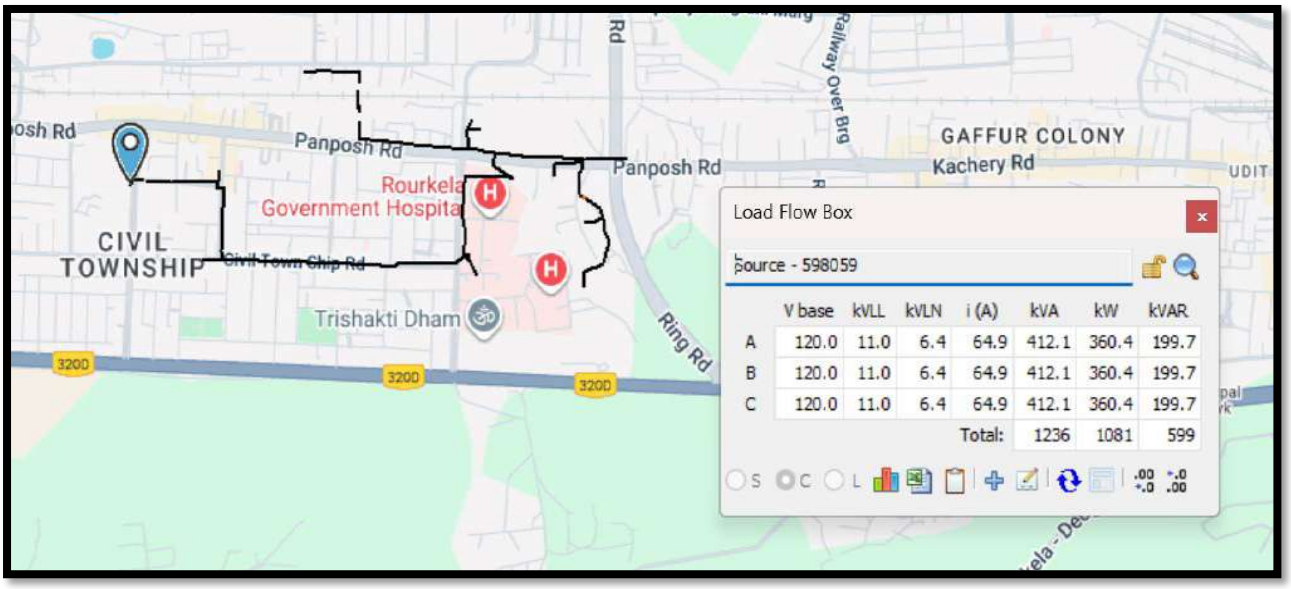
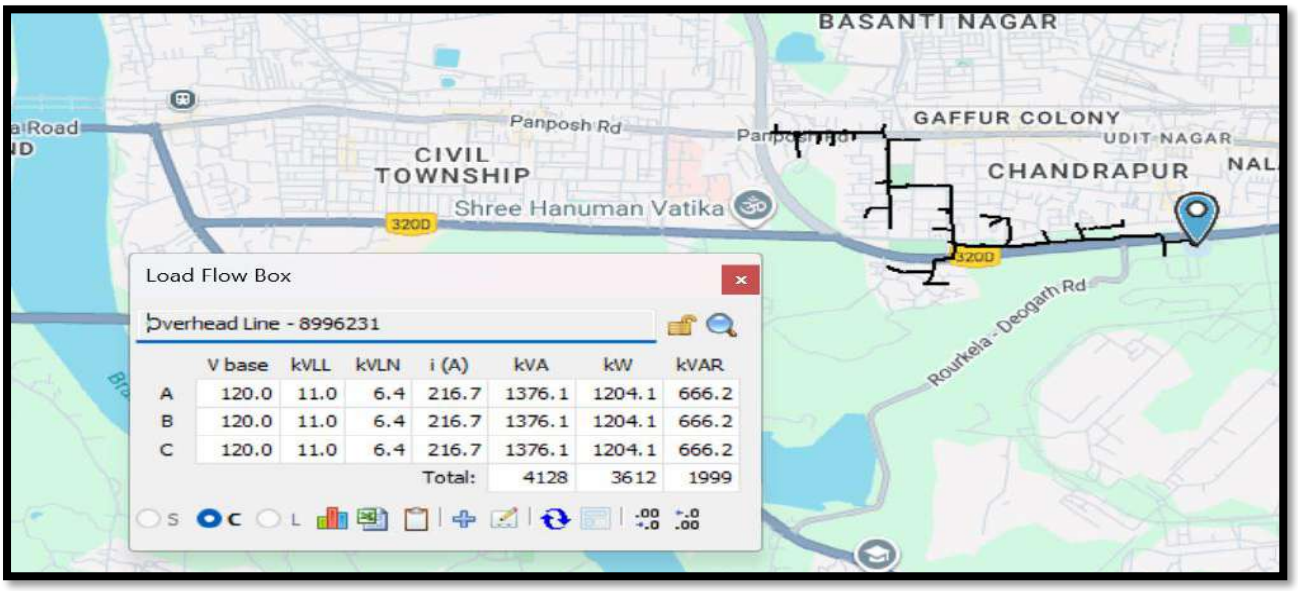
Load Flow Study of existing scenario in Cyme Software with 1 Yr Load Growth:





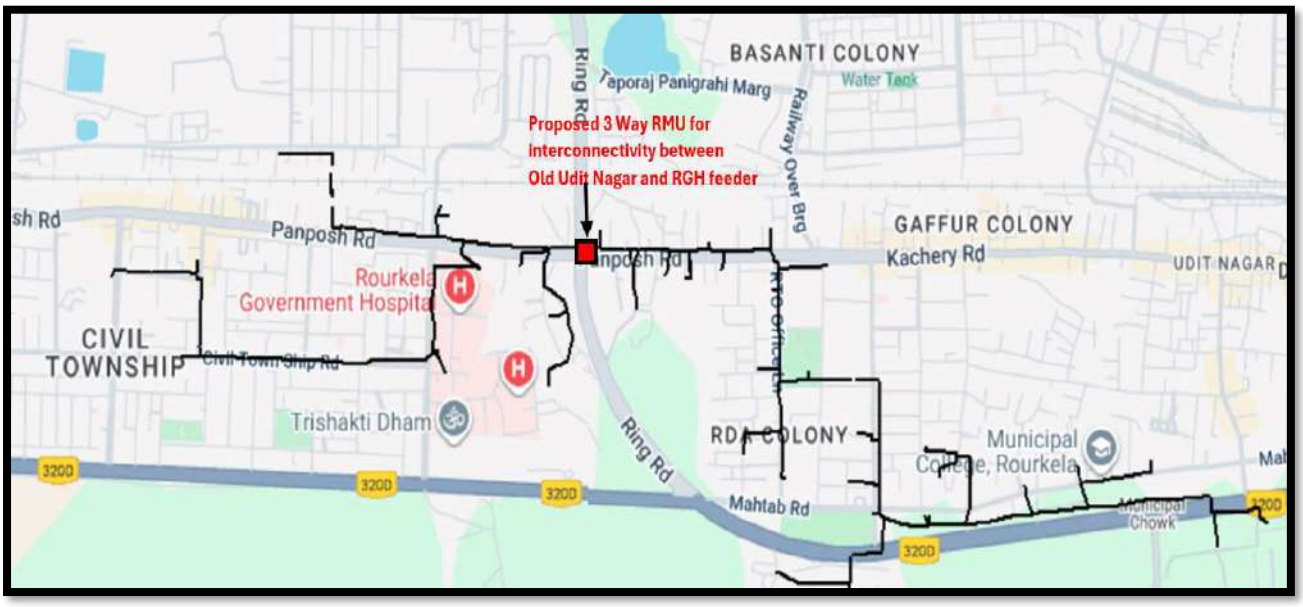
Proposed Scenario:

- Link line between Old Udit Nagar feeder and RGH feeder from Near STI over bridge.

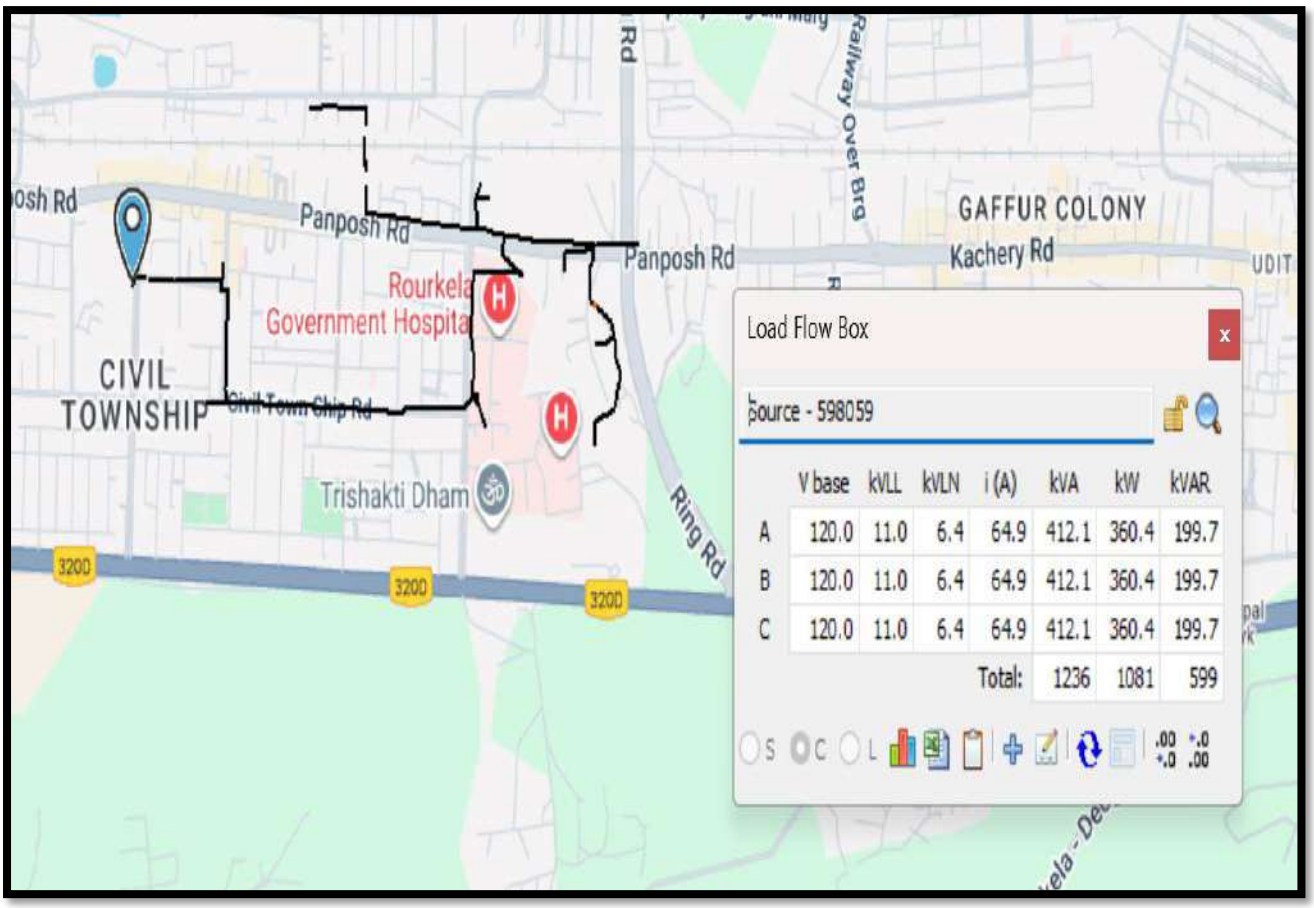
Proposed Loading details after proposal implementation:

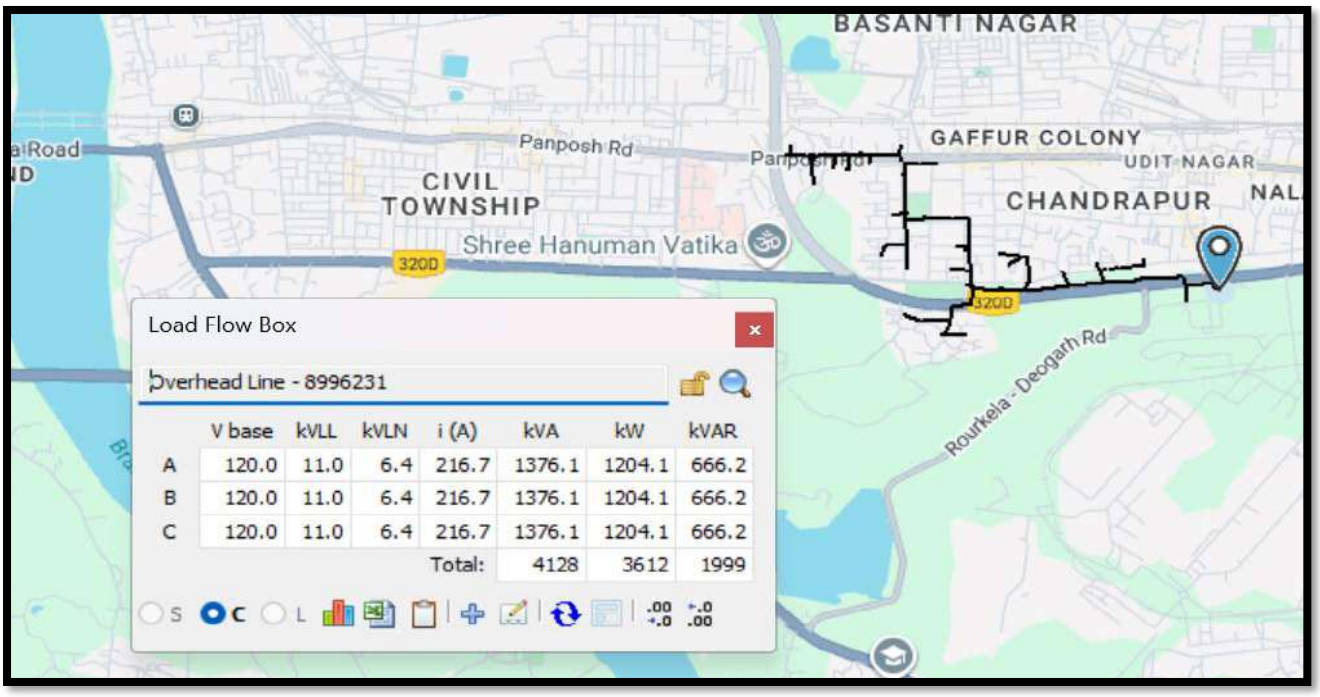
Proposed Scenario after Proposal Mapping						
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected Demand during Normal Operation In Fy-27 (MVA)**	**Projected Demand during N-1 condition**	**% loading during N-1 condition**	**Feeder Overloading Status**
Power House	Old Udit Nagar	5.92	4.128	5.458	92.19%	Not Overloaded
Civil Township	RGH Feeder	5.92	1.33	5.458	92.19%	Not Overloaded

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:





Scope of Work:

- Laying of 0.12km 3C*300sqmm XLPE UG cable through HDD method.
- Installation of one 11kV 3-Way RMU for connectivity between two feeders.
- Two Nos of cable termination DP with AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	Udit Nagar/ Industrial Estate	
Name of the Section: -	Udit Nagar/Civil Township	
Name of the Work:-	Link line between Old Udit Nagar feeder and RGH feeder to provide N-1 connectivity to Old Udit Nagar feeder from a different PSS.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
ESTIMATE – 1	11KV, UG XLPE (REFER ANNEXURE-166)	7,38,981.00
ESTIMATE – 2	11KV, 3-WAY RMU (REFER ANNEXURE-102)	15,49,126.00
ESTIMATE – 3	CABLE TERMINATION DP WITH AB SWITCH (REFER ANNEXURE-171)	6,10,421.00
	TOTAL	**28,98,528.00**
	Total Amount (In Cr)	**0.29**
Total estimated cost is Rs.0.29 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.29Cr.

Physical Target:

March 2027

Benefit to the system and consumers:

- Implementing N-1 connectivity for Old Udit Nagar feeder from RGH feeder will give Backup power supply during faults or outages so that overall system reliability will be improved.
- It will enhance the revenue of the TPWODL
- Improvement in the customer satisfaction.

Overloading Mitigation of Power Transformer

Proposal for Link line between Stadium and Balabhadra Market Feeder to mitigate overloading of 8MVA PTR-2 of Powerhouse PSS

Proposal:

11kV New link line between Stadium feeder and Balabhadra market feeder to mitigate overloading of 8MVA PTR-2 of Powerhouse PSS and to establish "N-1" connectivity.

Requirement/ Need of the proposal:

Objective:

To mitigate overloading of 8MVA PTR-2 of Powerhouse PSS and to establish "N-1" connectivity between Stadium & Balabhadra market feeder.

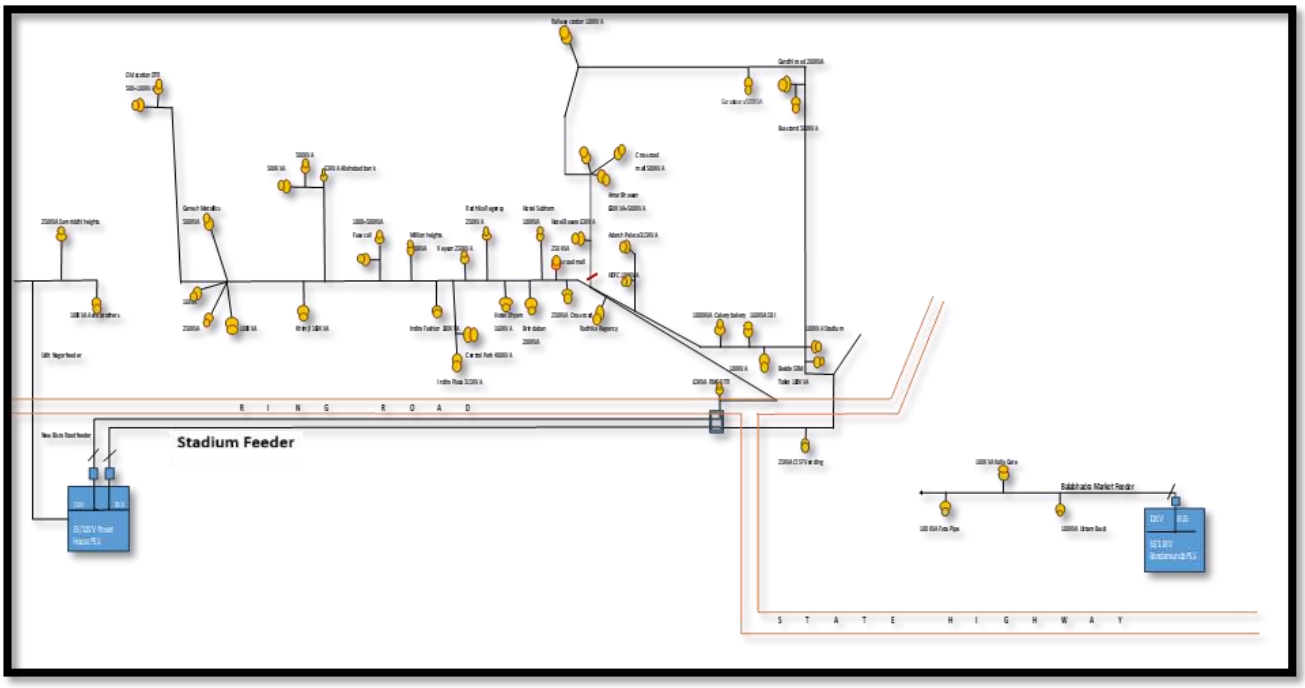
Existing Scenario:

- In existing scenario 11 KV Stadium feeder originates from 8MVA PTR-2 of 33/11 KV Powerhouse PSS & provides power supply to approx. 3000 Nos of commercial & domestic consumer at Main Road area.
- It is also evident from PTR-2 loading data that PTR-2 is overloaded with 112% loading. Therefore, it is advisable to shift the load from PTR-2.
- The peak load of Stadium feeder is 172A & the length of the feeder is 5.48 Ckm. Existing conductor of Stadium feeder is 100/55 sq.mm. AAAC.
- 11 KV Balabhadra market feeder originates from 8MVA PTR-2 of 33/11 KV Bondamunda PSS & provides power supply to Koila gate, Uttam Basti area of Rourkela city.
- Feeder peak of Balabhadra Market feeder is 12 A & feeder length is 17.7 Ckm & existing conductors is 100 sq.mm. AAAC.
- Therefore, to shift load from overloaded PTR-2 of Powerhouse PSS to underloaded 8MVA PTR-2 of Bondamunda PSS and to provide N-1 to Stadium and Balabhadra Market feeder, a link line is hereby proposed with RMU connectivity.

Existing FY-26 Loading and projected loading Details:

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Powerhouse	Stadium	5.92	3.29	55.62	Not Overloaded	3.53	59.69	Not Overloaded
Bonda-munda	Balabhadra Market	5.92	0.28	4.81	Not Overloaded	0.31	5.16	Not Overloaded

Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 1 Yr Load Growth:

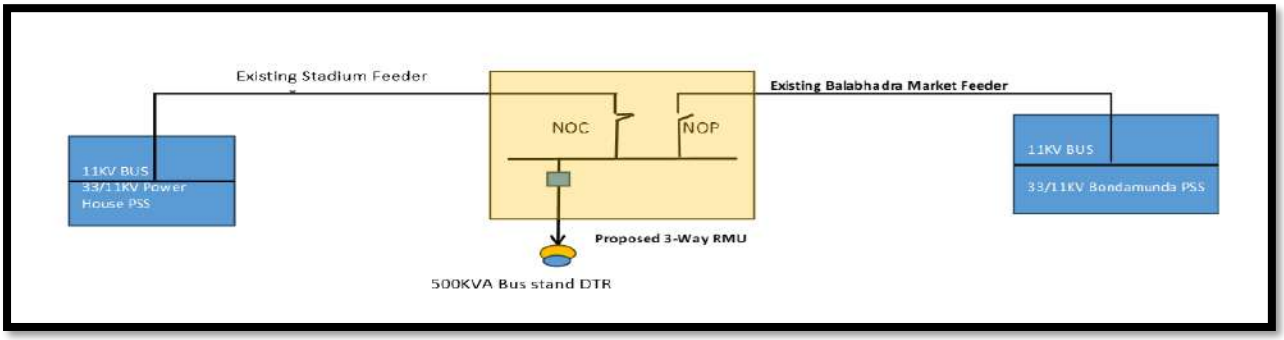
Proposed Scenario:

Link line between Balabhadra Market and Stadium feeder near 500KVA Bus tand DTR.

Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Bondamunda	Balabhadra Market	5.92	3.11	52.53	No overloading
Power house	Stadium	5.92	0.505	8.53	No overloading

Proposed SLD:

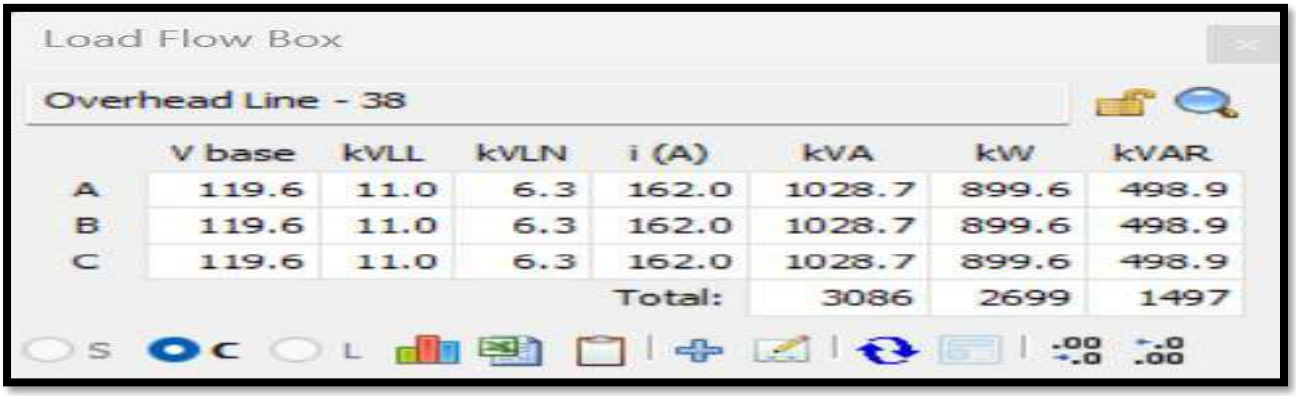


Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 8996255

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	120.0	11.0	6.4	26.3	167.1	146.5	80.4
B	120.0	11.0	6.4	26.3	167.1	146.5	80.4
C	120.0	11.0	6.4	26.3	167.1	146.5	80.4
				Total:	501	440	241



Load Flow Box

Overhead Line - 38

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	119.6	11.0	6.3	162.0	1028.7	899.6	498.9
B	119.6	11.0	6.3	162.0	1028.7	899.6	498.9
C	119.6	11.0	6.3	162.0	1028.7	899.6	498.9
				Total:	3086	2699	1497

Scope of Work:

- Laying of 1.17 Ckm, 3C*300sqmm, UG XLPE through HDD manner.
- One No of 3-Way RMU along with cable termination DP for interconnecting two feeders near 500KVA Bus Stand DTR.
- Two Nos of cable termination DP with AB switch

Proposed Cost with Estimate Break-up:

ANNEXURE	
TP WESTERN ODISHA DISTRIBUTION LIMITED	
Name of the Division: -	**RED**

Name of the Sub-Division:	Udit Nagar, Bisra
Name of Section: -	Bondamunda, Bisra road
Name of the Work: -	Link line between Stadium feeder and Balabhadra market feeder to mitigate overloading of 8MVA PTR-2 of Powerhouse PSS and to establish "N-1" connectivity.
Names of Schemes: -	TPWODL CAPEX (FY 26-27)

ABSTRACT OF ESTIMATE

Sl. No.	Description	Amount
Estimate – 1	11KV, 1.17CKm UG XLPE WITH HDD (Refer Annexure-166)	7506055
Estimate – 2	11KV, one nos 3-WAY RMU (Refer Annexure-102)	1549126
Estimate – 3	Two nos DP WITH AB SWITCH (Refer Annexure-171)	610421
	TOTAL	**9665602**
	Total Amount (In Cr.)	**0.97**
Total estimated cost is Rs.0.97 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.97Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Bondamunda**	**Balabhadra Market**	247	4	**1**	**11940**	**0.5**	
	Power House	**Stadium**	2868	107				
After Proposal	**Bondamunda**	**Balabhadra Market**	2699	100				
	Power House	**Stadium**	440	7				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	96.65	Rs. Lac
B	Load due to load growth	-	256.05	kVA
C	Total kW due to load growth	1.732*33*B*Pf	224	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1332621	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	18.99	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.50	Rs. Lac
J	Net Revenue Collected	H+I	19.49	Rs. Lac
K	% revenue return	(J/A)*100	20.2	%
L	Pay Back Period	100/K	4.96	Years

Benefit to the system and consumers:

- Mitigation of Power Transformer Overloading
- Ensures backup power supply during faults or transformer failures.
- Improves voltage stability and reduces chances of outages
- Provides uninterrupted power to consumers in Old Bisra Road and Balabhadra Market areas
- Supports better service quality and future load growth in urban zones

N-1 connectivity between feeders from different PSS

Proposal for Link line between Nayabazar feeder and Timber colony feeder:

Proposal:

11kV New link line between Nayabazar feeder and Timber feeder to provide N-1 connectivity to Timber feeder from NIT PSS.

