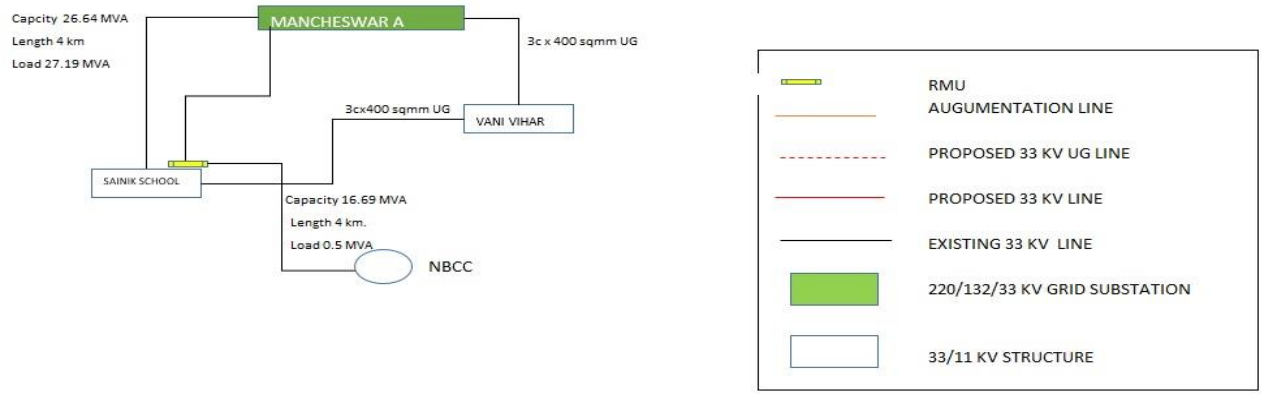


<u>Proposed Scenario</u>:-

- Peak load for FY'22 is 0.6 MVA on NBCC Feeder considering load growth .
- Propose 3 way RMU at sainik school (refer drawing).
- We can shift the load approximately 14 MVA from sainik school to NBCC feeder.

Proposed SLD (summer'22):

Refer 6.3.5 of the petition



Detailed Scope of Work:

A. <u>RMU Proposed at sainik school :</u>

- Proposed 3 way RMU at sainik school for smooth operation. Incoming NBCC feeder, outgoing NBCC and sainik school have been kept at Isolator of 33 KV 3 way RMU.

BOQ-

Refer 6.3.5 of the petition

Proposal for installation of 3 Way 33KV-RMU at Sainik School, for load shifting using NBCC feeder.					
SL NO	DESCRIPTION	UOM	Quantity	Rate	Amount
1	3 WAY RMU FOR 33 KV with 3 core 400 sqmm XLPE cable and accessories	NO	1	23,47,300.00	23,47,300.00
2	Design & constraction of Rcc foundation structure	NO	1	30,083.86	30,083.86
3	40mm dia GI pipe earthing device 3 mtr. Long(1050*3)	LS	1	3,150.00	3,150.00
4	50X6 FLAT	NO	50	75	3,750.00
5	Design & providing Galvenised fencing around RMUs to prevent public coming in contact with compact substation	LS	1	40,000.00	40,000.00
6	Total Estimated Capital cost	LS	2	40,000.00	24,24,283.86
7	Stock ,Storage &Insurance				72,728.52
8	Sub Total (A+B)				24,97,012.38
9	2% T & P charges of (A+B)				49,940.25
10	3% Contigency of (A+B)				74,910.37
11	7.5% Transportation charges of (A+B)				1,87,275.93
12	10% Errection Charges of (A+B)				2,49,701.24
13	Sub total (A to F)				30,58,840.16
14	Other over head (Including 6%) supervision charges of G				1,83,530.41
15	Total Estimated Capital cost (G+H)				32,42,370.57
16	GST @ 18% of H				5,83,626.70
17	CESS @1% of I				32,423.71
18	Inspection Fee				5,575.00
	Grand Total (I+J+K+L+M+N)				***38,63,995.98***

Benefits for this proposals:

1. Mitigate the overload of sainik school feeder.

2. NBCC will draw the load from 33/11 kv sainik school structure through RMU arrangement.

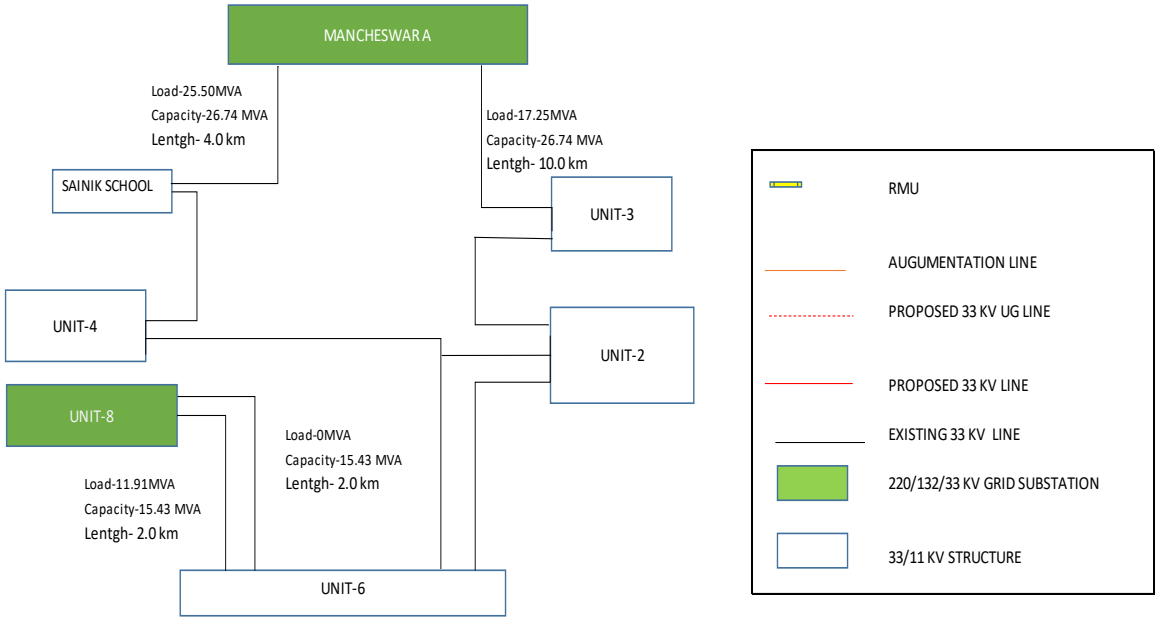
2. **Proposal:** For strenthening the Sainik school and kharbela nanagar feeder by proposed 2 nos 33 KV 4 way RMU at unit 6 structure .

Refer 6.3.5 of the petition

Objective: To maintain reliability of Power Supply by mitigating N-1 condition.
Existing Scenario:

- At present, 33/11kv Sainik school, UNIT-2, UNIT-4 and UNIT-6 structure is connected through FDR-1 (SAINIK SCHOOL) feeder from Mancheswar A OPTCL Grid.
- Now Sainik school, UNIT-2, UNIT-4 feeding from FDR-1 (SAINIK SCHOOL) feeder has conductor size on 232 sqmm overhead line. The maximum peak of FDR-1 (SAINIK SCHOOL) feeder is 27.19 MVA(considering load growth). In this situation Sainik school feeder is overloaded.
- Kharbela nagar feeder is also connected to unit 6 structure from Mancheswar A has conductor size on 232 sqmm and feeder length is 10 km .The maximum peak of this feeder is 17.25 MVA(considering load growth). Any interruption in this feeder will cause interuption to entire consumers connected to kharbela nagagar feeder.
- Feeder from UNIT-8 OPTCL grid named as UNIT-8 GIS-2 feeder has feeder length 2 km on 300 sqmm to unit 6 structure .Currenty unit 8 GIS-2 is running zero loading condition.
- To mitigate N-1 and overload for kharbela nagar and sainik school we proposed 2 nos 4 way RMU at 33/11 kv unit 6 structure.

Existing SLD (summer'20):



<u>Proposed Scenario</u>: -

- Proposed 2 nos 4 Way 33 kv RMU at 33/11 kv Unit 6.

Proposed SLD (summer'22):