Requirement/ Need of the proposal:

Objective:

Back feed arrangement for Timber colony feeder (MS Pali PSS) and Nayabazar feeder (NIT PSS) during power supply failure.

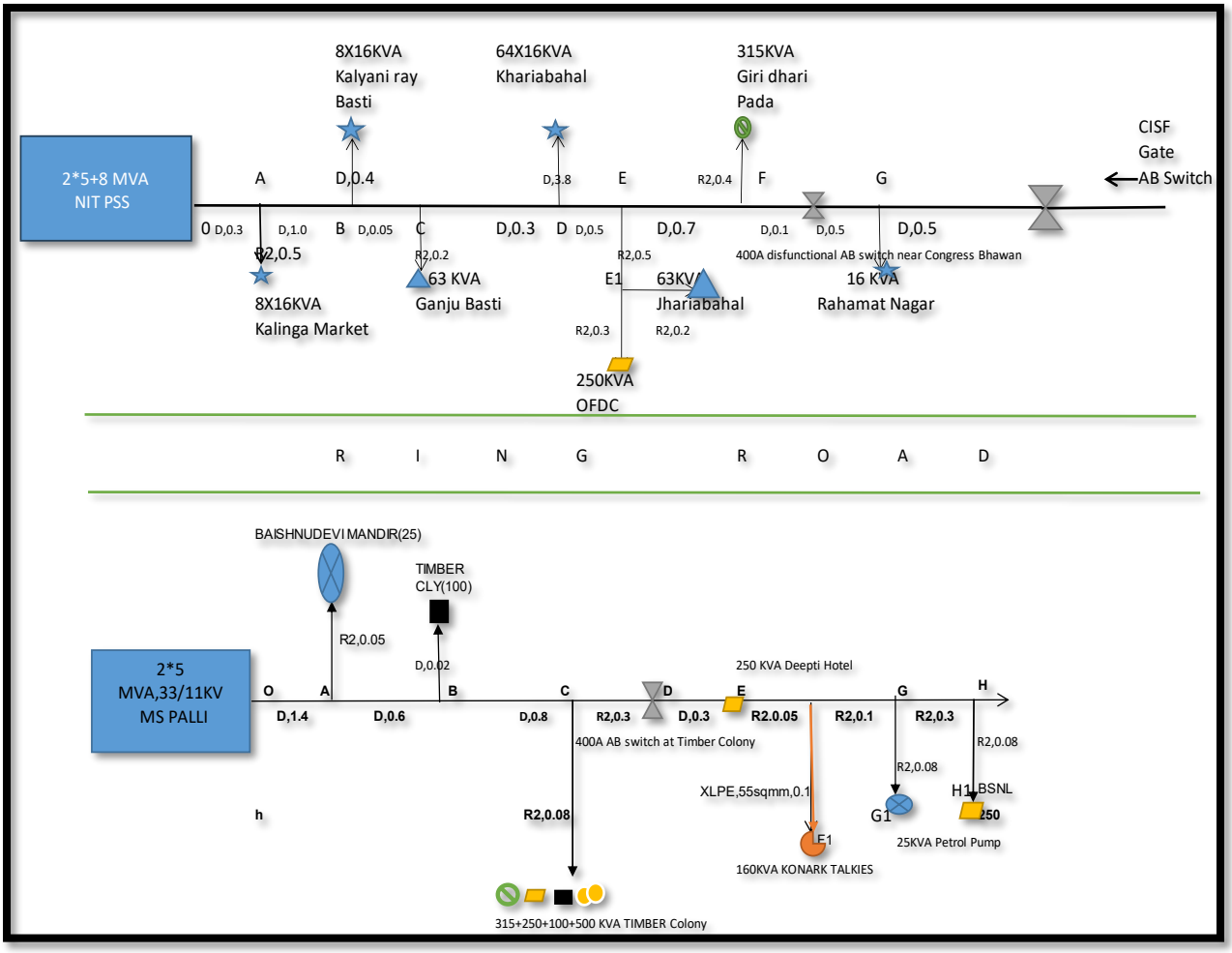
Existing Scenario:

- Presently 11 KV Timber Colony feeder which is an urban feeder emanates from MS Pali PSS & provides power supply to approx. 2000 Nos of commercial & domestic consumers at Timber Colony, Konark Talkies, Deepti Hotel.
- The peak load of Timber Colony feeder is 29.94 A & length of the feeder is 1.64 Ckm. Existing conductor of main road feeder is 100/55 sq.mm. AAAC
- 11 KV Nayabazar is a rural feeder which emanates from NIT PSS & provides power supply to peripheral area. This feeder also goes nearby to the Timber Colony feeder.
- Peak load of Nayabazar feeder is 27.62 A & feeder length is 6.63 Ckm & existing conductors is 100/55 sq.mm. AAAC.
- To provide N-1 connectivity from different PSS a link line can be proposed from nearby Nayabazar feeder. This will enable back feed arrangements during outages or overloads, allowing the complete load of Timber colony to be shifted to Nayabazar feeder without compromising voltage levels. The interconnection will enhance operational flexibility, improve reliability, and ensure uninterrupted power supply to consumers.

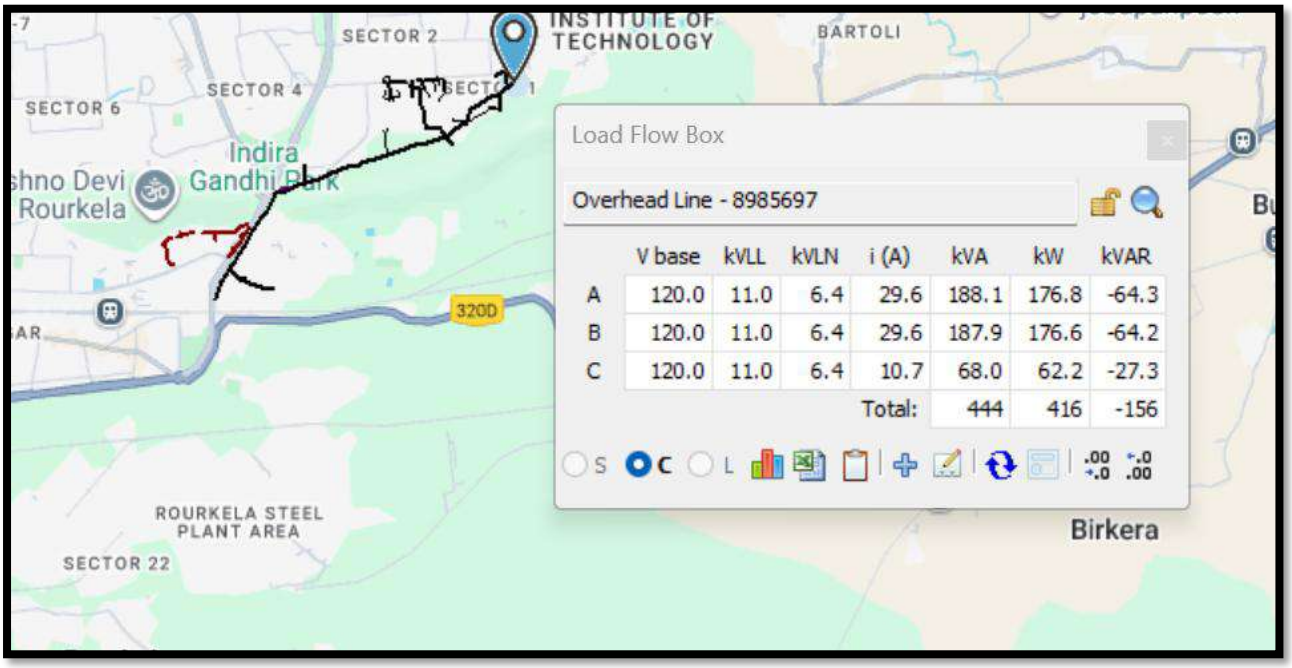
Existing FY-26 Loading and projected loading Deatils

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading Status**
MS Pali	Timber colony	5.95	0.570	9.5	Not Overloaded	0.611	10.2	Not Overloaded
NIT	Nayabazar	4.07	0.413	10.14	Not Overloaded	0.444	10.9	Not Overloaded

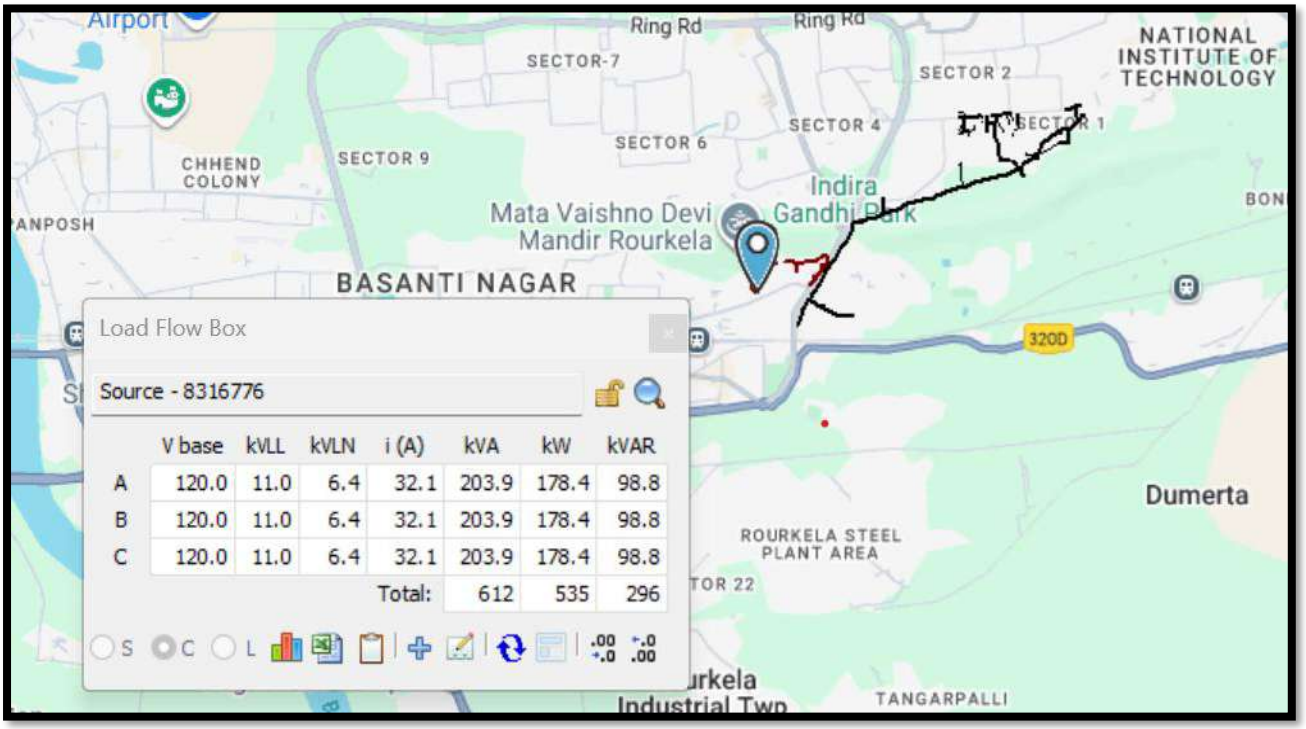
Existing SLD:



Load Flow Study of Existing Scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	120.0	11.0	6.4	29.6	188.1	176.8	-64.3
B	120.0	11.0	6.4	29.6	187.9	176.6	-64.2
C	120.0	11.0	6.4	10.7	68.0	62.2	-27.3
				Total:	444	416	-156



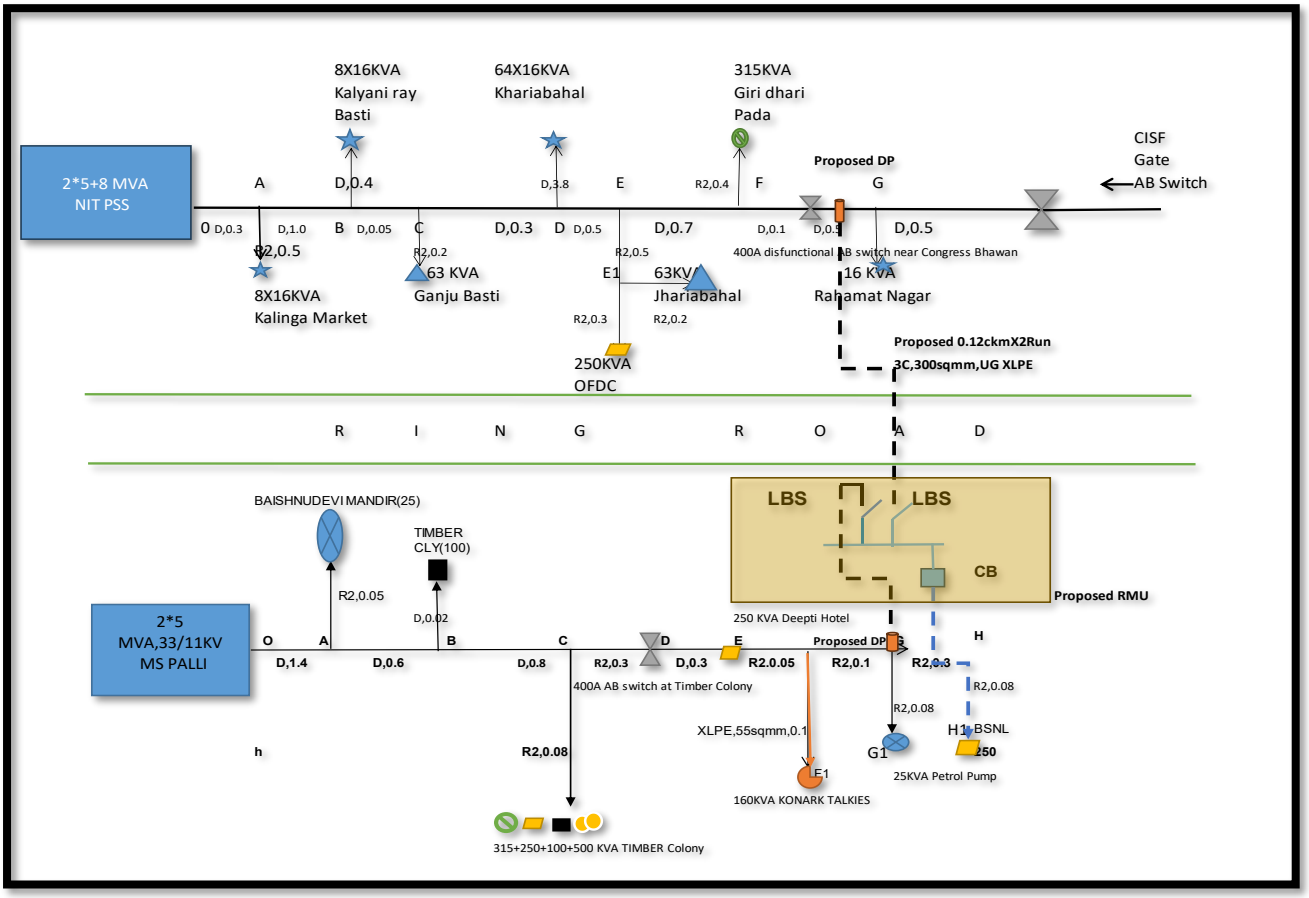
Proposed Scenario:

Proposal for New Link line between Nayabazar feeder and Timber feeder to provide N-1 connectivity between different PSS. The interconnection will enhance operational flexibility, improve reliability, and ensure uninterrupted power supply to consumers.

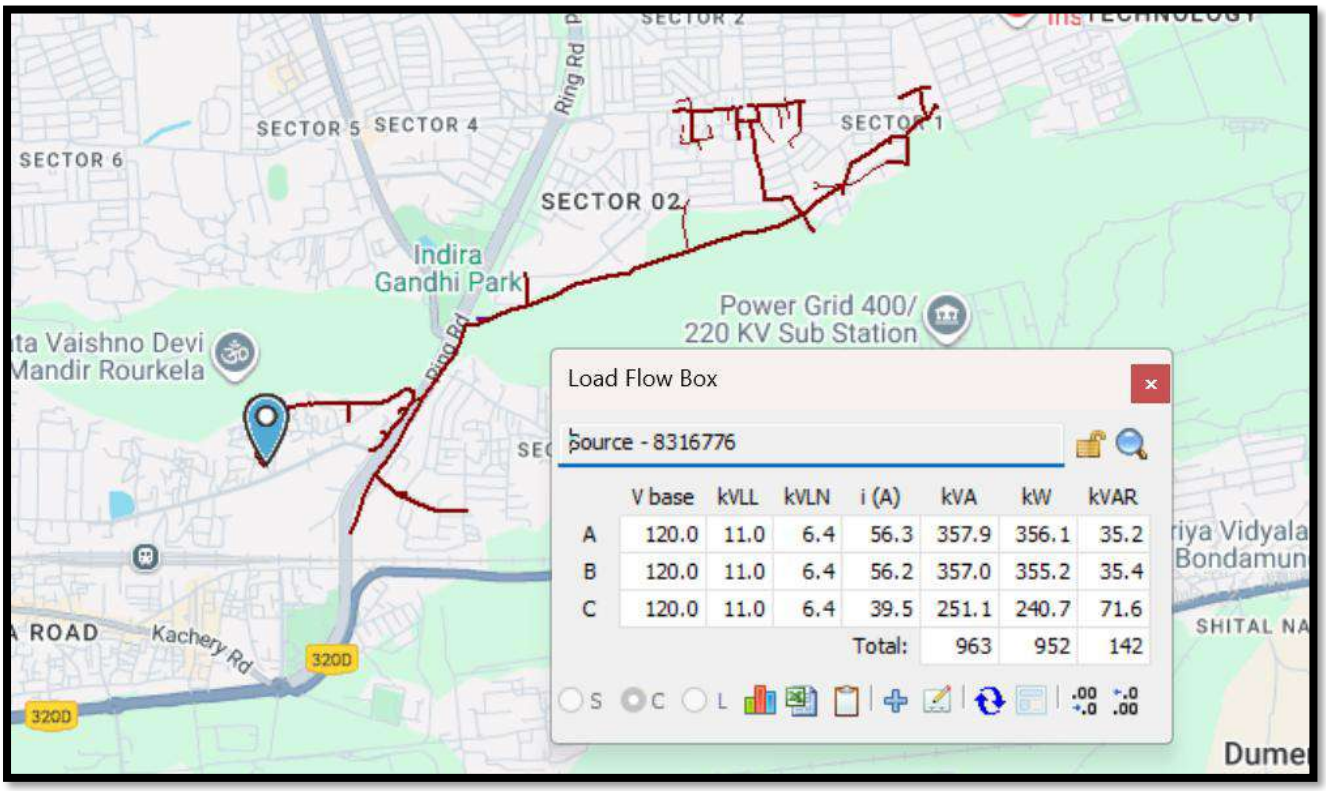
Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected Demand during N-1 condition (MVA)**	**% Loading**	**Feeder Overloading Status**
MS Pali	Timber colony	5.95	1.105	18.57	Not Overloaded
NIT	Nayabazar	4.07	1.105	27.1	Not Overloaded

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Scope of Work:

- Hereby proposed, at Ring Road to connect Nayabazar feeder with Timber Colony feeder.
- 2 Run x 0.125 Ckm, 3C*300sqmm XLPE UG cable in HDD manner
- 11KV, 3-Way, RMU for connectivity between two feeders.
- Two Nos of cable termination DP with AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	Basanti	
Name of Section: -	Ms Pali	
Name of the Work: -	Link line between Nayabazar feeder and Timber feeder to provide N-1 connectivity to Timber feeder from a different PSS.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
ESTIMATE – 1	11KV, UG XLPE AT ROAD CROSSING (REFER ANNEXURE-166)	15,39,543.00
ESTIMATE – 2	11KV, 3-WAY RMU (REFER ANNEXURE-102)	15,49,126.00
ESTIMATE – 3	DP WITH AB SWITCH (REFER ANNEXURE-171)	6,10,421.00
	TOTAL	**36,99,090.00**
	Total Amount (In Cr.)	**0.37**
Total estimated cost is Rs.0.37 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.37 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	**PSS**	**11kV Feeder**	**Peak Loading (kW)**	**Losses at peak loading (kW)**	**Avg.Loss reduction (kW) (LLF –0.470)**	**Unit saved annually (kWH)**	**Annual saving (Rs Lacs) (Rs 4.105/Unit)**	**Remarks**
Before Proposal	NIT	**Naya Bazar**	416	12	**0**	**2511**	**0.1**	
	MS Pali	**Timber Colony**	535	7				
After Proposal	NIT	**Naya Bazar**	0	0				
	MS Pali	**Timber Colony**	963	19				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	36.99	Rs. Lac
B	Load due to load growth	-	122.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	107	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	634953	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	9.05	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.10	Rs. Lac
J	Net Revenue Collected	H+I	9.15	Rs. Lac
K	% revenue return	(J/A)*100	24.7	%
L	Pay Back Period	100/K	4.04	Years

Benefit to the system and consumers:

- Implementing N-1 connectivity between Timber colony feeder (MS Pali PSS) and Nayabazar feeder (NIT PSS) will give Backup power supply during faults or outages so that overall system reliability will be improved.
- Ensures continuous power supply to the consumers even during faults.

Mitigation of Power Transformer Overloading By 11kV Feeder Bifurcation

Proposal for new feeder from Bondamunda PSS to bifurcate Bisa Road feeder:

Proposal:

11kV New Feeder from Bondamunda PSS to bifurcate Bisra Road feeder to mitigate PTR overloading.

Requirement/ Need of the proposal:

Objective: Bifurcation of Bisra Road feeder and load shifting of 8MVA PTR-2 of Power House PSS.

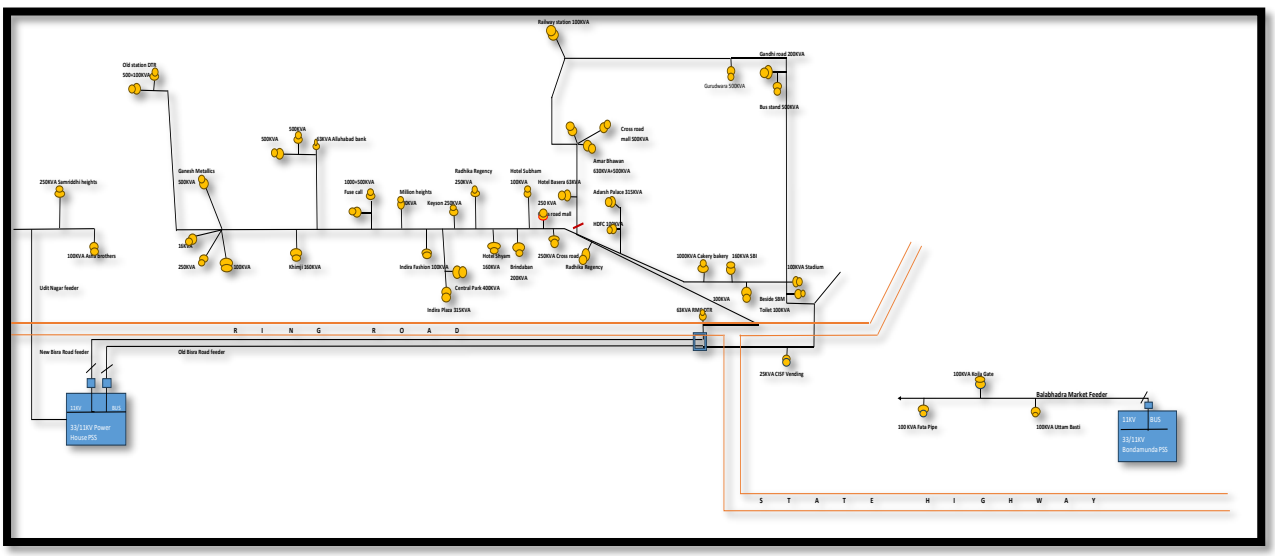
Existing Scenario:

- In existing scenario 11 KV Bisra Road feeder originates from 8MVA PTR-2 of 33/11 KV Power House PSS & provides power supply to approx. 3000 Nos of commercial & domestic consumer at Main Road area. This feeder is connected to the Stadium feeder at field, which originates from PTR-2. Both feeders are connected to Power House Road feeder which originates from 12.5MVA, PTR-3 of same PSS. Therefore, Bisra Road feeder has N-1 connectivity in the same PSS but does not have N-1 connectivity from other PSS.
- It is also evident from PTR-2 loading data that PTR-2 is running with 112% overloading, which is not acceptable in long term operation. Therefore, it is advisable to shift the load from PTR-2.
- The peak load of Bisra Road feeder is 147.52A & the length of the feeder is 5.232 Ckm. Existing conductor of Bisra Road feeder is 100/55 sq.mm. AAAC.
- Therefore, to shift load from overloaded PTR-2 of Powerhouse PSS to underload 8MVA PTR-2 of Bondamunda PSS and to provide N-1 connectivity, new feeder is required to be erected from Bondamunda PSS.

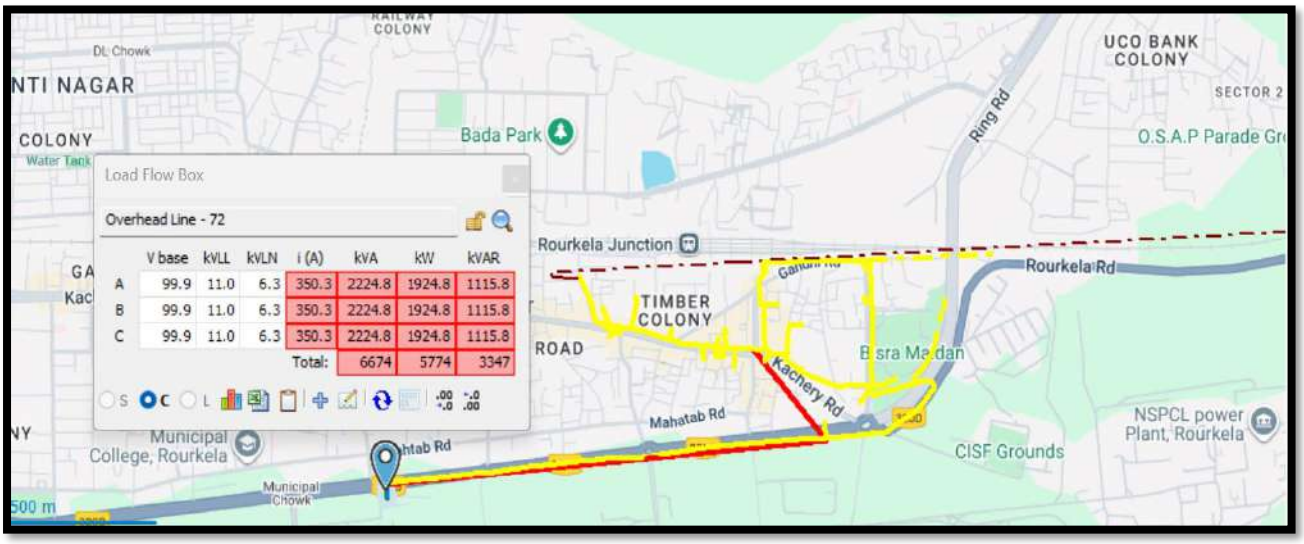
Existing FY-26 Loading and projected loading Deatils:

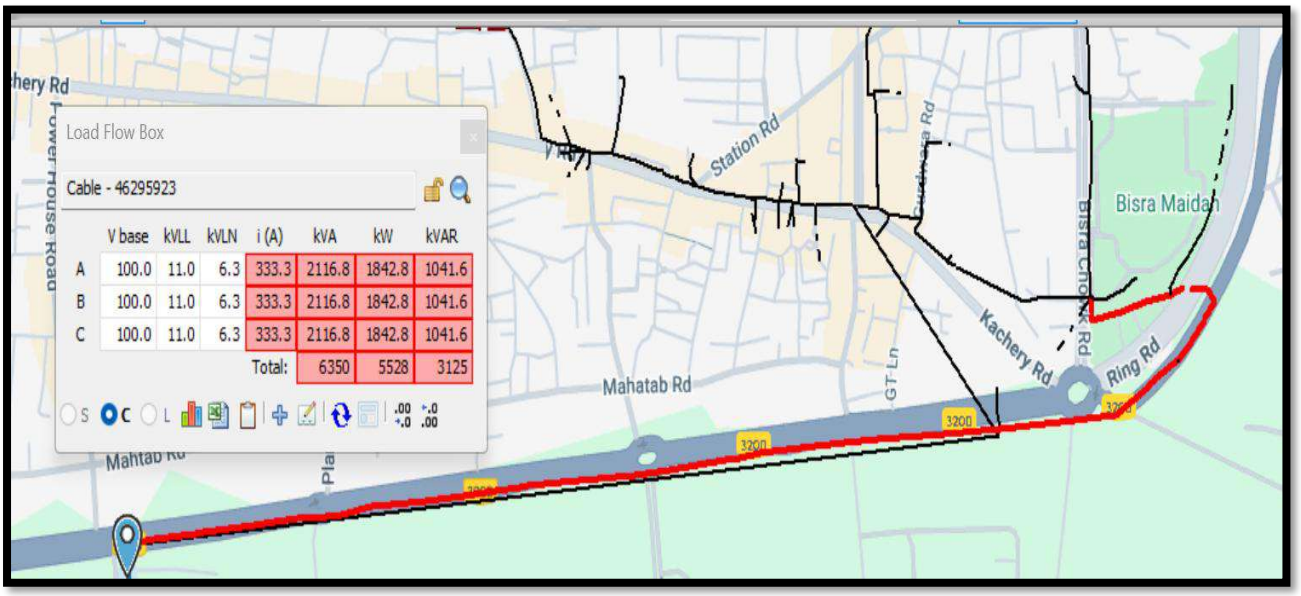
Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Power house	Bisra road	5.92	2.810	47.46	No Overloading	3.029	51.16	Overloading during N-1

Existing SLD:



Load Flow Study of existing scenario in Cyme Software in current condition:





Proposed Scenario:

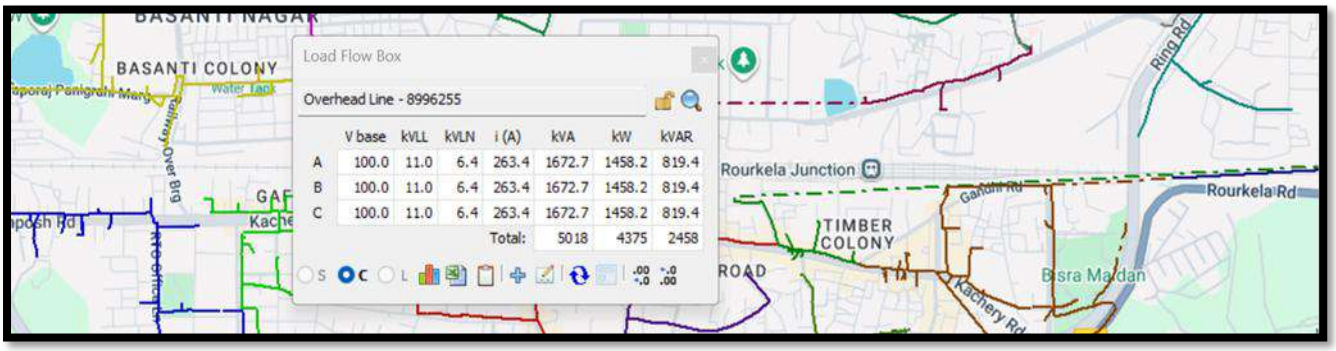
4.5 ckm new line from Bondamunda PSS to Old Station Road 100KVA DTR for bifurcation of Bisra Road feeder.

Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping						
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand Fy27 (MVA)**	**Proposed load in N-1 condition with Stadium feeder**	**% Loading**	**Feeder Overloading Status**
Bondamunda	New Bisra Road	5.92	1.583	-	-	No overloading
Power house	Bisra road	5.92	1.317	5.05	85.3	No overloading

Proposed SLD:

Load Flow Study of proposed scenario in Cyme Software:



Scope of Work:

- 4.5 Ckm,1 Run,3C, 300 sqmm, UG XLPE using HDD method from Bondamunda PSS to Old Station Road 100KVA DTR.
- Two No of 3-Way RMU along with cable termination.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division:	Udit Nagar, Bisra	
Name of Section: -	Bisra road, Bondamunda,	
Name of the Work: -	New feeder from Bondamunda PSS to Old Station Road 100Kva DTR to bifurcate Bisra Road feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
ESTIMATE – 1	11KV, UG XLPE WITH HDD (REFER ANNEXURE-166)	2,77,11,780.00
ESTIMATE – 2	11KV, 3-WAY RMU (REFER ANNEXURE-102)	30,98,252.00
	TOTAL	**3,08,10,032.00**
	Total Amount (In Cr.)	**3.08**
Total estimated cost is Rs.3.08 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 3.08Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Power House Road**	**Bisra Road**	2653	141	**36**	**316119**	**13.0**
After Proposal	**Power House Road**	**Bisra Road**	1156	31			
	Bondamunda	**New Bisra Road**	1421	33			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	308.10	Rs. Lac
B	Load due to load growth	-	218.36	kVA
C	Total kW due to load growth	1.732*33*B*Pf	191	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1136462	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	16.19	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.80	Rs. Lac
J	Net Revenue Collected	H+I	16.99	Rs. Lac
K	% revenue return	(J/A)*100	5.5	%
L	Pay Back Period	100/K	18.13	Years

Benefit to the system and consumers:

- Ensures backup power supply during faults or transformer failures.
- Helps shift load from overloaded PTR-2 at Power House PSS to underloaded PTR-2 at Bondamunda PSS which enhances system reliability and operational flexibility
- Improves voltage stability and reduces chances of outages
- Provides uninterrupted power to consumers in Bisra Bisra Road area.
- Supports better service quality and future load growth in urban zones

Proposal to improve reliability of 11kV Feeders

Proposal for Link line between MS Pali feeder and GB Pali feeder:

Proposal:

11kV New link line between GB Pali feeder and MS Pali feeder to provide N-1 connectivity.

Requirement/ Need of the proposal:

Objective:

Back feed arrangement for GB Pali feeder (MS Pali PSS) and MS Pali feeder (MS Pali PSS) during power supply failure.

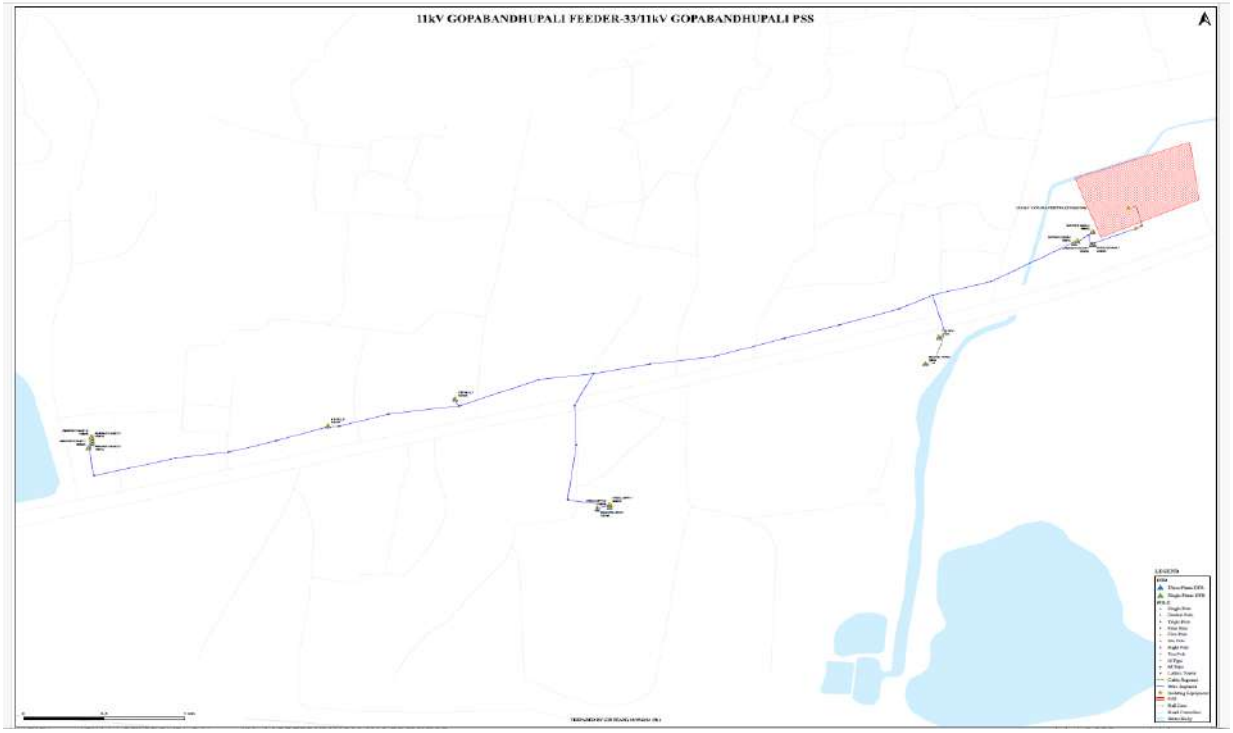
Existing Scenario:

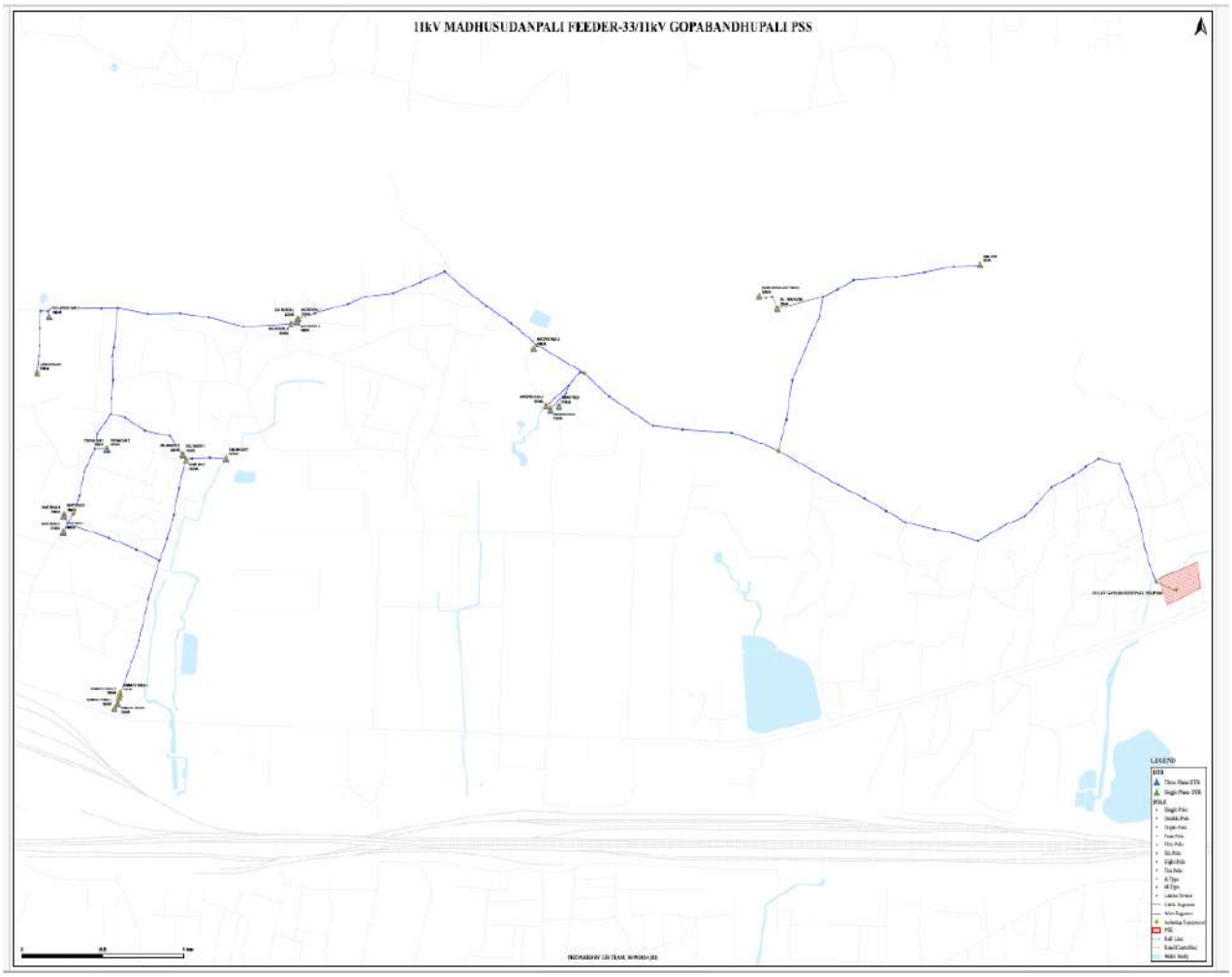
- Presently 11 KV GB Pali and MS Pali feeder emanates from MS Pali PSS & provides power supply to approx. 2000 Nos of commercial & domestic consumers at Madhusudan Pali and Gopabandhupali area.
- The peak load of GB Pali feeder and MS Pali feeder is 74 A & 94 A respectively. Length of the feeder is 0.859ckm and 4.324 Ckm respectively. Existing conductor size of the feeder is 100 sq.mm. AAAC
- To provide N-1 connectivity a link line can be proposed. This will enable back feed arrangements during outages. The interconnection will enhance operational flexibility, improve reliability, and ensure uninterrupted power supply to consumers.

Existing FY-26 Loading and projected loading Details:

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading Status**
MS Pali	MS Pali	5.24	1.787	34.10	No overloading	1.910	36.45	No overloading
MS Pali	GB Pali	5.24	1.463	27.91	No overloading	1.571	29.98	No overloading

Existing SLD:





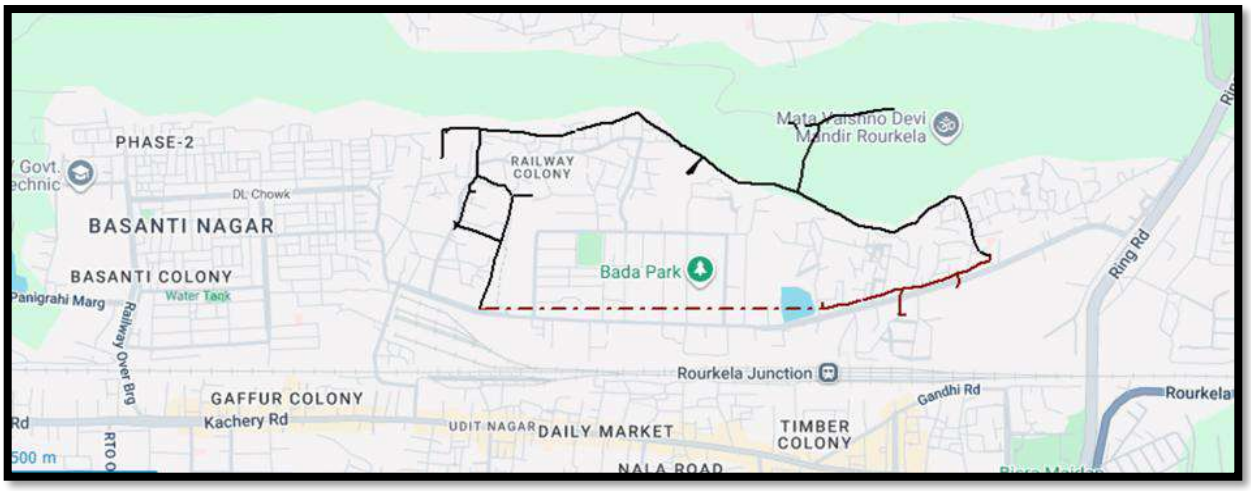
Proposed Scenario:

Proposal for 1.5ckm Link line using 3C*300sqmm, UG XLPE cable, with RMU connectivity between GB Pali and MS Pali feeder to provide N-1 reliability. The interconnection will enhance operational flexibility, improve reliability, and ensure uninterrupted power supply to consumers.

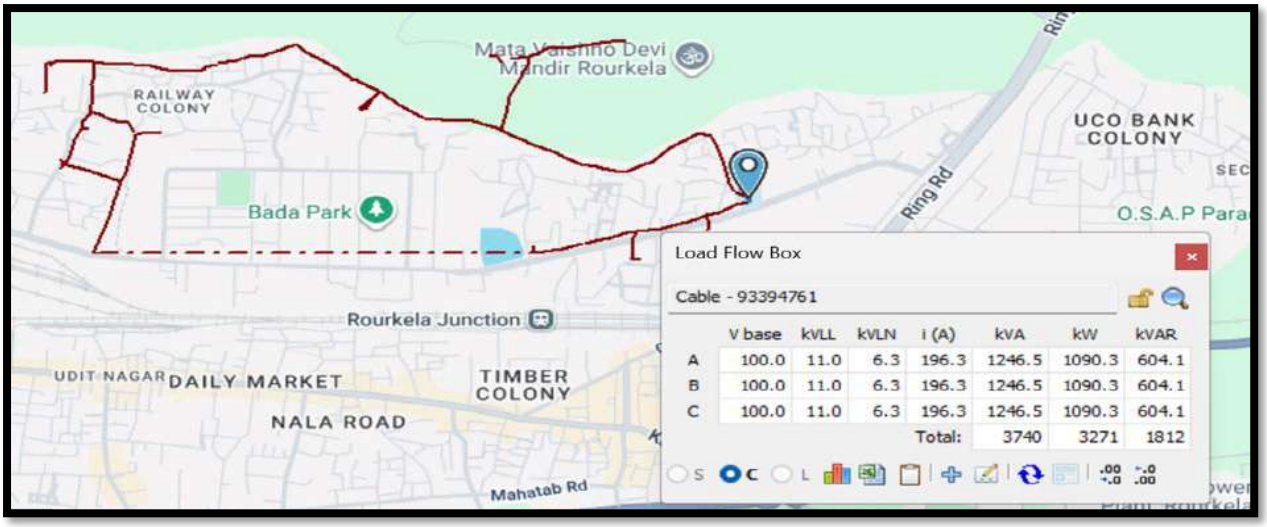
Proposed Loading details after proposal implementation:

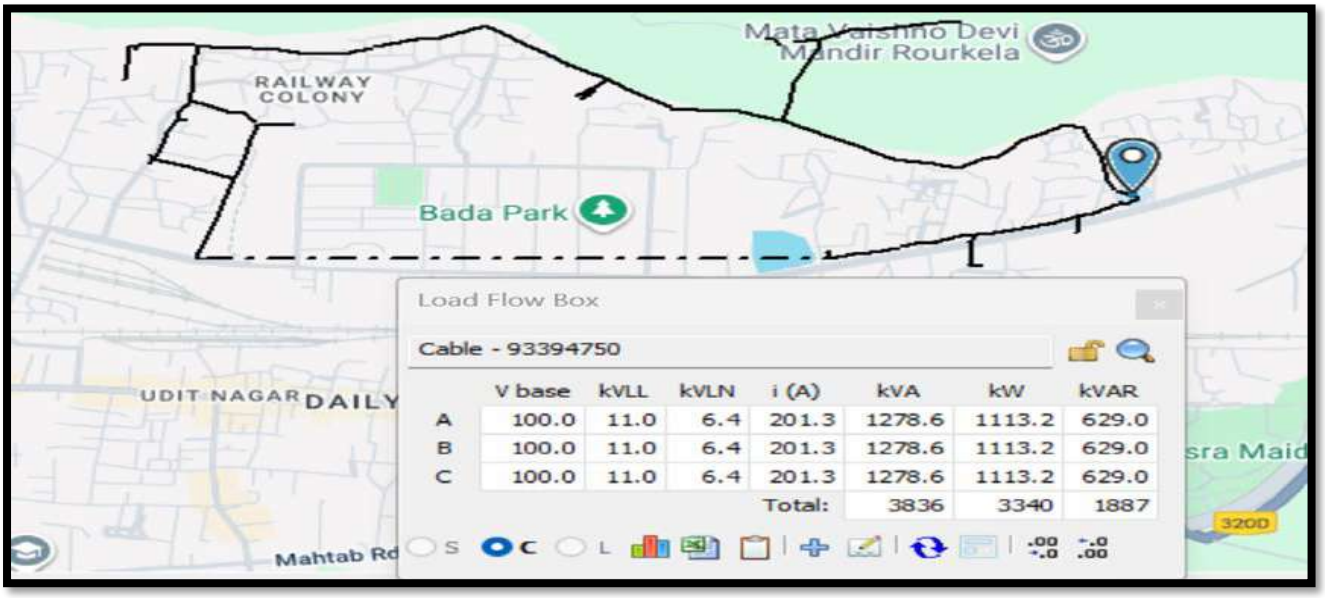
Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand during N-1 condition (MVA)**	**% Loading**	**Feeder Overloading Status**
MS Pali	MS Pali	5.24	3.775	72.04	No overloading
MS Pali	GB Pali	5.24	3.86	73.76	No overloading

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:





Scope of Work:

- Hereby proposed, 1.5ckm link line using 3C*300sqmm UG XLPE using HDD method to connect GB Pali feeder with MS Pali feeder
- 11KV, 3-Way, RMU for connectivity between two feeders.
- Two Nos of cable termination DP with AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	Basanti	
Name of Section: -	Ms Pali	
Name of the Work: -	Proposal for Link line to establish N-1 connectivity between GB Pali feeder and Ms Pali feeder	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
ESTIMATE – 1	11KV, UG XLPE (REFER ANNEXURE-166)	92,37,260.00
ESTIMATE – 2	11KV, 3-WAY RMU (REFER ANNEXURE-102)	15,49,126.00
ESTIMATE – 3	DP WITH AB SWITCH (REFER ANNEXURE-171)	6,10,421.00
	TOTAL	**1,13,96,807.00**
	Total Amount (In Cr.)	**1.13**
Total estimated cost is Rs.1.13 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.13 Cr.

Physical Target:

March 2027

Benefit to the system and consumers:

- Implementing N-1 connectivity between GB Pali feeder (MS Pali PSS) and MS Pali feeder (MS Pali PSS) will give Backup power supply during faults or outages so that overall system reliability will be improved.
- Ensures continuous power supply to the consumers even during faults.

Proposal for Reliability Improvement of OSAP Feeder

Proposal for Reliability improvement of 11kV OSAP Feeder:

Proposal:

11kV New link line within OSAP feeder to improve voltage & to provide reliable power supply

Requirement/ Need of the proposal:

Objective: To ensure uninterrupted and reliable power supply to the high-revenue consumers connected to the OSAP feeder, we have proposed Replacement of 2Ph 2wire network with 3ph network at OSAP feeder by new line using 100sqmm AAA conductor.

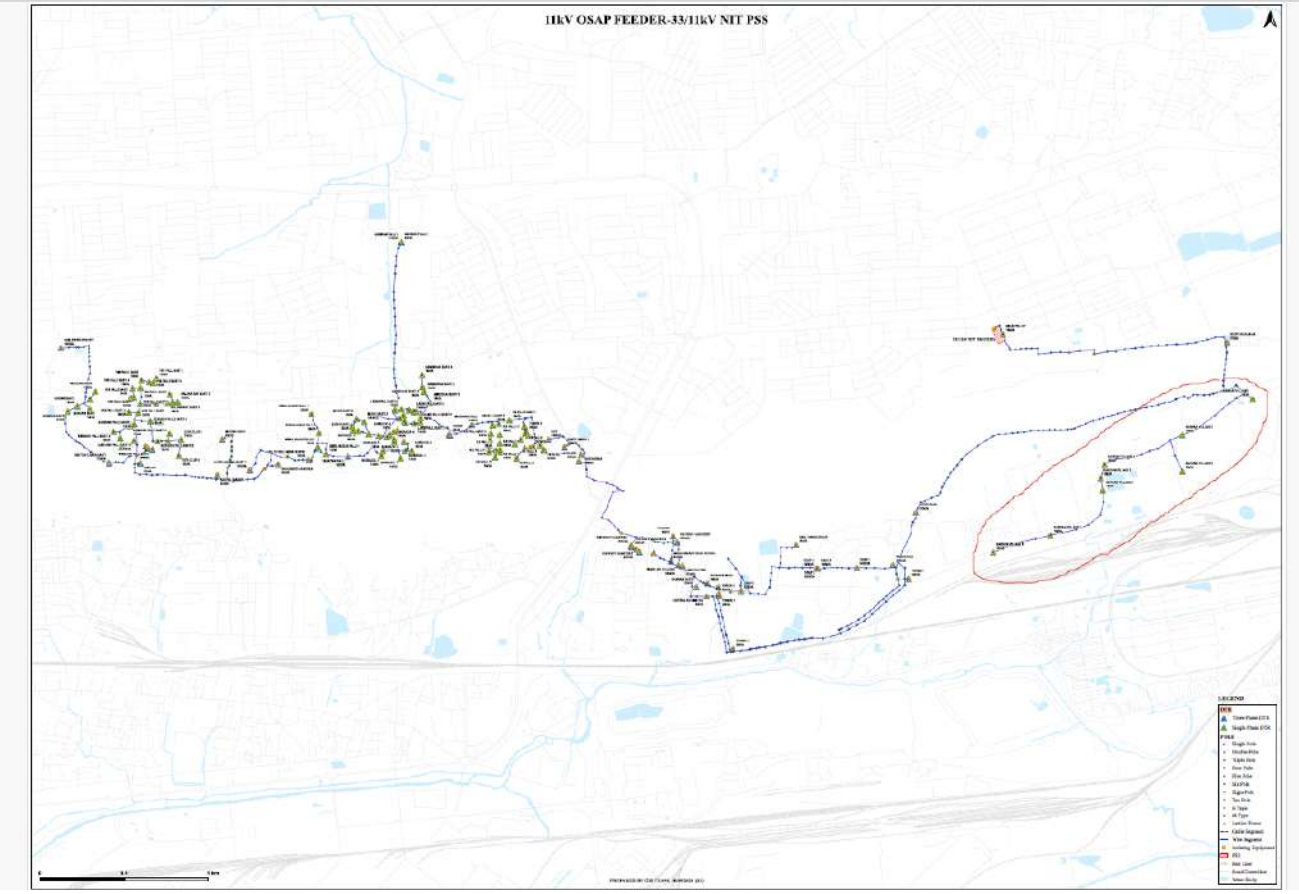
Existing Scenario:

- Presently 11 KV OSAP, which is an urban feeder emanates from NIT PSS & provides power supply to approx. 3000 Nos of commercial & domestic consumers. Some High revenue consumers such as OSAP staff quarters, Bank colony quarters, OSAP barrack, IG Police Office, Software Technology Development Park are connected to this feeder. At the tail end in Sector-5 & Sector-7 some slums also are connected to this feeder.
- The peak load of OSAP 11KV feeder is 132.8 A & length of the feeder is 19.13 Ckm. Existing conductor of main road feeder is 100/55 sq.mm. AAAC
- A significant portion of the feeder passes through dense forest area, where dense vegetation growth makes complete tree trimming impractical. This results in frequent transient faults, leading to reliability issues.
- Furthermore, a section of the feeder from Nandapada to Barkani operates on a 2-phase 2-wire network, which is inadequate for the current load demand and causes persistent undervoltage issues. To address this, it is proposed to replace this segment with a 3-phase network using 3.20 CKm of new line with 100 sqmm bare conductor, thereby improving voltage levels and overall feeder reliability.

Existing FY-25 Loading and projected load at 11 kV Feeders:

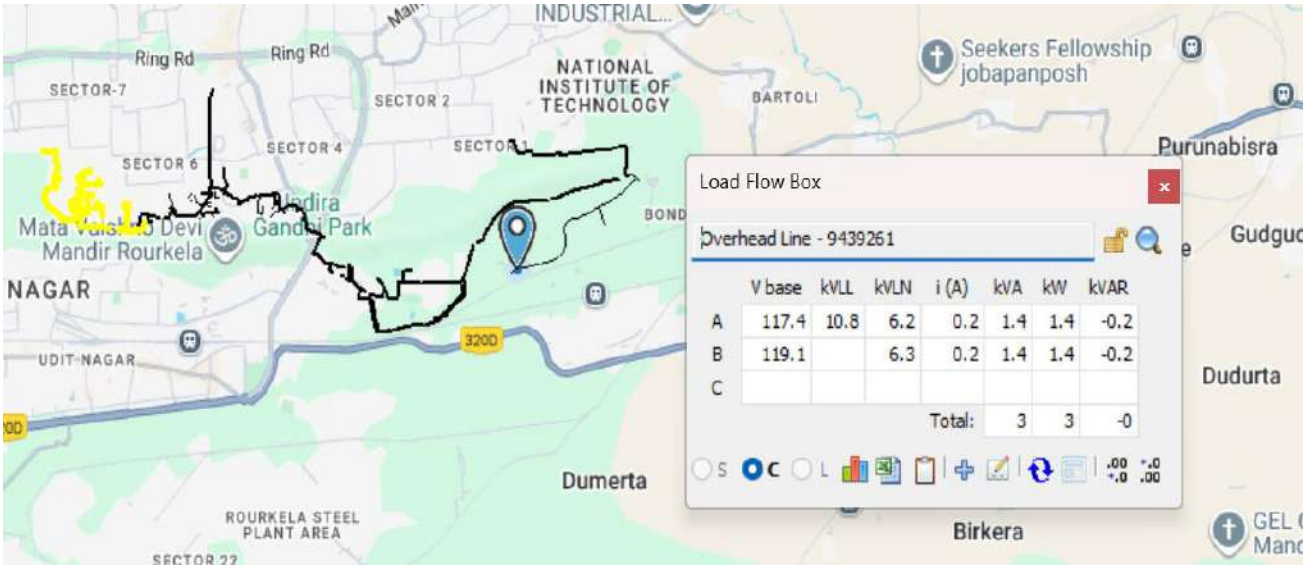
Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27(MVA)**	**% Loading**	**Feeder Overloading Status**
NIT	OSAP	5.32	2.554	48	No over loading	2.653	49.86	No over loading

GIS Map:



Existing SLD:

Load Flow Study of existing scenario in Cyme Software with 1 Yr Load Growth:



Proposed Scenario:

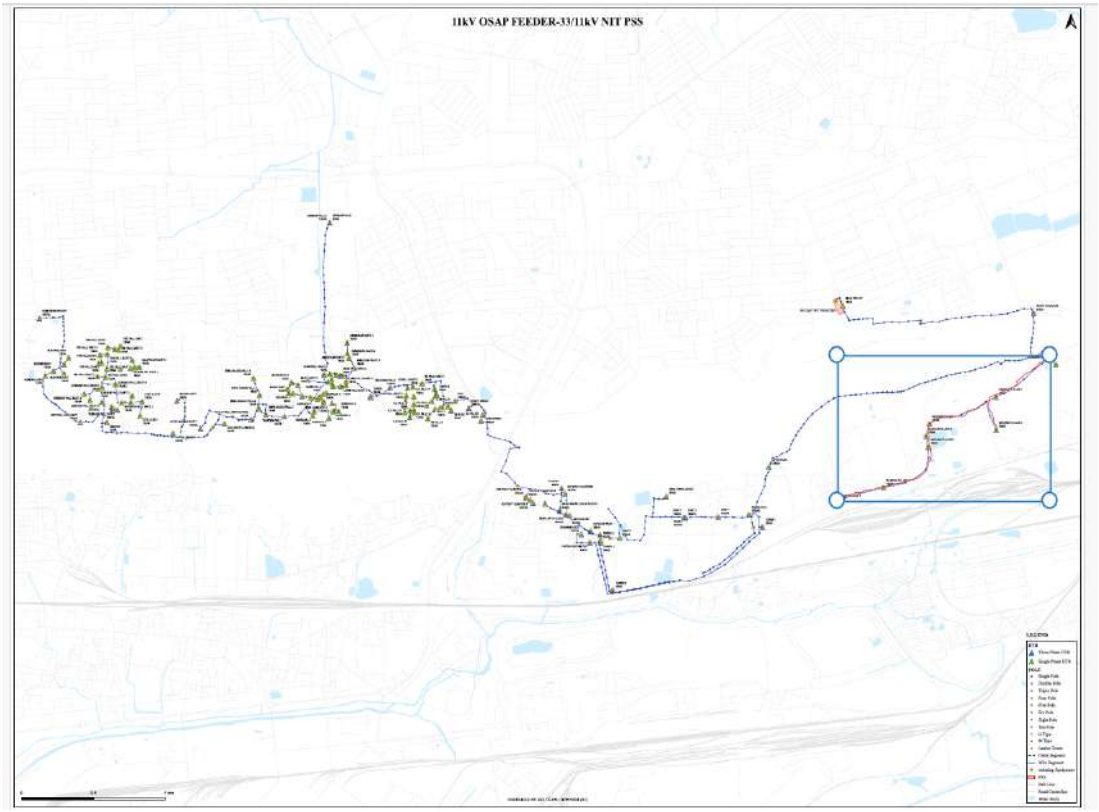
- To address the persistent undervoltage issue and improve the reliability of the 11 KV OSAP feeder, it is proposed to replace the existing 2-phase 2-wire network between Nandapada and Barkani with a 3-phase network. This will be achieved by constructing a new 3.20 CKm 11 KV line using 100 sqmm bare conductor.
- The current 2-phase configuration is inadequate for the growing load demand and contributes to voltage drops, especially at the tail end of the feeder. Upgrading to a 3-phase system will ensure balanced load distribution, improved voltage profile, and enhanced system stability. This proposal is a critical step toward strengthening the feeder infrastructure and ensuring uninterrupted power supply to both high-revenue and vulnerable consumer segments

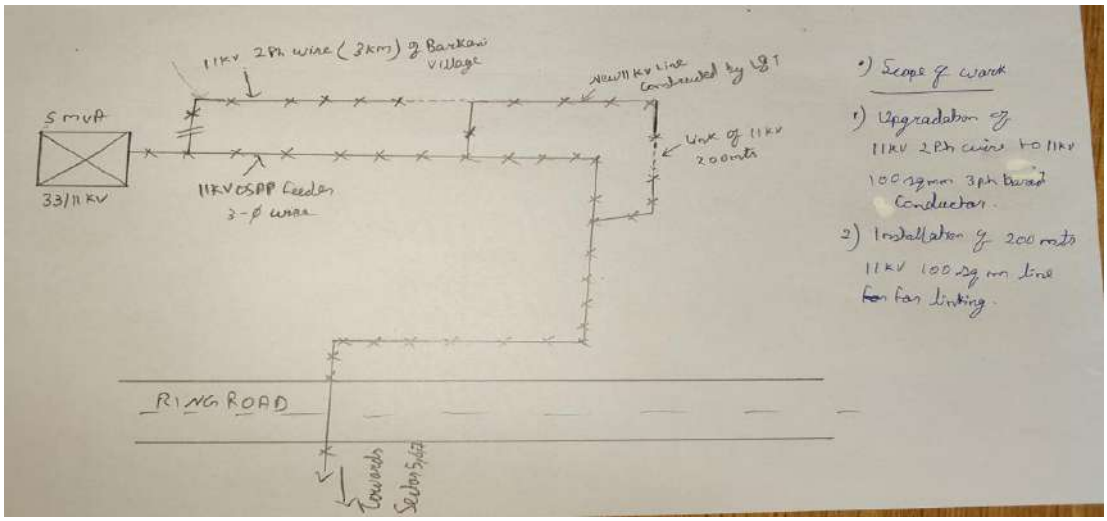
Proposed FY-27 Loading and projected load at 11 kV Feeder:

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
NIT	OSAP	5.32	2.653	49.86	No over loading

- Upgrading to a 3-phase system using 100 sqmm bare conductor will improve voltage levels, ensure balanced load distribution, and enhance service quality for all connected consumers.

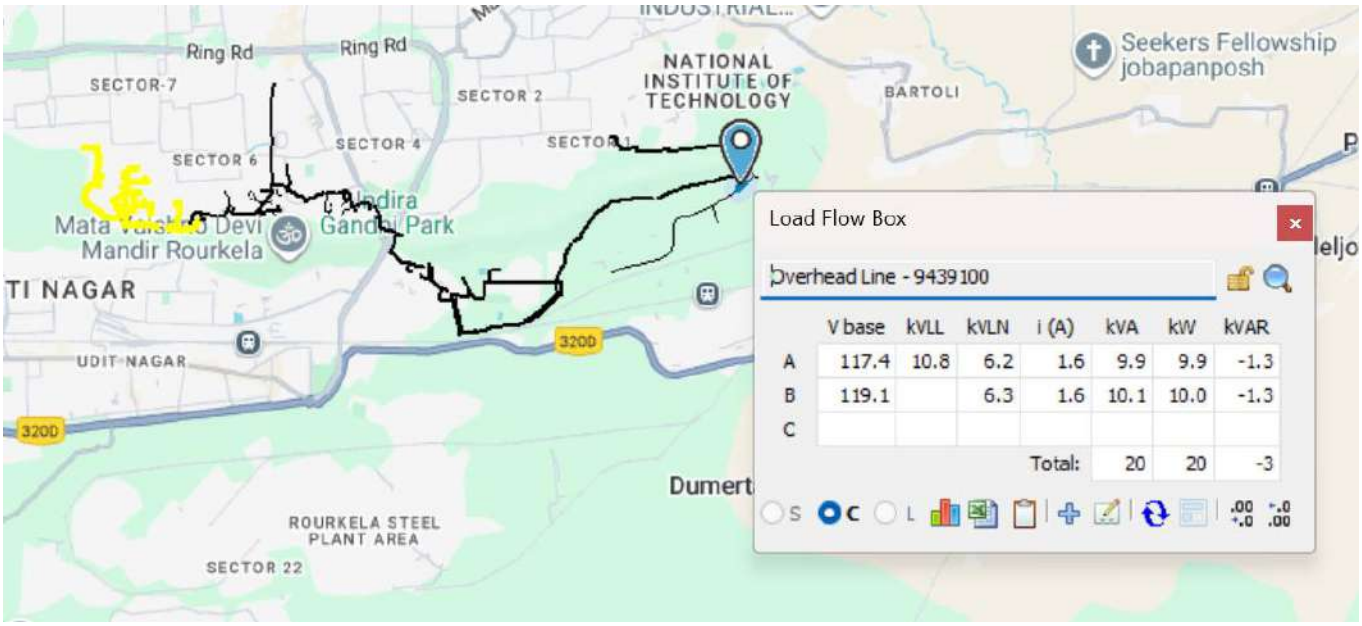
Proposed GIS SLD:





Proposed SLD

Load Flow Study of proposed scenario in Cyme Software:



Scope of Work:

- 3.2 Ckm new line using 100sqmm AAA conductor using 11m WPB pole.

Proposed Cost with Estimate Break-up:

ANNEXURE-12.1		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	BISRA	
Name of Section: -	NAYA BAZAR	
Name of the Work: -	Proposal for Replacement of 2Ph 2wire network with 3ph network at OSAP feeder by new line using 100sqmm AAA conductor	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
ESTIMATE-1	11KV, CONDUCTOR CONVERSION FROM 2PH TO 3PH (REFER ANNEXURE-112)	66,28,391.00
	Total Amount	66,28,391.00
	Total Amount (In Cr 0.6628)	
Total estimated cost is Rs. 0.66 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.66 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**NIT**	OSAP	2533	256	**33.53**	**293762.22**	**12.06**	
After Proposal	**NIT**	OSAP	2629	185				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	66.28	Rs. Lac
B	Load due to load growth	-	98.37	kVA
C	Total kW due to load growth	1.732*33*B*Pf	86	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	511970	kWH
E	Power Purchase cost per unit	-	4.11	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving additional load	G/(D*10^5)	7.30	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	12.06	Rs. Lac
J	Net Revenue Collected	H+I	19.36	Rs. Lac
K	% revenue return	(J/A)*100	29.2	%
L	Pay Back Period	100/K	3.42	Years

Benefit to the system and consumers:

- Enhanced reliability of power supply to high-revenue and critical consumers such as OSAP quarters, IG Police Office, and Software Technology Park.
- Reduction in feeder tripping due to transient faults, leading to improved operational efficiency and reduced maintenance interventions.
- Improved consumer satisfaction due to fewer outages and better quality of power supply.

Proposal for load shifting arrangement of OSAP Feeder

Proposal for load shifting arrangement of 11kV OSAP Feeder:

Proposal:

11kV New Link line between OSAP feeder and Nayabazar feeder to ensure uninterrupted and reliable power supply to the high-revenue consumers

Requirement/ Need of the proposal:

- **Objective:** To ensure uninterrupted and reliable power supply to the high-revenue consumers connected to the OSAP feeder, it is proposed to shift the load of slum areas from the OSAP feeder to the Naya Bazar feeder.

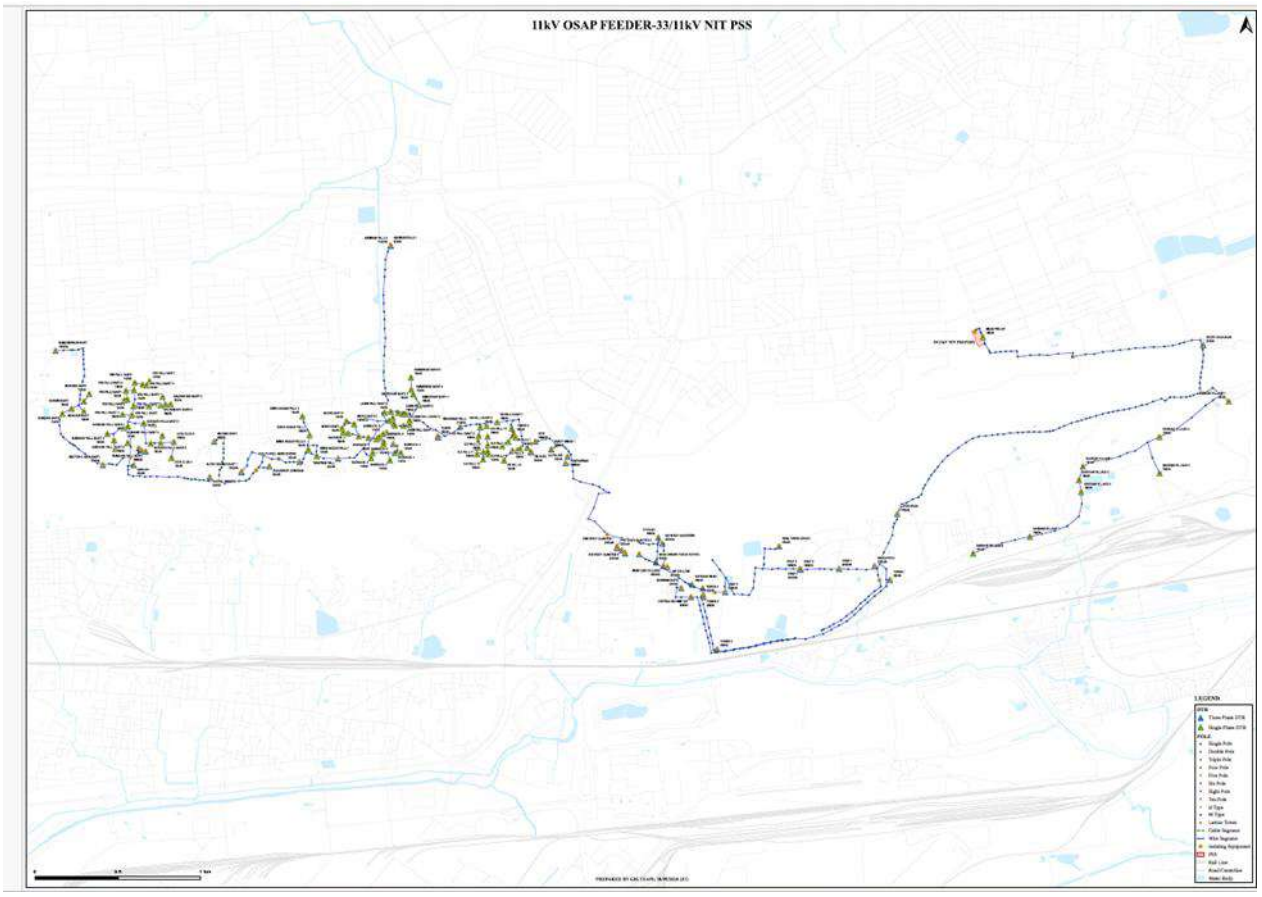
Existing Scenario:

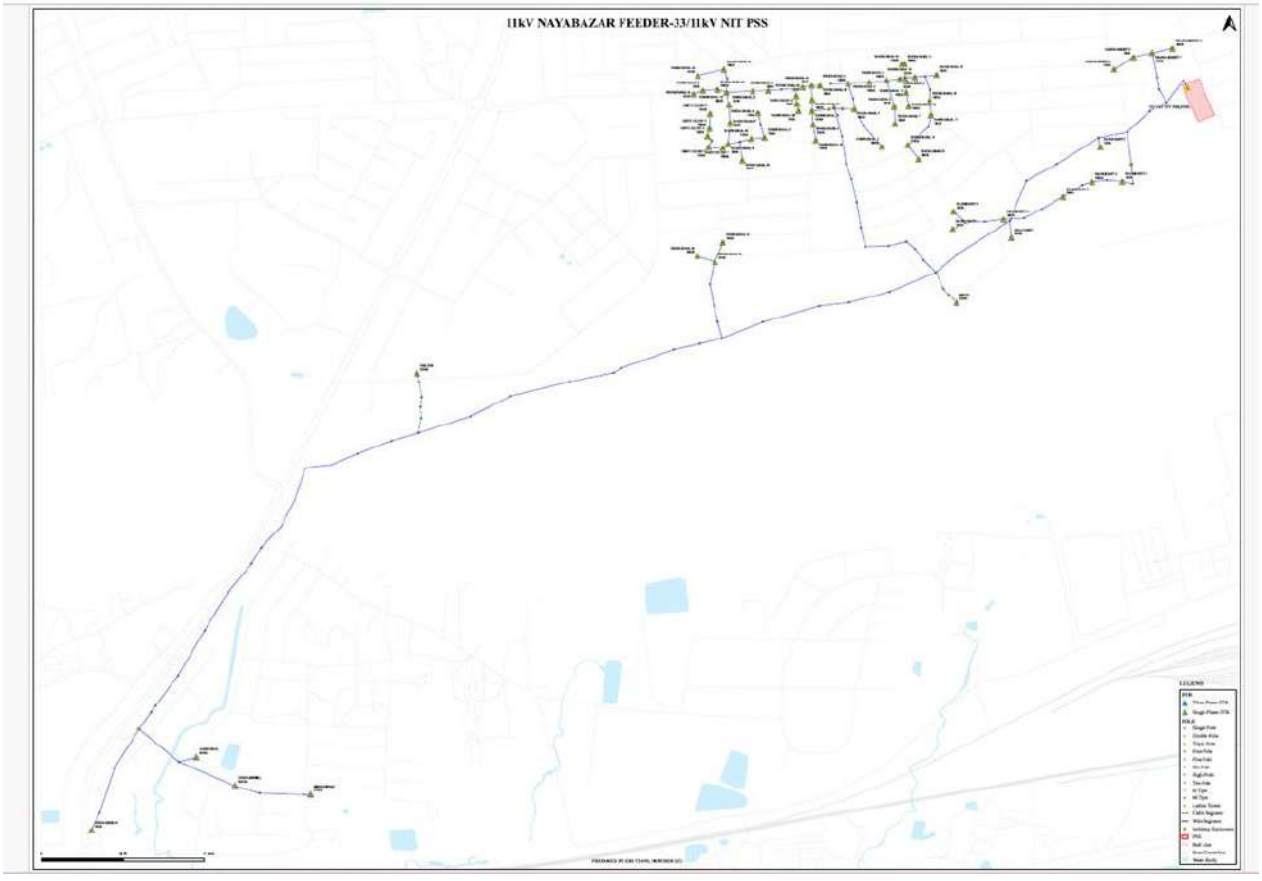
- In the existing scenario, 11 KV OSAP, which is an urban feeder originates from NIT PSS & provides power supply to approx. 3000 Nos of commercial & domestic consumers. Some High revenue consumers such as OSAP staff quarters, Bank colony quarters, OSAP barrack, IG Police Office, Software Technology Development Park are connected to this feeder. At the tail end in Sector-5 & Sector-7 some slums also are connected to this feeder.
- The peak load of OSAP 11KV feeder is 132 A & length of the feeder is 19.13 Ckm. Tail end voltage 9.9KV. Existing conductor of main road feeder is 100/55 sq.mm AAAC
- From tripping details of this feeder, it is evident that maximum fault is occurring in slum area are due to which high revenue consumers are affected.
- 11 KV Naya Bazar feeder emanates from 33/11 KV NIT PSS & provides power supply to Rahamad Nagar, Kalinga Market, Ganju market area of Rourkela city.
- Peak load of Nayabazar feeder is 21.47 A & feeder length is 6.638 Ckm & existing conductors is 100/55 sq.mm. AAAC.
- Therefore, it is necessary to shift OSAP feeder's slum area's load to Nayabazar feeder for steady supply to OSAP feeder and improve voltage level.

Existing FY-25 Loading and projected load at 11 kV Feeders:

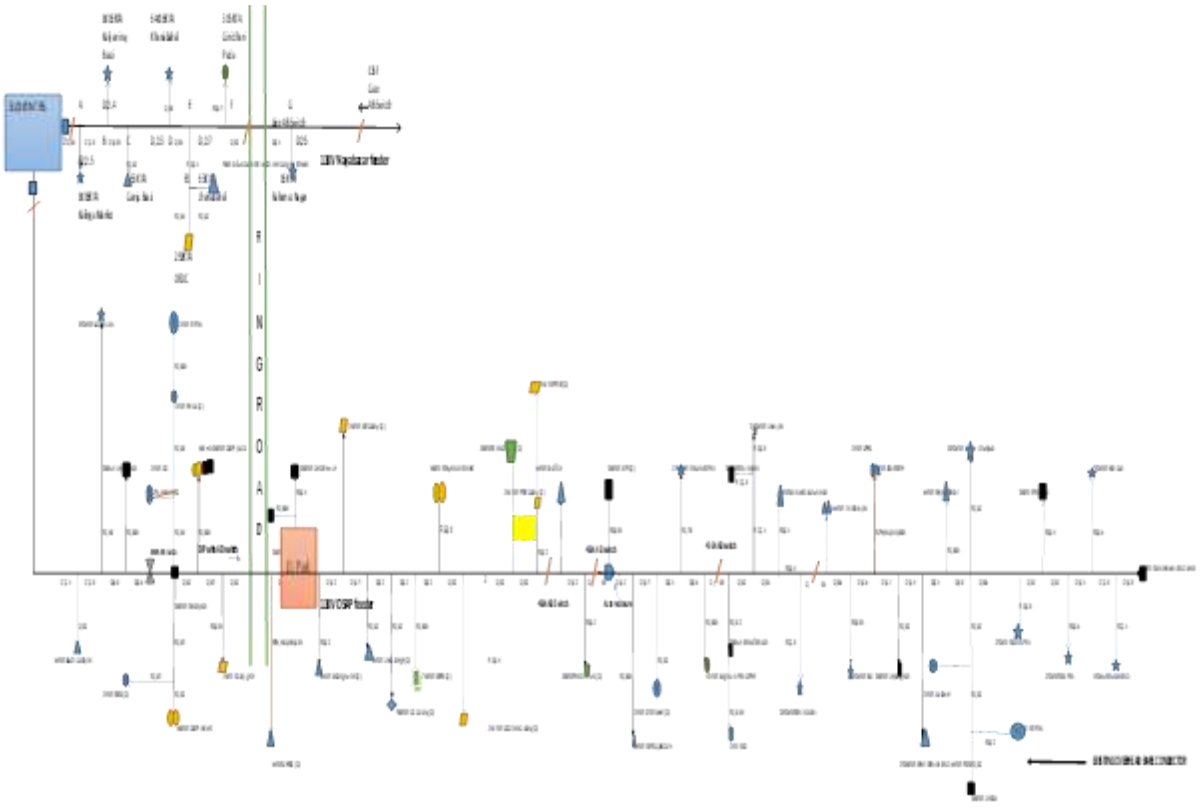
Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
NIT	OSAP	5.32	2.554	48	No	2.653	49.86	Under voltage (9.9KV)
NIT	Naya Bazar	4.07	0.413	10.14	No	0.443	10.88	No

GIS Map:

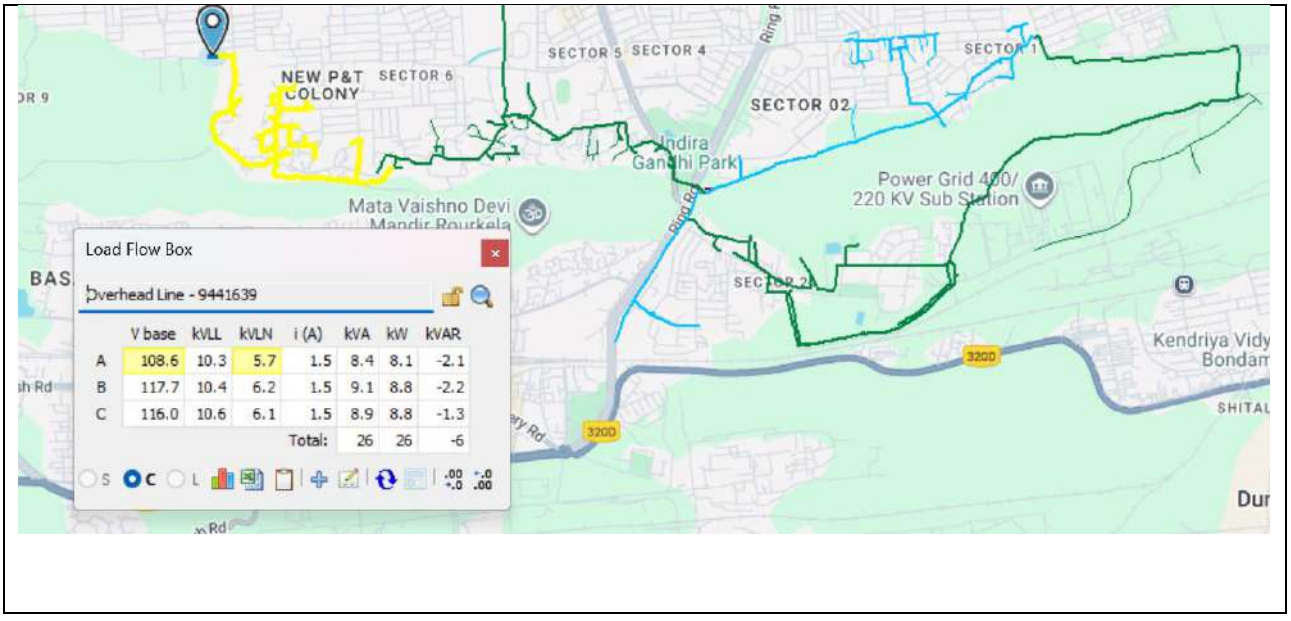

11kV OSAP FEEDER-33/11kV NIT PSS


11kV NAYABAZAR FEEDER-33/11kV NIT PSS

Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 1 Yr Load Growth:



Proposed Scenario:

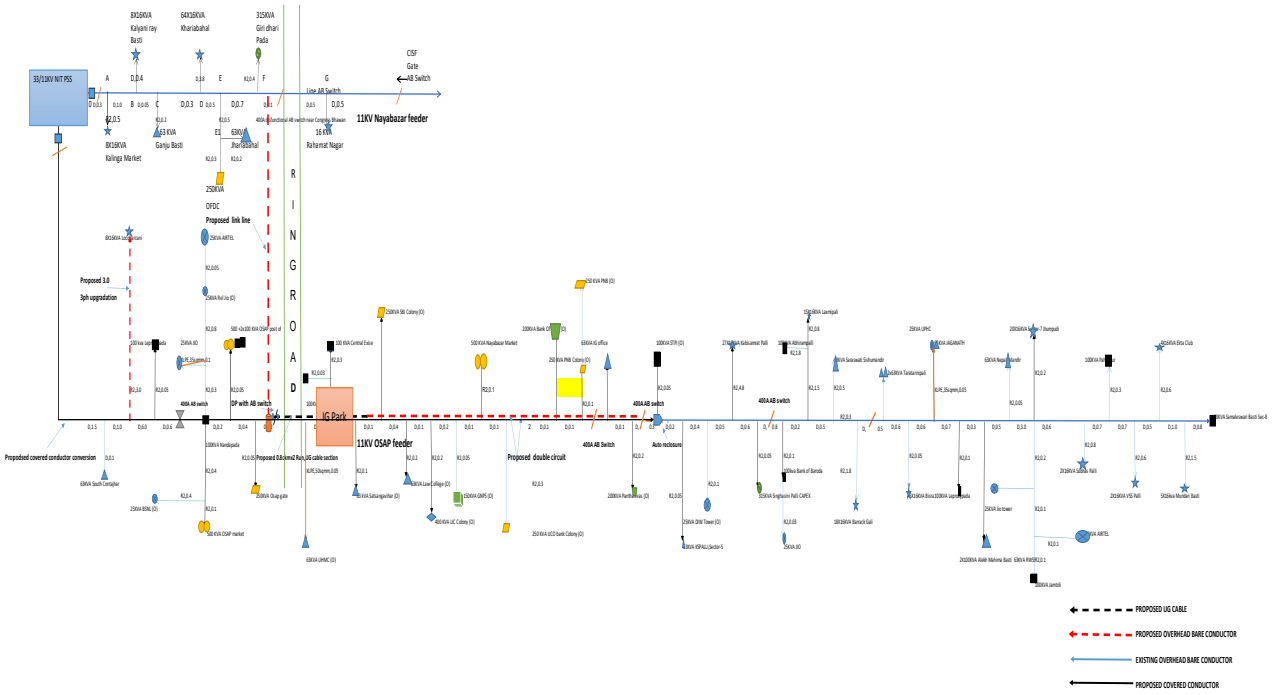
- It is hereby proposed 0.2Ckm double circuit arrangement from Rahamad Nagar to Ring Road with 100sqmm AAAC conductor on 11m WPB pole.
- Two runs, 0.1 Ckm 3C,300sqmm XLPE UG cable with HDD arrangement at Ring Road. Two runs, 0.7Ckm, 3C,300sqmm XLPE UG cable with HDD arrangement at IG park.
- 0.8Ckm double circuit arrangement from IG park to STPI, sector-5 with 100sqmm AAAC conductor on 11m RSJ pole. Thus, the load of OSAP feeder after STPI would be shifted to Nayabazar feeder.
- Two Nos of 400A AB switch beside Ring Road before starting of UG cable section.

- After load shifting the length of the feeder and load reduces this will increase the voltage level of feeder at tail end.

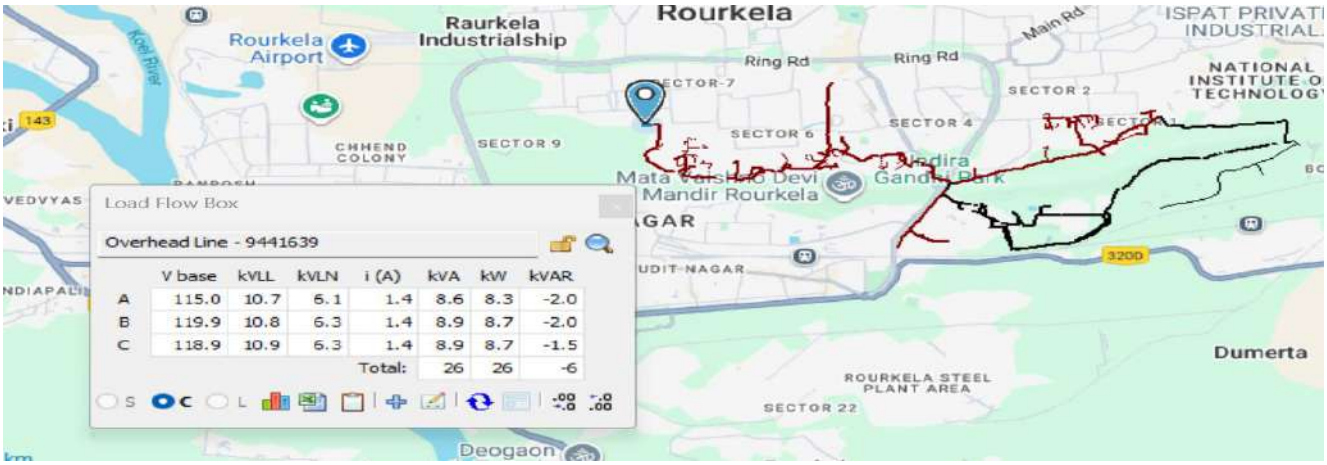
Proposed FY-27 Loading and projected load at 11 kV Feeder:

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
NIT	OSAP	5.32	1.192	22.40	No over loading
NIT	Naya Bazar	4.07	1.826	44.86	No over loading

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Scope of Work:

- 1.0 Ckm x 2 run, double circuit arrangement using 100sqmm AAA conductor on 11 Mtr WPB pole.
- 0.8 Ckm x 2 run, 3C,300sqmm XLPE UG cable with HDD arrangement.
- Two No of 400A AB switch on DP.
- One No of 11Kv 3-WAY RMU.

Proposed Cost with Estimate Break-up:

ANNEXURE-12.1		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	BISRA	
Name of Section: -	NAYABAZAR	
Name of the Work: -	Proposal for Load shifting arrangement from OSAP feeder to Nayabazar feeder to mitigate under voltage issue.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
Estimate – 1	DOUBLE CKT WITH AAA BARE CONDUCTOR	42,11,399.00
Estimate – 2	NEW LINE ON 3C,300 UG XLPE CABLE	98,53,077.00
Estimate – 3	DP WITH AB SWITCH	6,10,421.00
Estimate – 3	11KV 3-WAY RMU	15,49,126.00
	Total Amount	1,62,24,023.00
	Total Amount (In Cr 1.62)	
Total estimated cost is Rs. 1.62 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.62 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**NIT**	OSAP	2629	185	**41**	**359637**	**14.8**
	NIT	Naya Bazar	416	12			
After Proposal	**NIT**	OSAP	1192	36			
	NIT	Naya Bazar	1827	74			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	99.51	Rs. Lac
B	Load due to load growth	-	129.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	113	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	671385	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	9.57	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	29.30	Rs. Lac
J	Net Revenue Collected	H+I	38.87	Rs. Lac
K	% revenue return	(J/A)*100	39.1	%
L	Pay Back Period	100/K	2.56	Years

Benefit to the system and consumers:

- Enhanced reliability of power supply to high-revenue and critical consumers such as OSAP quarters, IG Police Office, and Software Technology Park by isolating fault-prone slum areas.
- Reduction in feeder tripping, leading to improved operational efficiency and reduced maintenance interventions.
- Optimized load distribution between OSAP and Naya Bazar feeders, minimizing technical losses and improving voltage profile.
- Improved consumer satisfaction due to fewer outages and better quality of power supply.
- Support for future load growth by relieving stress on the OSAP feeder and utilizing spare capacity of Naya Bazar feeder.

Undervoltage Mitigation of Lahunipara Feeder

Proposal for Mitigation of Undervoltage for 11kV Lahunipara & Roxy Feeder:

Proposal:

11kV New Link line for load shifting from Lahunipara & Roxy Feeder to Phatangar Feeder to mitigate undervoltage problem.

Objective:

To mitigate Undervoltage issue of both Lahunipara & Roxy Feeder.

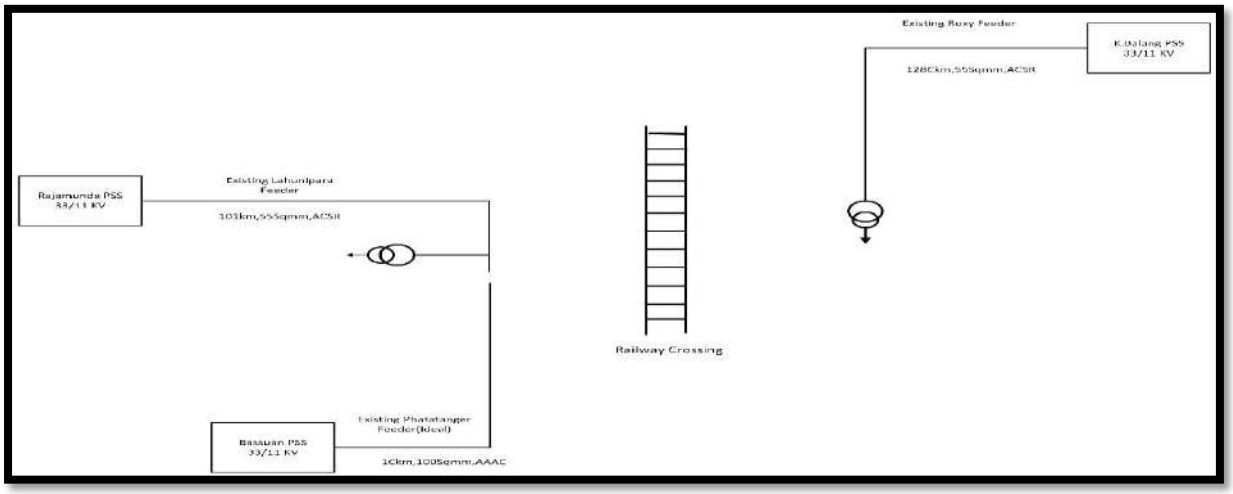
Existing Scenario:

- At present, 11kV Lahunipara feeder(94.96Ckm) emanating from Rajamunda PSS feeder power to LT and HT consumers. Feeder having conductor size of 55 sq.mm AAAC with peak load at FY-25 is 100A and Tail end Voltage is 10.00kV.
- At present, 11kV Roxy feeder(128.54Ckm) emanating from K.Balang PSS feeder power to LT and HT consumers. Feeder having conductor size of 55/100 sq.mm AAAC with peak load at FY-25 is 51A and Tail end Voltage is 9.9kV.
- After this Proposals Bifurcated and fed by Phatatanger Feeder (to be charged) from Barsuan PSS.
- Considering load growth for 2Years@10.07% per year, both this 11kV feeder having undervoltage at tailend.

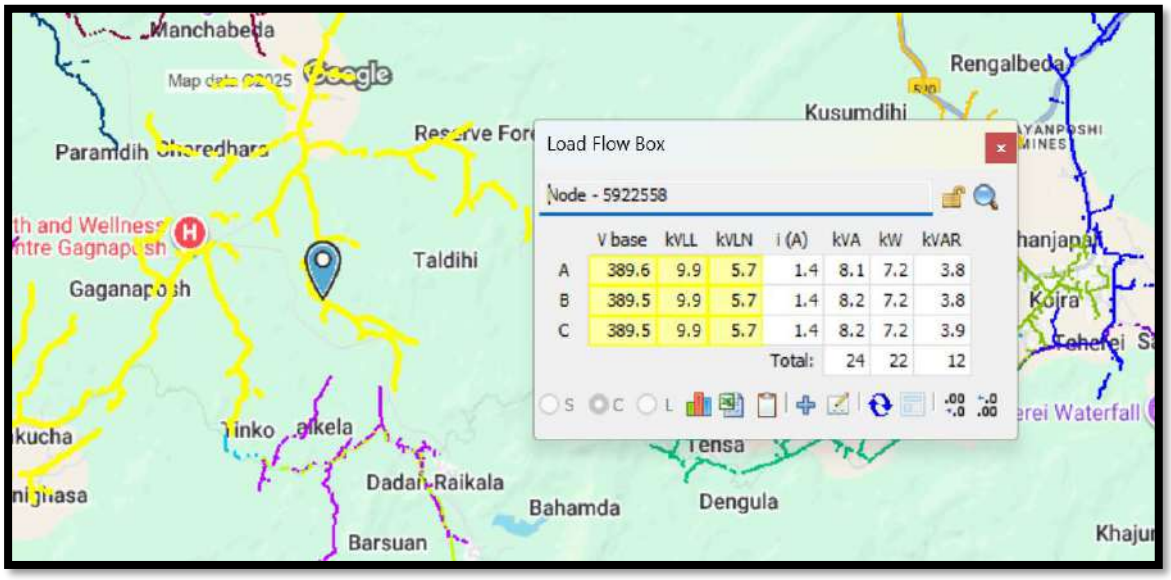
Existing FY-25 Loading and Proposed load FY-27

11kV Feeder Name	Feeder Capacity (MVA)	Peak Demand FY-25 (MVA)	Feeder Undervoltage Status	Projected load FY-27 (MVA)	Feeder Status with tail-end voltage (kV)	Feeder Undervoltage Status FY-27
Lahunipara	3.54	1.92	Undervoltage (10.0kV)	2.35	10.00kV	Undervoltage
Roxy	3.54	0.97	Undervoltage (9.9kV)	1.2	9.9kV	Undervoltage

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

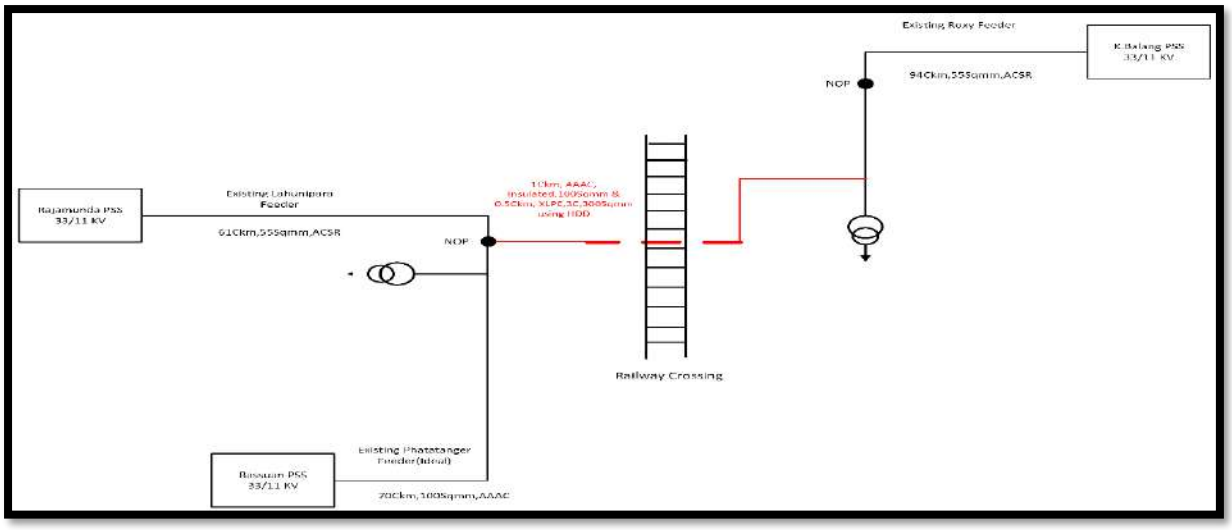


Proposed Scenario:

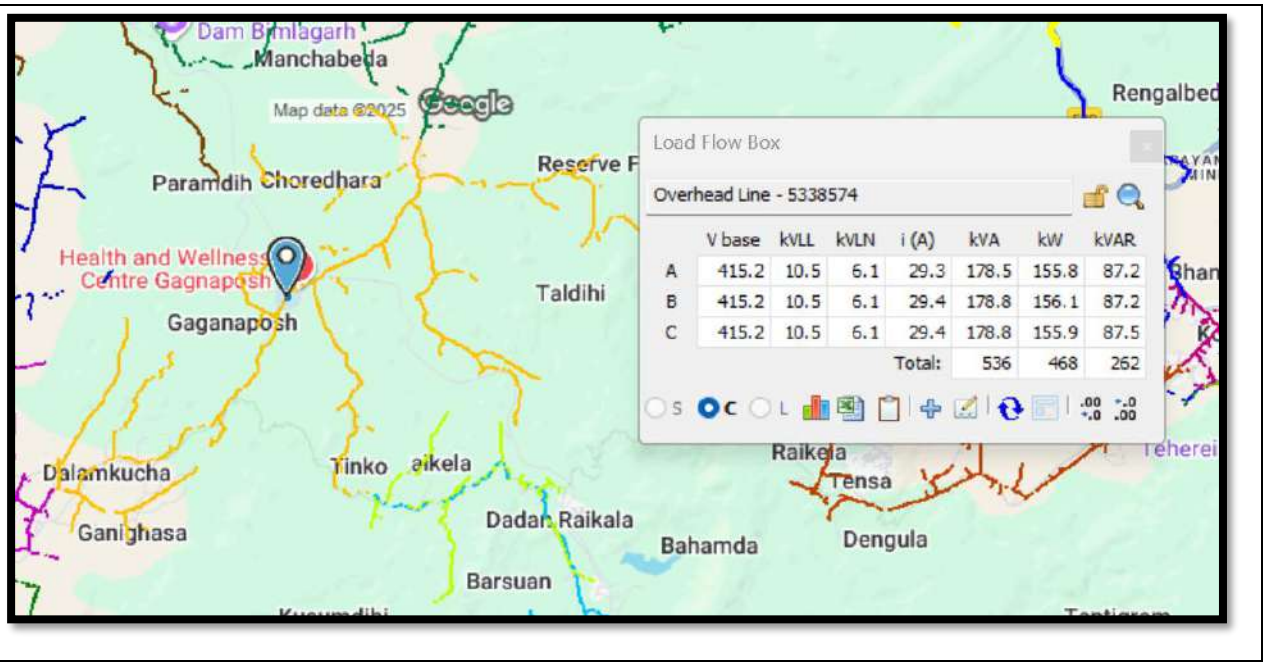
- Interconnector Proposed Between Lahunipara and Roxy Feeder and Bifurcate both part of the feeder. After this Proposals Bifurcated and fed by Phatatanger Feeder (to be charged) from Barsuan PSS.

Loading after Proposal (FY-27)				
11kV Feeder Name	**Feeder Capacity (MVA)**	**Projected load (MVA)**	**Tail-end Voltage**	**Feeder Status with overloading**
Lahunipara	3.54	1.58	10.6	OK
Roxy	3.54	0.8	10.25	OK
Phatatanger	5.18	1.028	10.5	OK

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Detailed Scope of Work:

1. 1Ckm, AAAC, Insulated,100Sqmm using 11Mtr. WPB Pole & 0.5Ckm, XLPE,3C,300Sqmm using HDD.

BoQ:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Bonai	
Name of Section:-	Lahunipara	
Name of the Work :-	•Interconnector Between Lahunipara & Roxy Feeder and bifurcate both part of the feeder to Phatangar Feeder	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART-A: New Line,1.1Ckm,11kV,AAAC,100Sqmm (Refer Annexure-112)	**₹ 28,31,292.00**
2	PART-A: New Line,0.5Ckm,11kV,3C,1R, XLPE,300Sqmm (Refer Annexure-166)	**₹ 61,58,173.50**
3	PART-C: 11 KV RMU (3-WAY , LLV, AUX PT & FRTU) (Refer Annexure-102)	**₹ 16,14,807.00**
	Total Amount	**₹ 1,06,04,272.50**
	Total Amount (In Cr.)	**₹ 1.06**
Total estimated cost is Rs 1.06Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.06Cr.

Cost Benefit:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	Rajamunda	Lahunipara	2368	174	55	484142	19.9
	Barsuan	Phatatanger	0	0			
	K.Balang	Roxy	1044	118			
After Proposal	Rajamunda	Lahunipara	1586	55			
	Barsuan	Phatatanger	1032	58			
	K.Balang	Roxy	808	61			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	106.00	Rs. Lac
B	Load due to load growth	-	211.67	kVA
C	Total kW due to load growth	1.732*33*B*Pf	185	kW

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1101644	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	15.70	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	19.90	Rs. Lac
J	Net Revenue Collected	H+I	35.60	Rs. Lac
K	% revenue return	(J/A)*100	33.6	%
L	Pay Back Period	100/K	2.98	Years

Benefit:

- Undervoltage mitigation of 11kV Roxy & Lahunipara feeder.
- Improved N-1 connectivity with 11kV Phatatanger feeder.
- Ensuring reliable power supply of the Area.

Mitigation of Undervoltage of 11kV Feeder

Proposal for Mitigation of Undervoltage for 11kV Industry-I Feeder:

Proposal:

11kV New Link line Between Industry-I & Industry-II Feeder to mitigate the Undervoltage issue.

Objective:

To mitigate the Undervoltage issue of Industry-I Feeder.

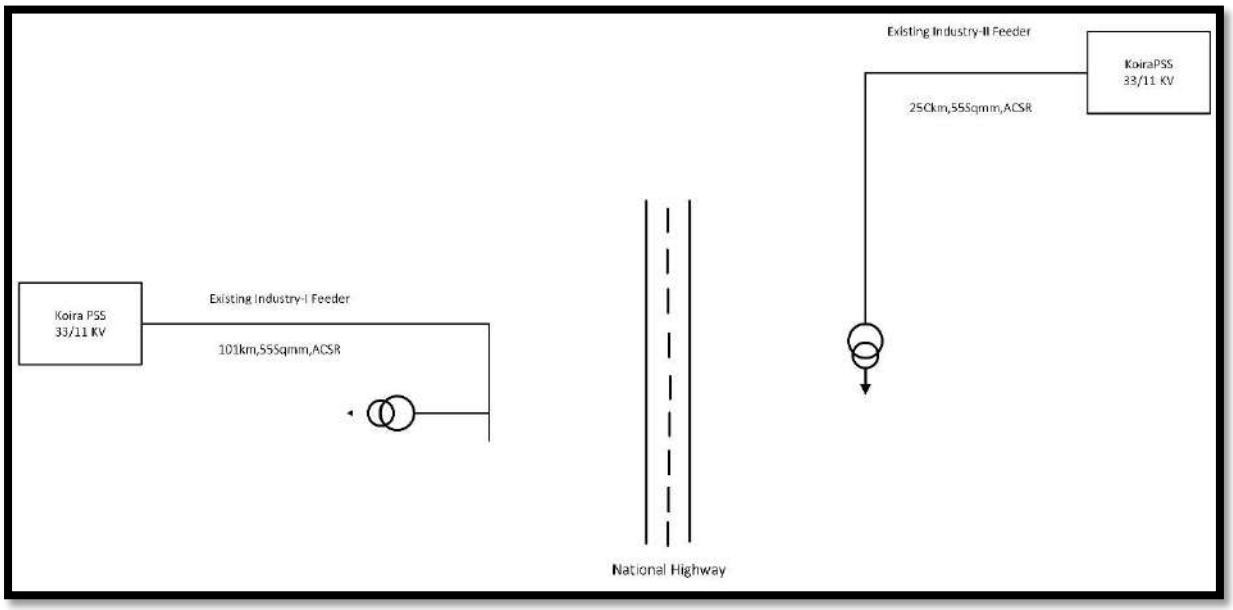
Existing Scenario:

- At present, 11kV Industry-I feeder (100.5 Ckm) emanating from Koida PSS feeder power to LT and HT consumers. Feeder having conductor size of 55 sq.mm AAAC with peak load at FY-25 is 100A and Tail end Voltage is 10.01kV.
- Considering load growth for 2Years@10.07% per year, both this 11kV feeder having undervoltage at tail end.

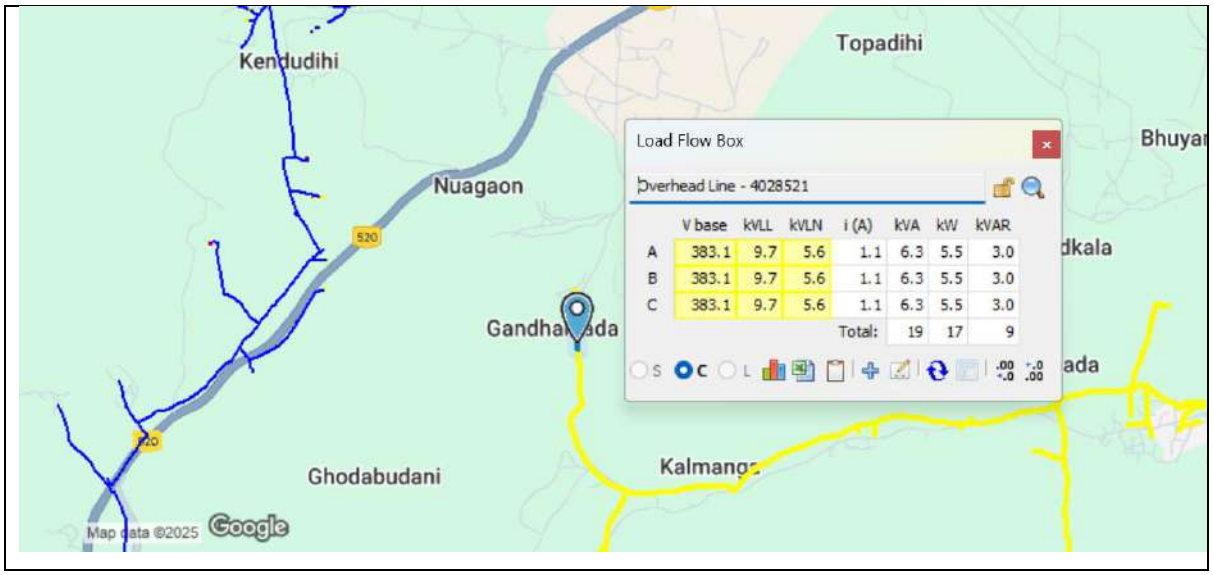
Existing FY-25 Loading and proposed load(FY-27) :

11kV Feeder Name	Feeder Capacity (MVAs)	Peak Loading FY-25 (MVA)	Feeder Status (as is) with tail-end voltage(kV)	Projected load FY-27 (MVA)	Feeder Status with tail-end voltage (kV)	Feeder Undervoltage Status FY-27
Industry-I	3.5	1.9	Undervoltage (10.0kV)	2.32	9.7kV	Undervoltage

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

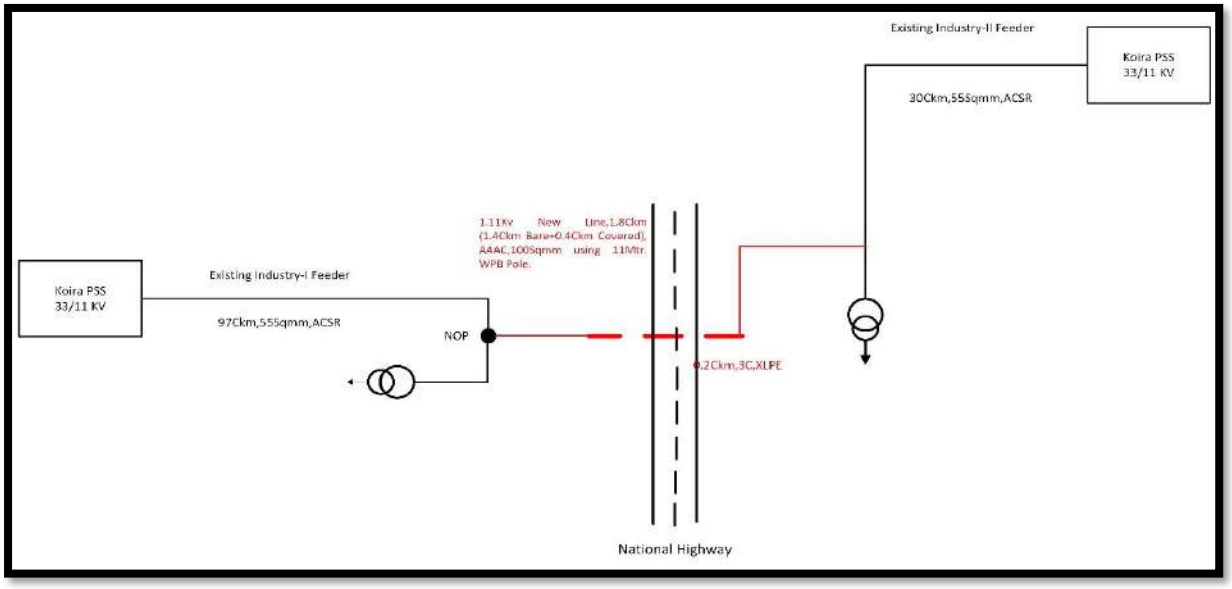


Proposed Scenario:

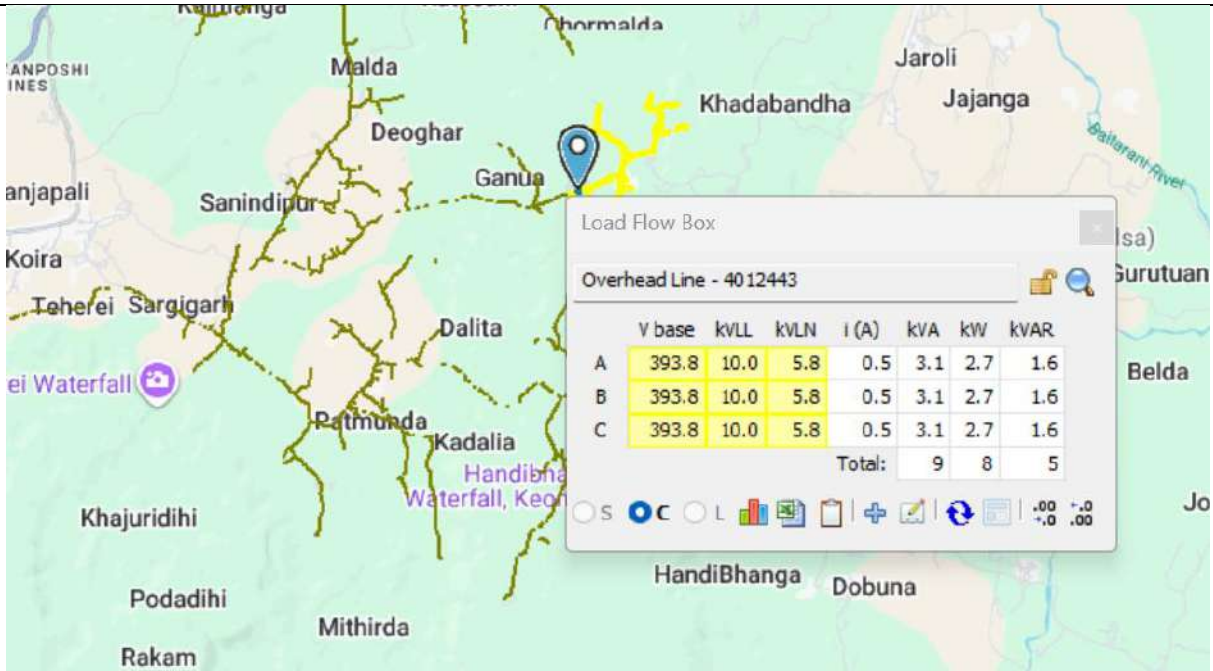
- Link line Proposed Between Industry-I and Industry-I Feeder and Bifurcate part of the industry-I Feeder.
- After this, both Industrial feeder and N-1 with each other.

Loading after Proposal (FY-27)				
11kV Feeder Name	**Feeder Capacity (MVA)**	**Projected load (MVA)**	**Tail-end Voltage**	**Feeder Status Undervoltage**
Industry-I	3.54	2.32	10.6	OK

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Detailed Scope of Work:

1. 11kV New Line,2.2Ckm (1.8Ckm Bare+0.4Ckm Covered), AAAC,100Sqmm using 11Mtr. WPB Pole.
2. 0.2Ckm New lIne,0.2Ckm,3C, XLPE,300Sqmm using HDD for Road Crossing.

BoQ:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Bonai	
Name of Section:-	Koira	
Name of the Work :-	Link line between Industry-I & Industry-II Feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART-A: New Line,0.2Ckm,11kV,3C, XLPE,300Sqmm (Refer Annexure-166)	**₹ 12,31,634.70**
2	PART-A: New Line,1.8Ckm,11kV, AAAC,100Sqmm (Refer Annexure-112)	**₹ 37,95,712.20**
3	PART-A: New Line,0.4Ckm,11kV, AAAC,100Sqmm (Refer Annexure-170)	**₹ 11,43,454.40**
	Total Amount	**₹ 61,70,801.30**
	Total Amount (In Cr.)	**₹ 0.62**
Total estimated cost is Rs.0.62Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.62Cr

Cost Benefit

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	Koira	Industry-I	2039	238	34	300761	12.3
	Koira	Industry-II	1495	118			
After Proposal	Koira	Industry-I	1966	165			
	Koira	Industry-II	1495	118			

Revenue Return Sheet				
Sr. No.	Description	Formula	Value	UoM
A	Total cost of scheme	-	62.00	Rs. Lac
B	Load due to load growth	-	335.75	kVA
C	Total kW due to load growth	1.732*33*B*Pf	294	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1747423	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	24.90	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	12.30	Rs. Lac
J	Net Revenue Collected	H+I	37.20	Rs. Lac
K	% revenue return	(J/A)*100	60.0	%
L	Pay Back Period	100/K	1.67	Years

Benefit:

- Undervoltage mitigation & Reliabiity(N-1) Improvement of Industry-I & Industry-II feeder.
- Ensuring reliable power supply of the Area.

Undervoltage Mitigation of Boneikela Feeder

Proposal for Improving Reliability & Mitigation of Undervoltage for 11kV Tynser Feeder:

Proposal:

11kV New Link line Between Boneikela & Tynser feeder to mitigate the Undervoltage problem

Objective:

To mitigate the Undervoltage issue of the Tynser Feeder.

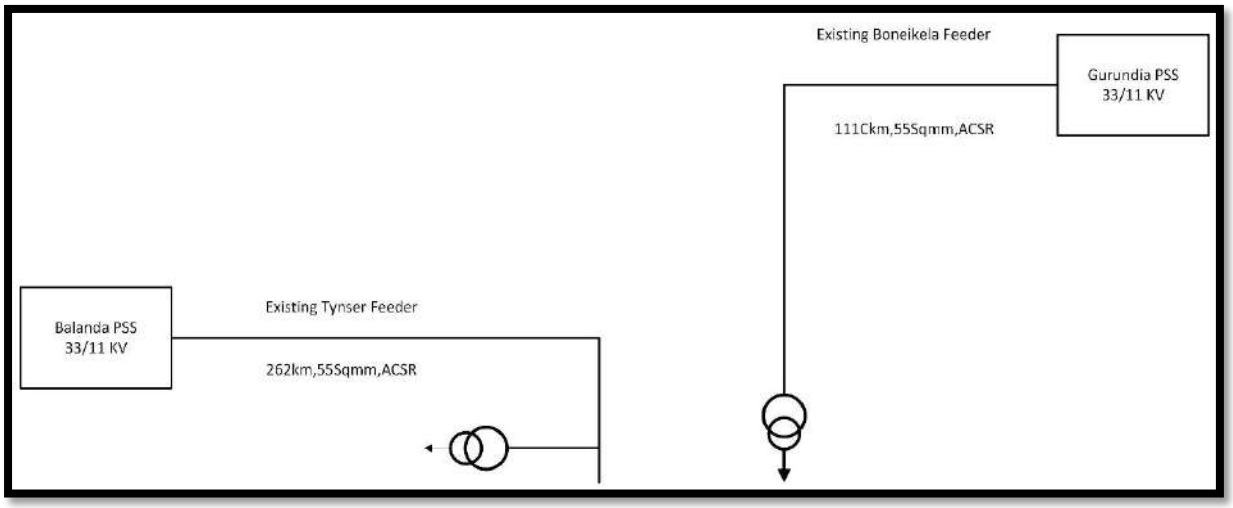
Existing Scenario:

- At present, 11kV Tynser Feeder (262Ckm) emanating from Balanda PSS feeder powers LT and HT consumers major under RED Rajgangpur Division Jurisdiction. But some tail-end Part of the Feeder, around 30 km, is under RSED Jurisdiction. The Feeder having conductor size of 55sq mm AAAC with peak load at FY-25 is 53A and Tail end Voltage is 9.6kV.
- Considering load growth for 2Years@10.07% per year, both this 11kV feeder having undervoltage at tailend.

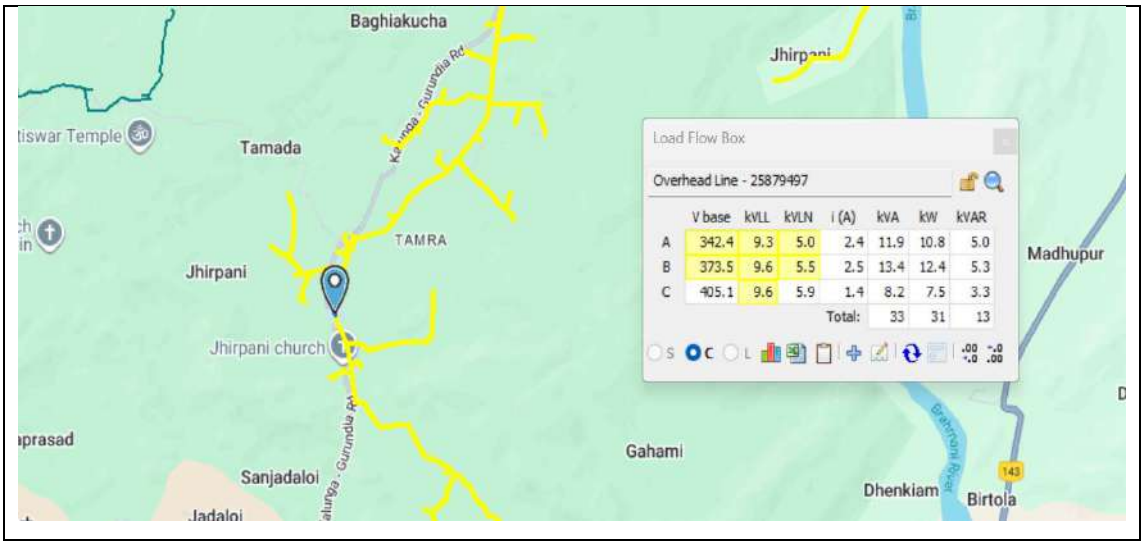
Existing FY-25 Loading and projected load at 11kV Feeder:

11kV Feeder Name	Feeder Capacity (MVAs)	Peak Loading FY-25 (MVA)	Feeder Status (as is) with tail-end voltage(kV)	Projected load FY-27 (MVAs)	Feeder Status (as is) with tail-end voltage (kV	Feeder Undervoltage Status FY-27
Tynser	3.54	1	Undervoltage (9.6kV)	1.18	9.3kV	Undervoltage

Existing SLD:



Load Flow Study of the existing scenario in Cyme Software:

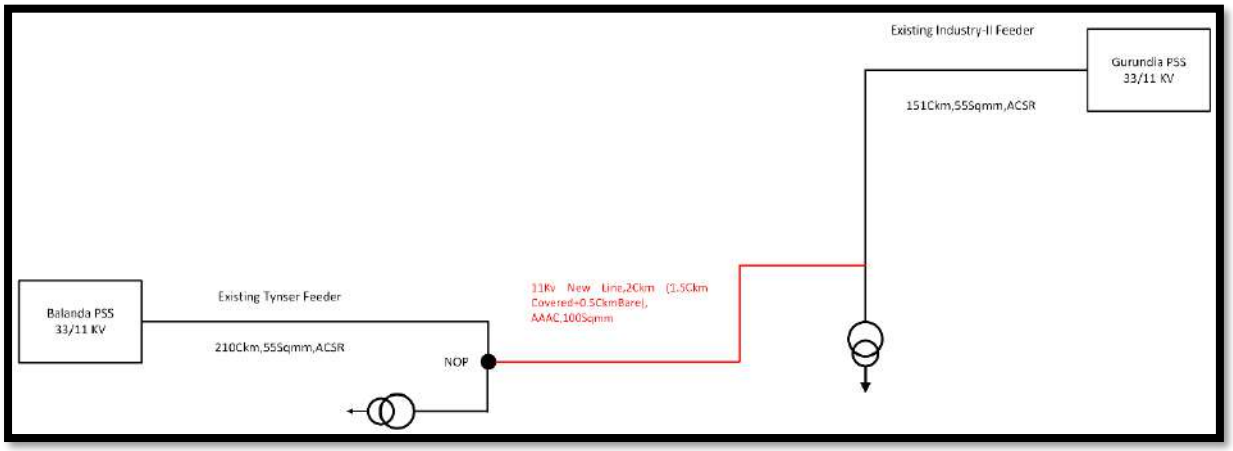


Proposed Scenario:

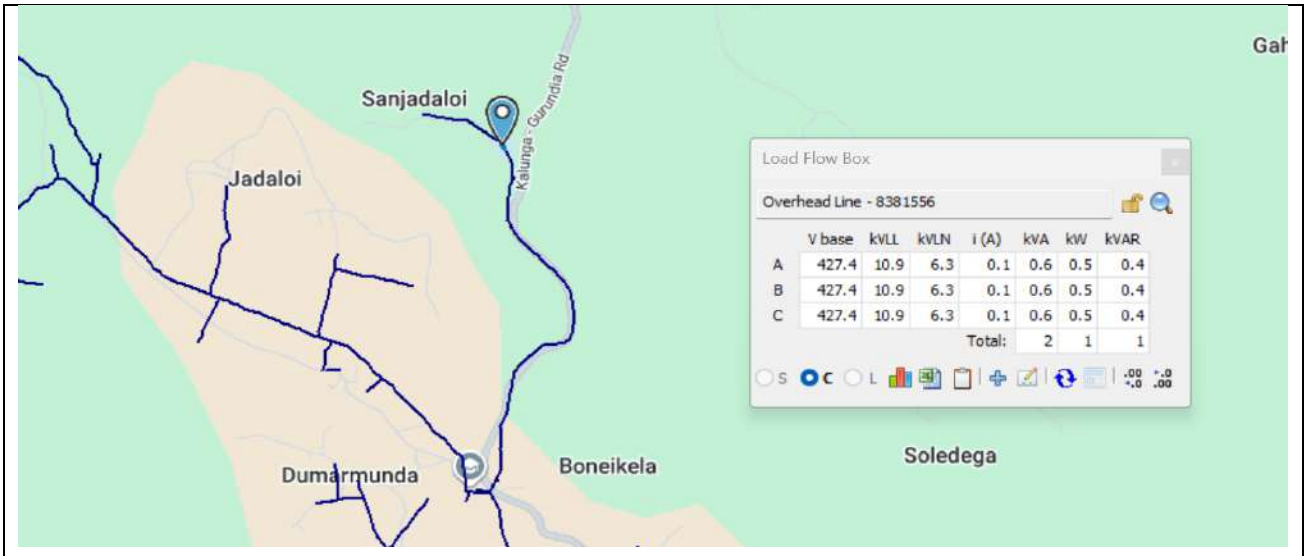
- Interconnector Proposed Between Tynser and Boneikela Feeder and Bifurcate both parts of the Tynser feeder under RSED Jurisdiction.

Loading after Proposal (FY-27)				
11kV Feeder Name	**Feeder Capacity (MVAs)**	**Projected load (MVAs)**	**Tail-end Voltage**	**Feeder Status Undervoltage**
Boneikela	3.54	0.47	10.9	OK

Proposed SLD:



Load Flow Study of the proposed scenario in Cyme Software:



Detailed Scope of Work:

2Ckm, AAAC, (1.5Ckm Insulated+0.5Ckm Bare),100Sqmm using 11Mtr. RSJ Pole.

BoQ:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Bonai	
Name of Section:-	Bonai	
Name of the Work :-	Link line between Boneikela & Tynser Feeder(Blanda PSS RED Rajgangpur)	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART-A: New Line,1.5km,11kV, Insulated,AAAC,100Sqmm (Refer Annexure-170)	**₹ 42,87,954.00**
2	PART-A: New Line,0.5km,11kV,AAAC,100Sqmm (Refer Annexure-170)	**₹ 10,54,364.50**
	Total Amount	**₹ 53,42,318.50**
	Total Amount (In Cr.)	**₹ 0.53**
Total estimated cost is Rs 0.53Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.53Cr.

Cost-Benefit:

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	53.00	Rs. Lac
B	Load due to load growth	-	92.99	kVA
C	Total kW due to load growth	1.732*33*B*Pf	81	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	483970	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	6.90	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.00	Rs. Lac
J	Net Revenue Collected	H+I	6.90	Rs. Lac
K	% revenue return	(J/A)*100	13.0	%
L	Pay Back Period	100/K	7.68	Years

Savings due to technical loss is zero

Benefit:

- Undervoltage mitigation of Tynser Feeder feeder.
- Improved N-1 connectivity with 11kV Boneikela Feeder.
- Ensuring a reliable power supply in the Area.

Reliability(N-1) Improvement of 11kV feeder.

Proposal for reliability improvement(N-1) for 11kV Panposhbasti Feeder:

PROPOSAL:

11kV New Link Line between 11KV College (Panposh) feeder and Panposhbasti feeder for load shifting and to provide "N-1" reliability.

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

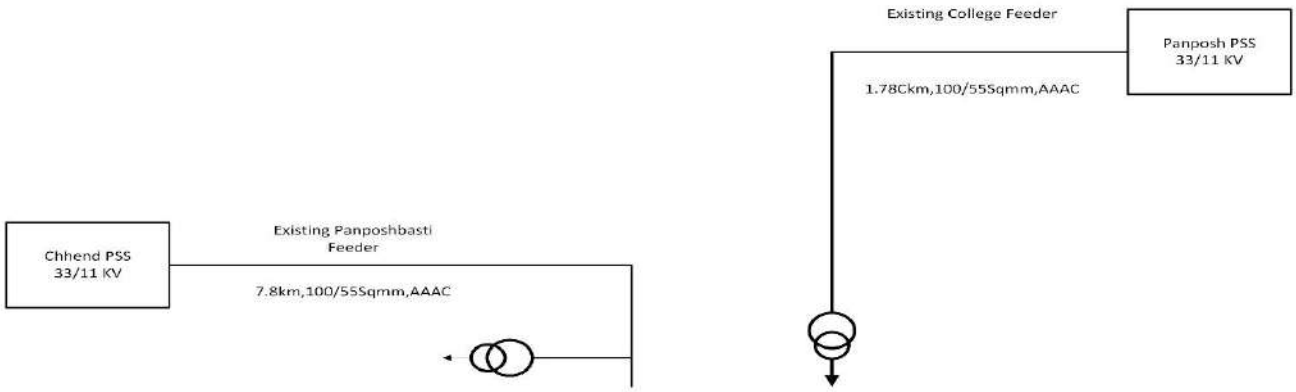
11KV Link line of 1.5Ckm between 11kV Panposhbasti feeder & 11kV College feeder, and load shifting from Panposh basti to College feeder & provide N-1 connectivity to both feeders which feed power to the Panposhbasti Area where vertical growth is expected.

EXISTING SCENARIO: -

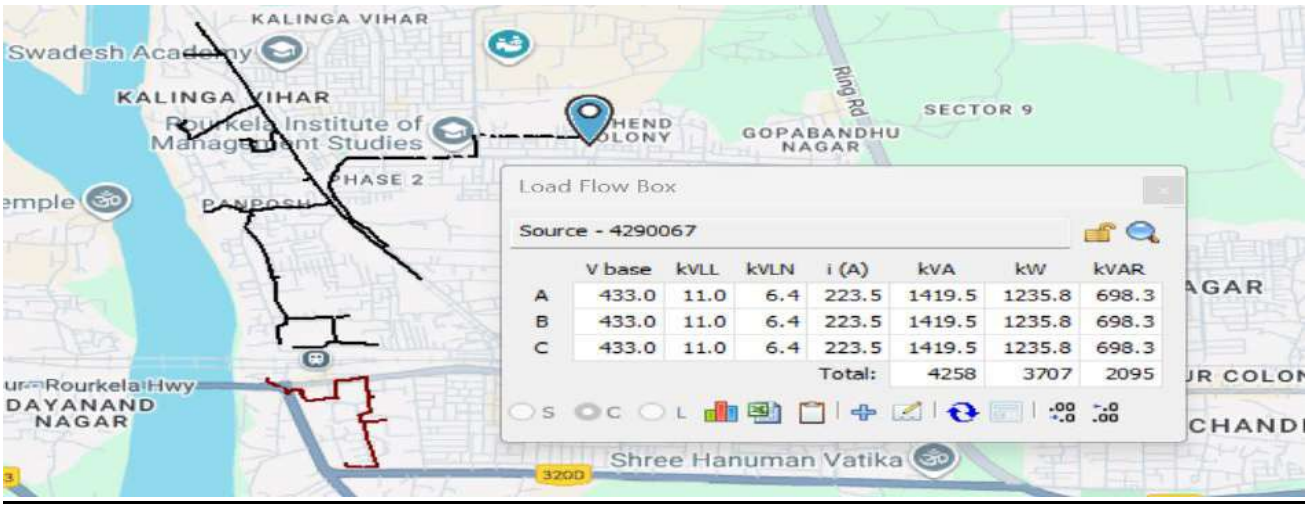
- The 11kV Panposhbasti feeder is emanating from Chhend PSS. It feeds Power Supply to many residential consumers of Panposh Area of Rourkela Town.
- The 11kV Panposhbasti feeder is emanating from Chhend PSS.The 11kV College feeder peak loading is 32A & the conductor of 100 sq.mm AAA is used in the trunk line.
- The 11kV College feeder is emanating from PHD Panposh PSS.The 11kV College feeder peak loading is 181A & the conductor of 100 sq.mm AAA is used in the trunk line.
- Presently, the N-1 Supply arrangement & load shifting for the 11kV Panposhbasti & College feeder i it is very essential to arrange a N-1 supply for both.

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Chhend	Panposhbasti	5.3	3.5	66%	Ok	4.33	81%	Ok
PHD Panposh	College	5.3	0.6	11%	Ok	0.7	13%	Ok

Existing SLD



Load Flow Study of the existing scenario in Cyme Software



Proposed Scenario:

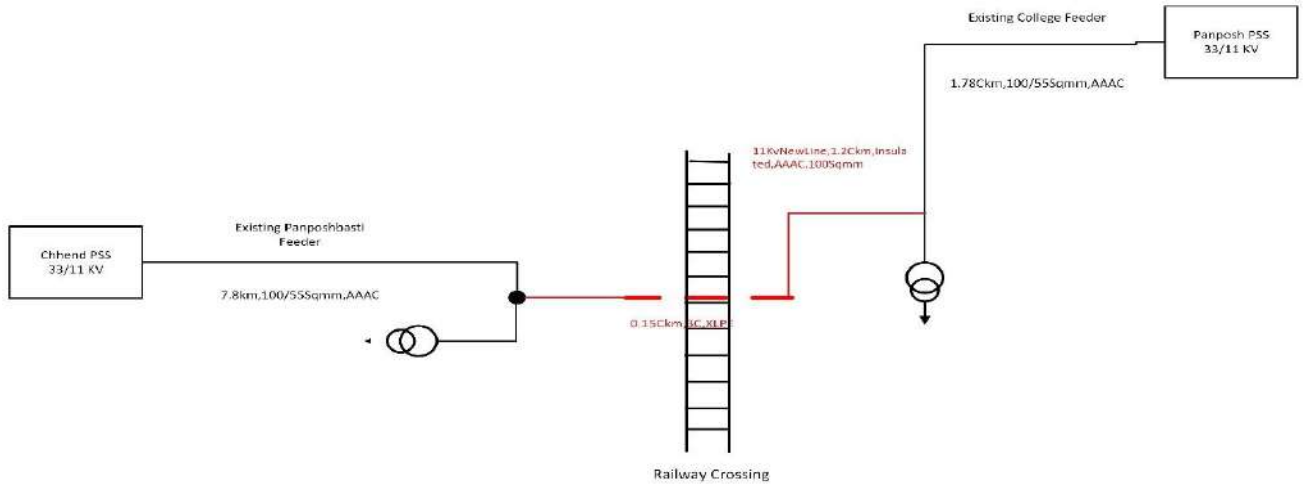
- A 11kV link line (1.5 km) from Panposh Chowk to Jammia Colony through Railway Crossing.
- After connecting this new proposed line, the 11kV Panposhbasti feeder will have N-1 connectivity with 11kV College feeder from Panposh PSS and load shifted to underloaded feeder.
- After connecting this new proposed line, the 11kV Panposhbasti feeder will have N-1 connectivity with 11kV College feeder from Panposh PSS. And load shifted to underloaded feeder.

Proposed Loading details after proposal Implementation at 11 kV Panposhbasti Feeder.

Loading after Proposal (FY-27)

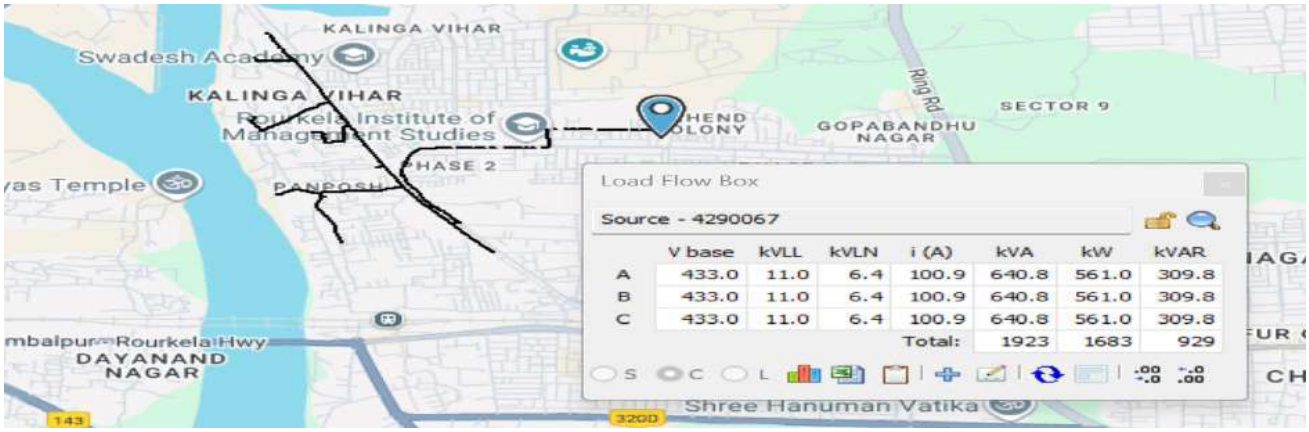
Name of PSS	11kV Feeder Name	Feeder Capacity (MVA)	Projected load FY'27 (MVA)	% Loading	Feeder Overloading Status
Panposh PSS	College	5.33	1.96	36%	OK
Chhend	Panposhbasti	5.33	3.0	56%	OK

Proposed GIS SLD

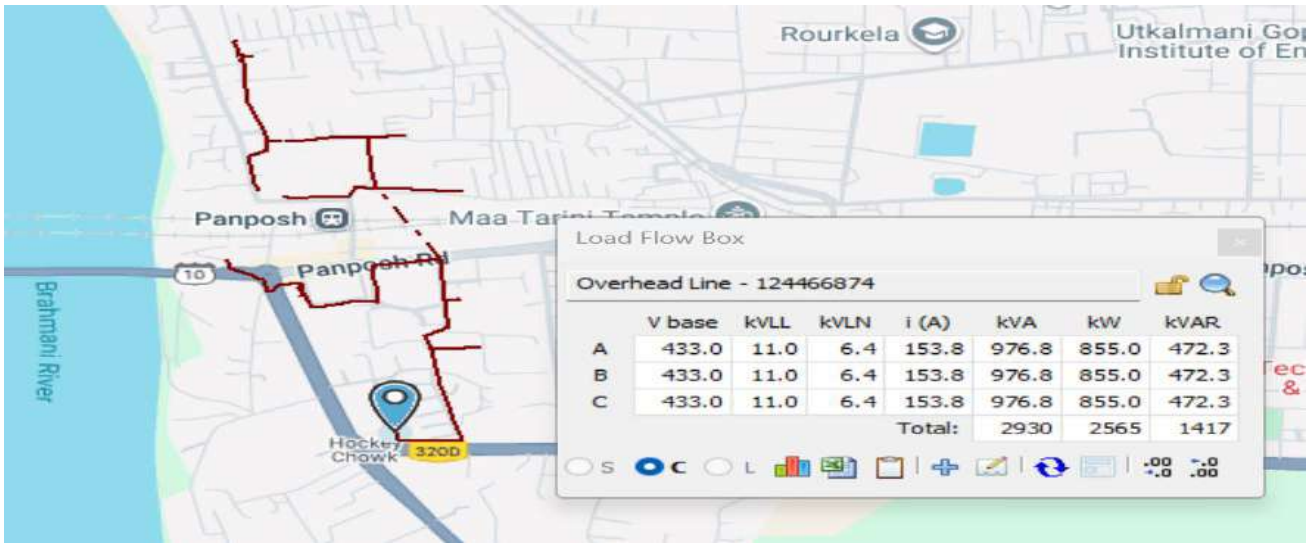


Load Flow Study of the existing scenario in Cyme Software with 2 Yr Load Growth:

At Panposh Basti Feeder:-



At Collage Feeder:-



Scope of Work:

- New line of 1.2Km of 11kV line using 100 sq.mm, AAAC using 11Mtr. WPB Poles.
- New line, 0.15CKM,2R,3C, XLPE,300Sqmm for Railway Crossing.
- One no of 3WAY RMU 11KV LLV, AUX PT & FRTU.

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Panposh	
Name of Section:-	Panposh	
Name of the Work :-	11KV Link Line between 11KV College(Panposh) feeder and Panposhbasti feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART-A: New Line,1.2Ckm,11kV, AAAC,100Sqmm (Refer Annexure-112)	**₹ 28,31,292.00**
2	PART-A: New Line,0.3Ckm,11kV,3C, XLPE,300Sqmm (Refer Annexure-166))	**₹ 18,47,452.05**
3	PART-C: 11 KV RMU (3-WAY, LLV, AUX PT & FRTU) (Refer Annexure-102)	**₹ 16,14,807.00**
	Total Amount	**₹ 62,93,551.05**
	Total Amount (In Cr.)	**₹ 0.63**
Total estimated cost is Rs 0.63Crore. (On TPWODL Capex Scheme)		

Estimated cost is Rs 0.63 Crore

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Chhend**	Panposhbasti	4258	209	**48**	**424072**	**17.4**
	Panposh	College	736	10			
After Proposal	**Chhend**	Panposhbasti	1922	52			
	Panposh	College	2930	64			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	63.00	Rs. Lac
B	Load due to load growth	-	485.32	kVA
C	Total kW due to load growth	1.732*33*B*Pf	425	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2525865	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	35.99	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	17.40	Rs. Lac
J	Net Revenue Collected	H+I	53.39	Rs. Lac
K	% revenue return	(J/A)*100	84.8	%
L	Pay Back Period	100/K	1.18	Years

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Panposhbasti feeder.
- By linking 11KV College from Panposh PSS, can ensure load diversion in case of requirement to maintain reliability, ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.

Improving Reliability(N-1) of 11kV (HRF) Feeder

Proposal for Reliability improvement(N-1) of 11kV Birshamunda(HRF) Feeder:

Proposal:

11KV New feeder from Panposh PSS to Tribal Museum Lane for N-1 of BirshaMunda feeder and to improve reliability.

Requirement/ Need of the proposal:

Objective:

New 11kV Feeder from Panposh PSS to provide (N-1) reliability of Birshamunda Feeder.

Existing Scenario:

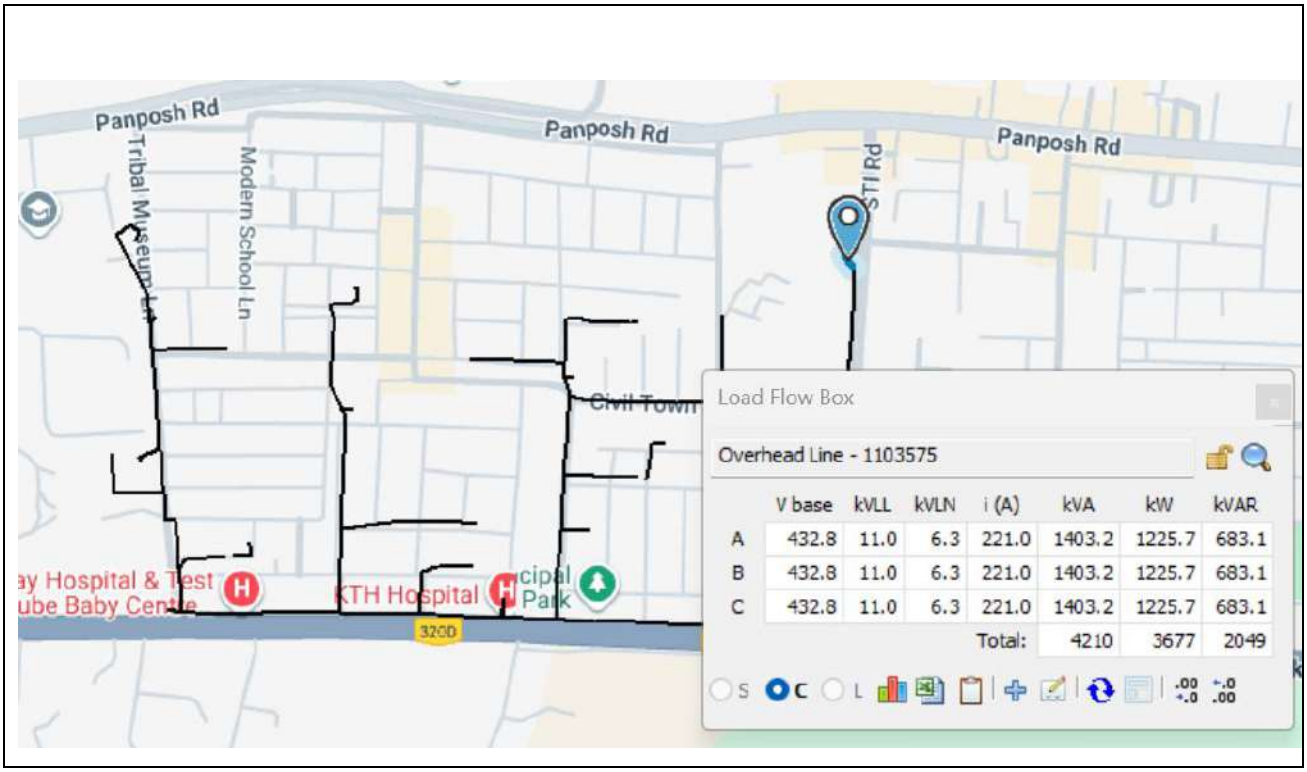
- At present, 11kV Birshamunda feeder is a critical feeder emanating from 33/11kV Birshamunda PSS. The total trunk length of this feeder is 3.56 km and the peak load is 222Amps.
- The trunk conductor size of 11 kV Birshamunda feeder emanating from Birshamunda PSS is 80/100 Sqmm AAAC.
- This feeder is proposed to ensure safe power supply to the domestic as well as commercial HT as well as LT consumers.
- At present the feeder is loaded 76% and will go upto 92% loaded with a 2 Year Load growth.
- Several breakdowns on the 11kV feeder hamper the reliability of the power supply. Also, considering the future load growth of the upcoming consumers, this new feeder is proposed to supplement the existing feeder to meet N-1 Compliance.

Existing FY-25 Loading and projected load at 11 kV Birshamunda Feeder:

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Projected load FY-27)**	**% Loading**	**Feeder Overloading Status**
Civil Township	Birshamunda	4.6	3.56	77%	Ok	4.29	93%	Ok

GIS Map:

Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



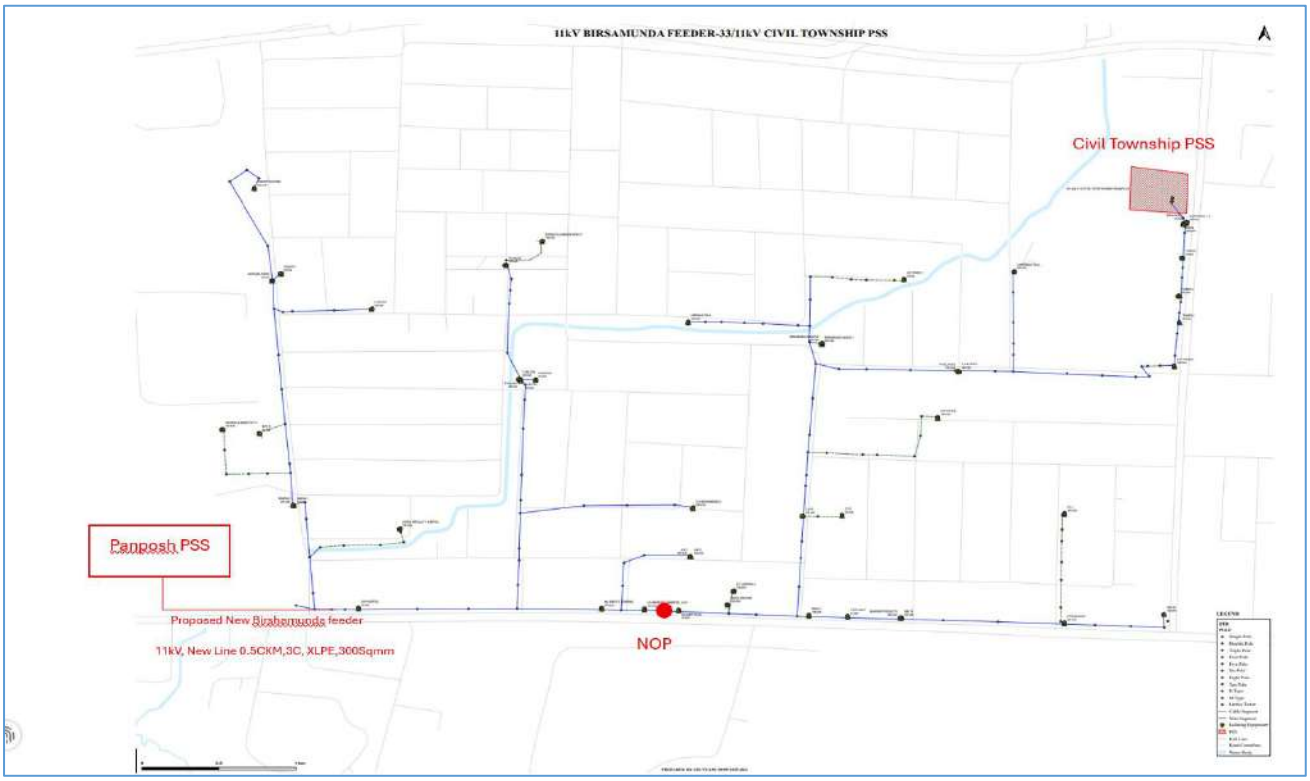
Proposed Scenario:

- 11KV New U/G Feeder is proposed from Panposh PSS to Tribal Museum Lane for load Bifurcation from the existing 11KV Birshamunda Feeder.
- After bifurcation the existing 11kV Birshamunda feeder will be divided into two parts, the existing 11kV Birshamunda feeder will be loaded upto 43% of its capacity and the new 11KV feeder will be loaded upto 40% of its capacity.

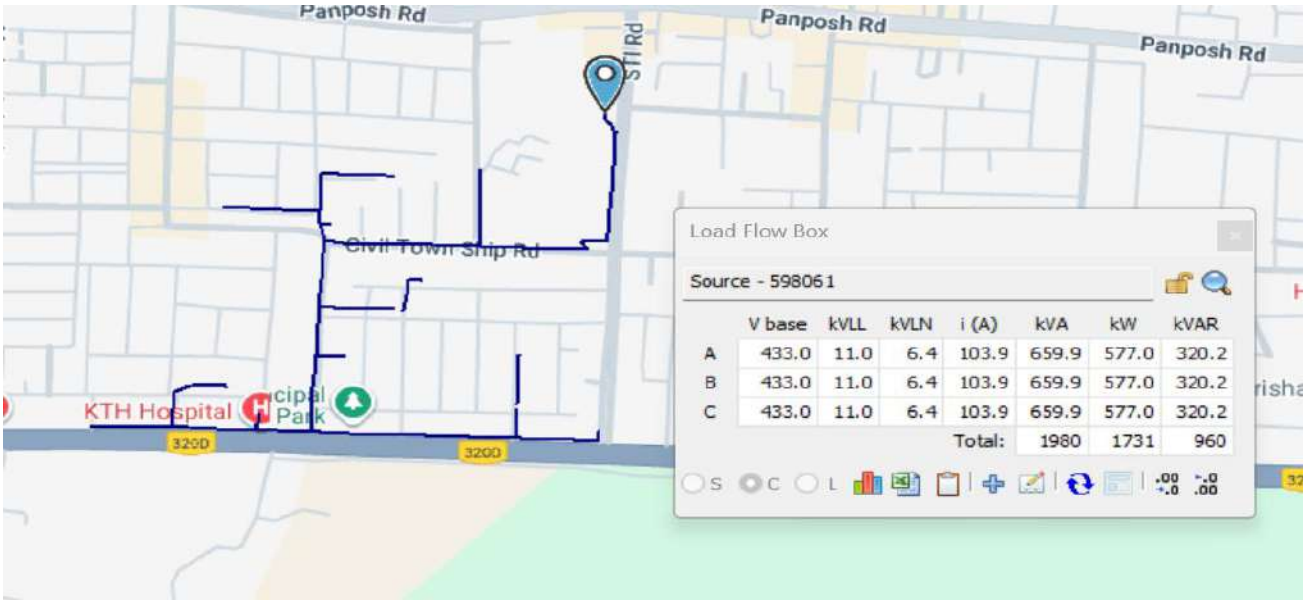
Proposed FY-27 Loading and projected load at 11 kV Birshamunda Feeder:

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Civil Township	Birshamunda	5.3	2.0	43%	OK
Panposh	New Feeder	5.3	2.21	40%	OK

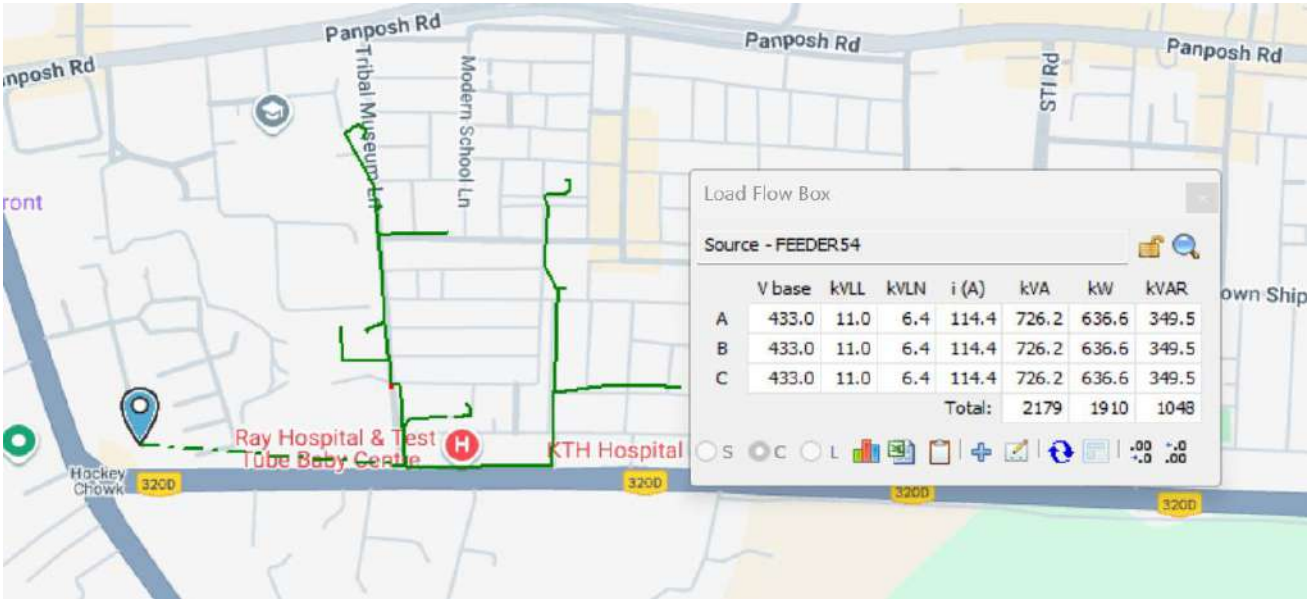
Proposed GIS SLD:



Load Flow Study of Birshamunda feeder in proposed scenario at Cyme Software:



Load Flow Study of NEW feeder in proposed scenario at Cyme Software:



Scope of Work:

- New 11kV line Feeder,0.5Ckm,3C,XLPE,300Sqmm.
- One No's of 11kV, Bay (O/D with VCB,CT & CRP) For Feeder Protection.
- One No's of 11 KV RMU (3-WAY , LLV, AUX PT & FRTU) .

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Industrial Estate	
Name of Section:-	Civil Township	
Name of the Work :-	11KV New feeder from Panposh PSS to Tribal Museum Lane for N-1 of Birsa Munda feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART-A: New Line,0.5Ckm,11kV,3C, XLPE,300Sqmm (Refer Annexure-166)	**₹ 61,58,173.50**
2	PART-B: One No's of 11kV, Bay (O/D with VCB, CT & CRP) For Feeder Protection. (Refer Annexure-163)	**₹ 16,38,577.00**
3	PART-C: 11 KV RMU (3-WAY, LLV, AUX PT & FRTU) (Refer Annexure-100)	**₹ 16,14,807.00**
	Total Amount	**₹ 94,11,557.50**
	Total Amount (In Cr.)	**₹ 0.94**
Total estimated cost is Rs.. 0.94Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.94Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Civil Township**	Birshamunda	2564	57	**2**	**16798**	**0.7**
After Proposal	**Civil Township**	Birshamunda	1731	32			
	Panposh	New Birshamunda	2179	21			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	94.00	Rs. Lac
B	Load due to load growth	-	392.92	kVA
C	Total kW due to load growth	1.732*33*B*Pf	344	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2044966	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	29.14	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.70	Rs. Lac
J	Net Revenue Collected	H+I	29.84	Rs. Lac
K	% revenue return	(J/A)*100	31.7	%
L	Pay Back Period	100/K	3.15	Years

Benefit to the system and consumers:

- Reliability improvement 11kV Birshamunda feeder comes under critical Feeder.
- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Birshamunda feeder.
- Providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Mitigation of 11kV Feeder Overloading Issue

Proposal for overloading mitigation and Reliability improvement of 11kV College Feeder:

Proposal:

11kV New feeder from Civil Township 33/11KV PSS to bifurcate College Feeder to mitigate overloading.

Requirement/ Need of the proposal:

Objective: New 11kV Feeder from Civil township 33/11KV PSS to mitigate overloading and to improve reliability(N-1) of College Feeder.

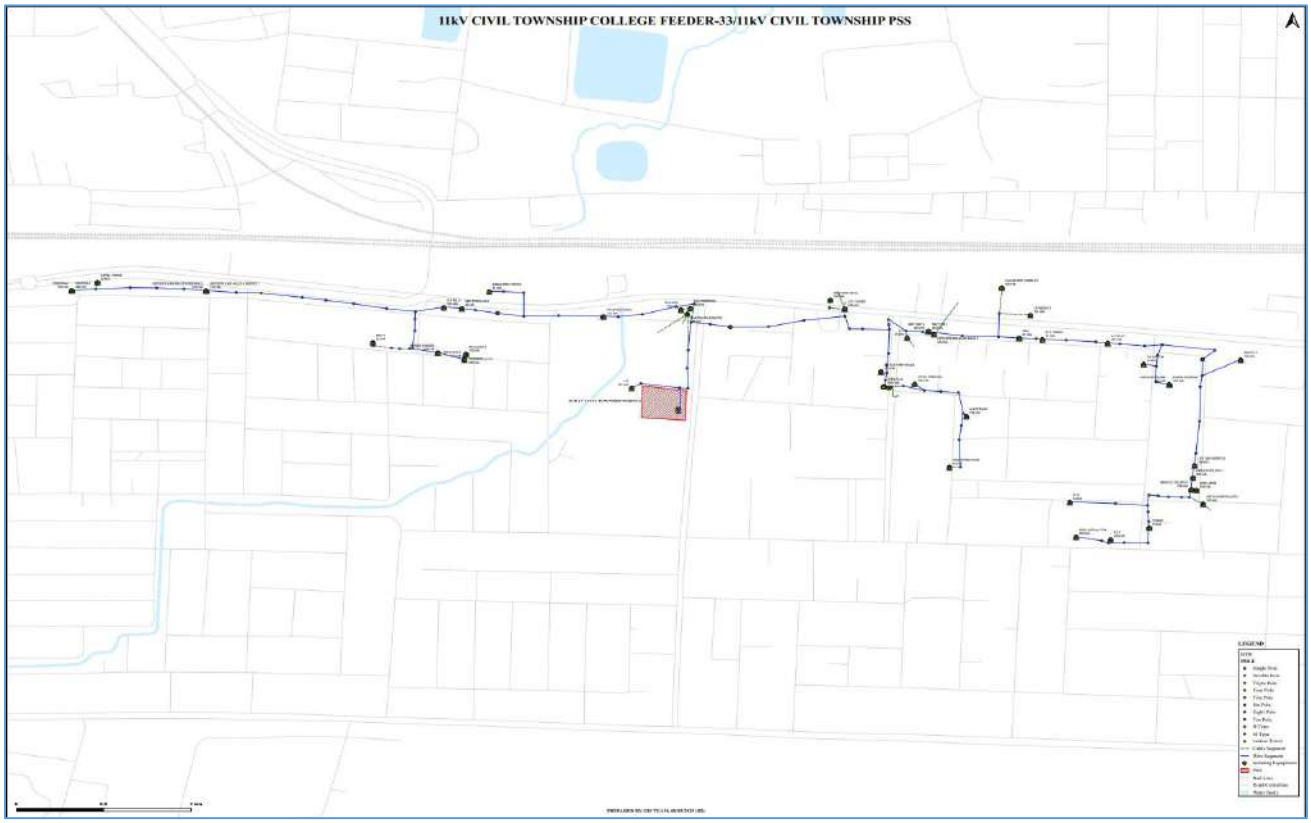
Existing Scenario:

- At present, 11kV College feeder emanating from 33/11kV Civil Township PSS. The total trunk length of this feeder is 3.56 km and the peak load is 222 Amps This feeder identified as a Critical feeder.
- The trunk conductor size of 11 kV College feeder emanating from Civil Township PSS is 80/100 Sqmm AAAC.
- At present the feeder is loaded upto 93% and will go upto 113.0 % loaded with a 2 Year Load growth.

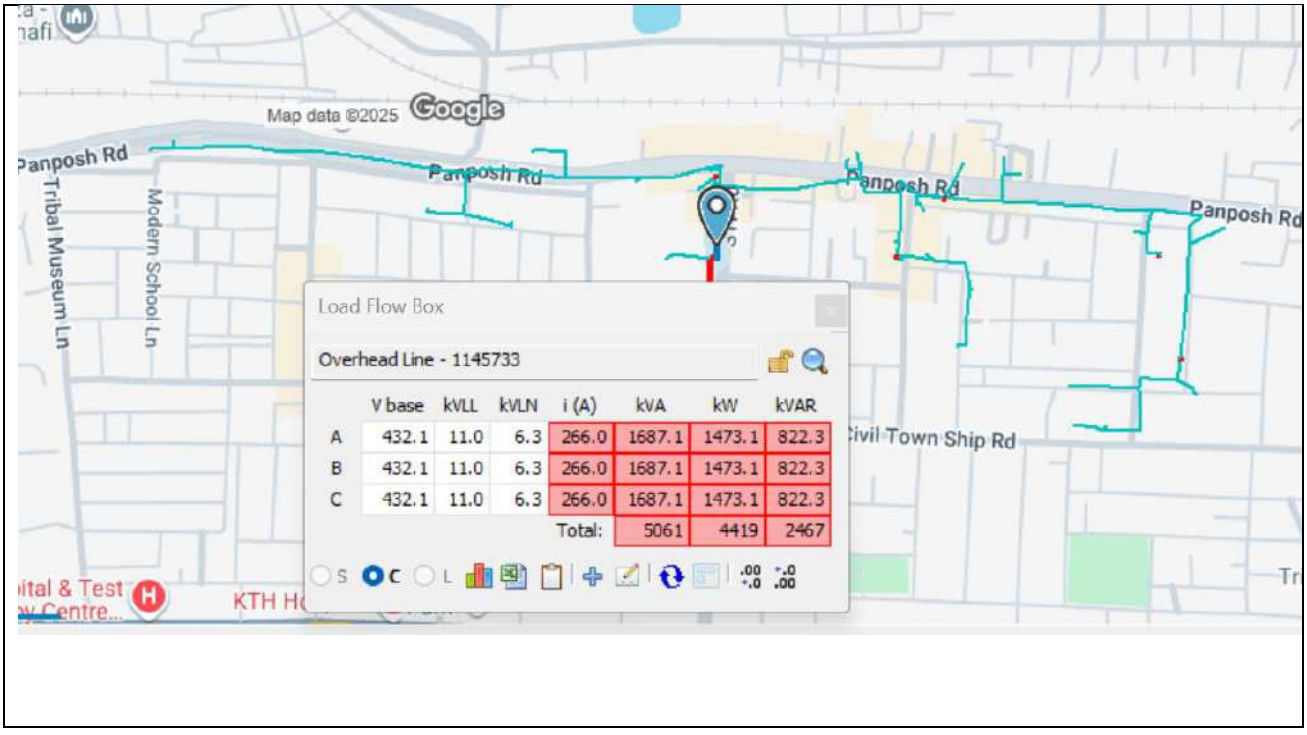
Existing FY-25 Loading and projected load at 11 kV College Feeder:

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (AMP)**	**% Loading**	**Feeder Overloading Status**
Civil Township	College	4.6	4.3	93%	Ok	5.24	113.0 %	Overload

GIS Map:



Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



Proposed Scenario:

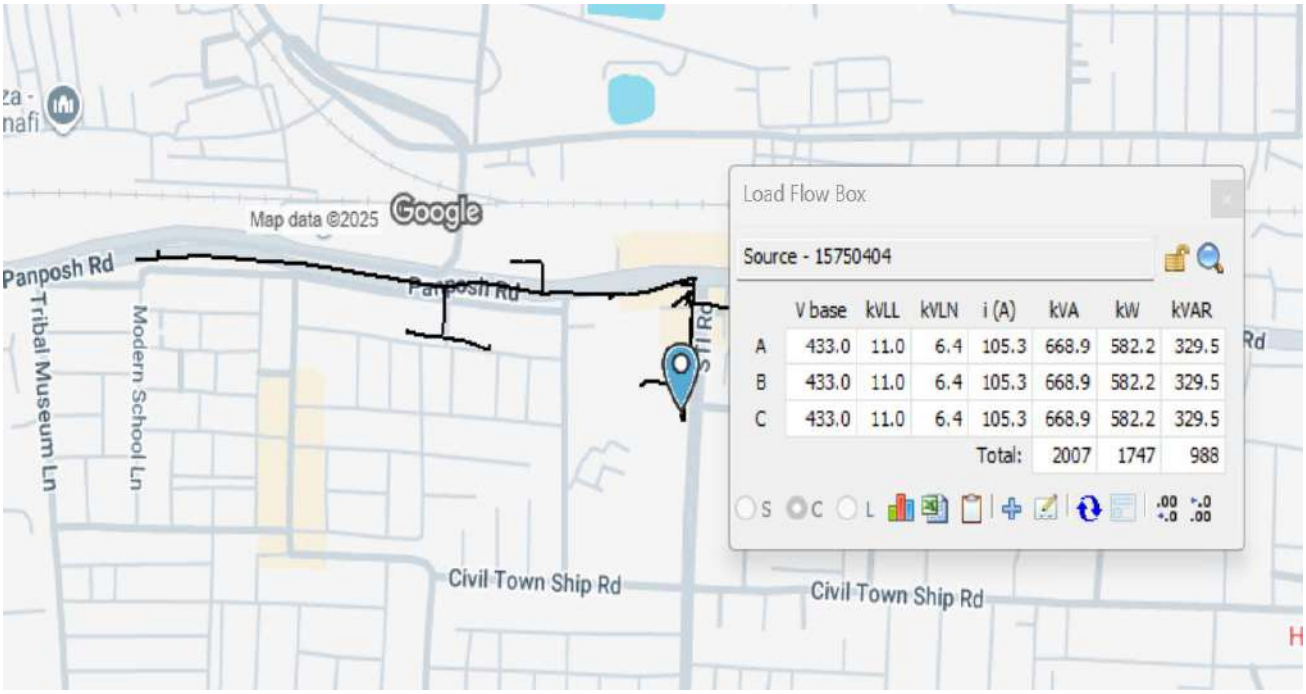
- 11KV New Feeder with UG XLPE is proposed from Civil Township PSS(E-House) to near Lifeline for Hospital load Bifurcation from the existing 11KV College Feeder.
- As the Switchgear is Indoor, and no spare breaker is available. The new feeder will be evacuated through Outdoor Bay from New Transformer.
- This feeder is proposed to ensure reliable power supply to the domestic as well as commercial HT as well as LT consumers.
- With future load growth from new consumers additional feeder is planned reliable power , ensuring N-1 connectivity.
- After bifurcation the existing 11kV College feeder will be divided into two parts, the existing 11kV College feeder will be loaded upto 56% of its capacity and the new 11KV feeder will be loaded upto 60% of its capacity.

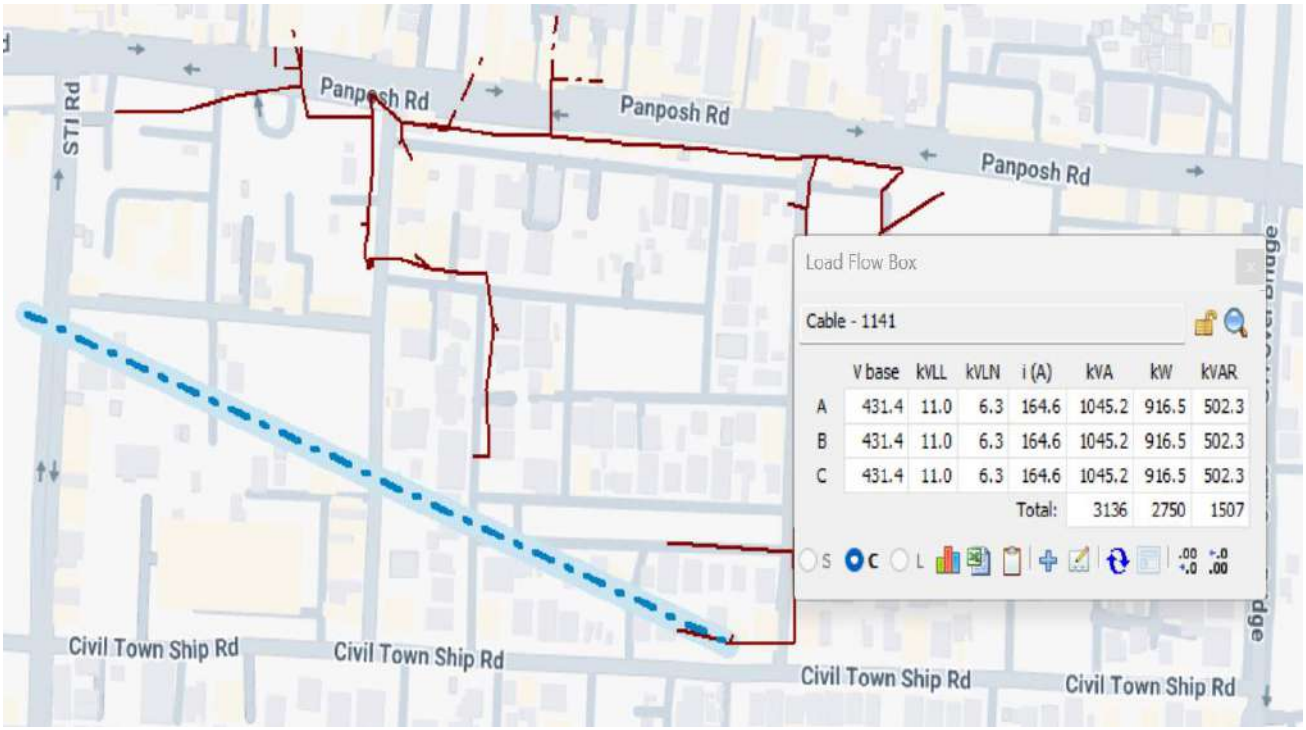
Proposed FY-27 Loading and projected load at 11 kV College Feeder:

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Civil Township	College	3.6	2.03	56%	OK
Civil Township	New College	5.3	3.18	60%	OK

Proposed GIS SLD:

Load Flow Study of the proposed scenario in Cyme Software:





Scope of Work:

- Proposal for a new 11KV U/G Feeder from 33/11kV Civil Township PSS using 11KV 3CX400 Sq.mm.
- XLPE U/G for 0.5Ckm and 0.5Ckm Insulated AAAC.
- 11 KV RMU (3-WAY, LLV, AUX PT & FRTU)
- 11 KV RMU (4-WAY, LLVV, AUX PT & FRTU)

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Sub-Division : -	Industrial Estate	
Name of Section:-	Civil Township	
Name of the Work :-	11kV New feeder from Civil Township 33/11KV PSS to near Lifeline Hospital for load shifting of College Feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART A: New Line,0.5Ckm,11kV, Insulated, AAAC,100Sqmm (Refer Annexure-170)	**₹ 14,58,414.20**
2	PART-B: New Line,0.5Ckm,11kV,3C,2R XLPE,300Sqmm (Refer Annexure-166)	**₹ 61,58,173.50**
3	PART-C: 11 KV RMU (3-WAY, LLV, AUX PT & FRTU) (Refer Annexure-102)	**₹ 16,14,807.00**
4	PART-D: 11 KV RMU (4-WAY, LLVV, AUX PT & FRTU) (Refer Annexure-101)	**₹ 20,33,445.00**
	Total Amount	**₹ 1,12,64,839.70**
	Total Amount (In Cr.)	**₹ 1.13**
Total estimated cost is Rs.1.13Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.13Cr. (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Civil Township**	College	4501	82	**2**	**18527**	**0.8**
After Proposal	**Civil Township**	College	1747	26			
	Civil Township	New College	2750	52			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	113.00	Rs. Lac
B	Load due to load growth	-	480.05	kVA
C	Total kW due to load growth	1.732*33*B*Pf	420	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2498437	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	35.60	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.80	Rs. Lac
J	Net Revenue Collected	H+I	36.40	Rs. Lac
K	% revenue return	(J/A)*100	32.2	%
L	Pay Back Period	100/K	3.10	Years

Benefit to the system and consumers:

- Overloading mitigation of existing 11kV College feeder.
- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV College feeder.
- Providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Reliability (N-1) for 11KV BIRAMITRAPUR TOWN 01 & TOWN 02 RURAL FEEDER

Proposal for reliability improvement and shifting of Urban Load from 11kV Biramitra Town 02 Rural Feeder.

PROPOSAL:

11KV New line between 11KV Biramitrapur Town-01 & 11 KV Biramitrapur Town-02 Rural Feeder for N-1 Connectivity of 11 KV Biramitrapur Town-02 Rural Feeder.

REQUIREMENT/NEED OF THE PROPOSAL:

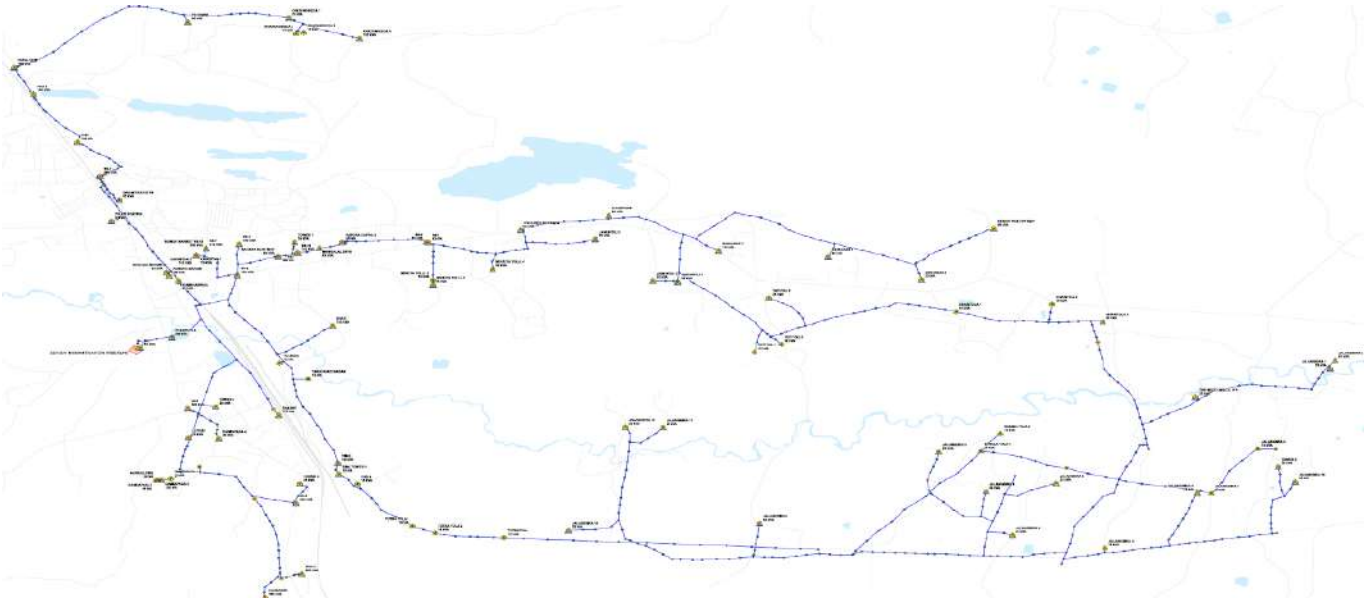
Objective: 11kV new link line 0f 0.3 Ckm between 11kV Biramitrapur Town-01 Feeder & Biramitrapur Town-02 Rural Feeder to shift Urban/Town load to Biramitrapur Town-01 Feeder from Rural Feeder and improve reliablity.

EXISTING SCENARIO: -

- The 11kV Biramitrapur Town-02 Rural Feeder is emanating from 33/11KV Biramitrapur PSS with feeder length of 33 Ckms.
- The Tail End Voltage of 11KV Sorada Feeder is 10.67 kV.
- The 11kV Biramitrapur Town-02 Rural Feeder peak load is 140 A. After 1 year load growth the peak load goes up to 165 Amps with feeder end voltage of 10.63 kV.
- The 11KV Biramitrapur Town-02 Rural Feeder consists of mixed Town/Urban & Rural Load.
- Due to long feeder length there is a always a issue in maintenance of the feeder for which a part of town load gets effected.
- The 11kV Biramitrapur Town-01 Feeder feeder is emanating from Biramitrapur PSS with feeder lenth of 6ckms.
- The 11kV Biramitrapur Town-01 feeder peak loading is 76 Amp feeds the Town Area Load only.

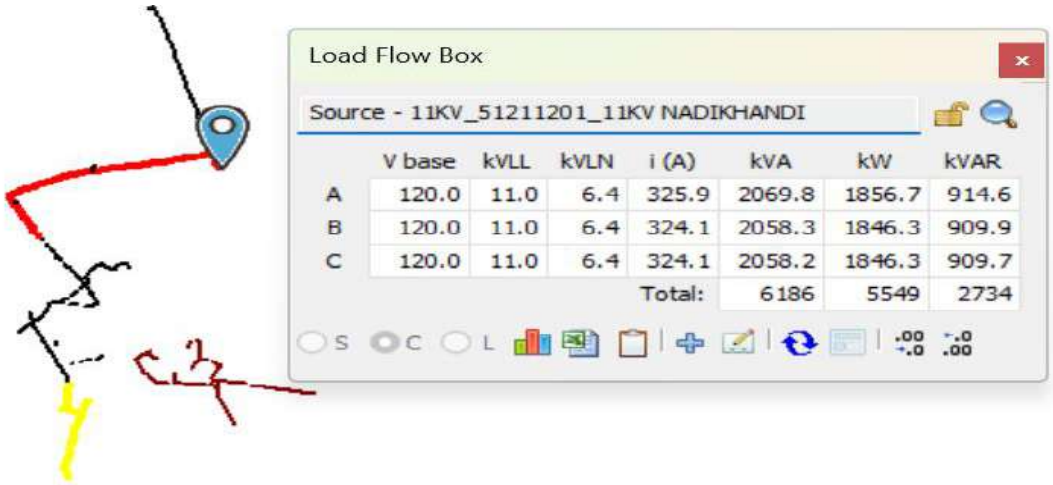
	Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Tail End Voltage**	**Feeder Overloading Status**
Biramitrapur	Town 02	3.8	2.8	74%	OK	3.2	85%	10.67	OK

GIS Map:



Existing SLD:

Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



Proposed Scenario:

- A 11kV link line(0.3Ckm) from 11kV Biramitrapur Town-01 Feeder from ST. Mary Convent School Location is proposed using AAAC 100Sqmm up to Auto Stand of 11kV Biramitrapur Town-02 Rural Feeder.
- 2 Nos DP with 02 Nos of AB switch is proposed at tapping point of 11kV Biramitrapur Town-02 Rural Feeder (Auto Stand).
- Interlinking of 11kV Biramitrapur Town-02 Rural Feeder with 11kV Biramitrapur Town-01 Feeder from Biramitrapur PSS.
- This new feeder link will shift all the Town/Urban load from 11kV Biramitrapur Town-02 Rural Feeder to Town 01 Urban/Town Feeder.

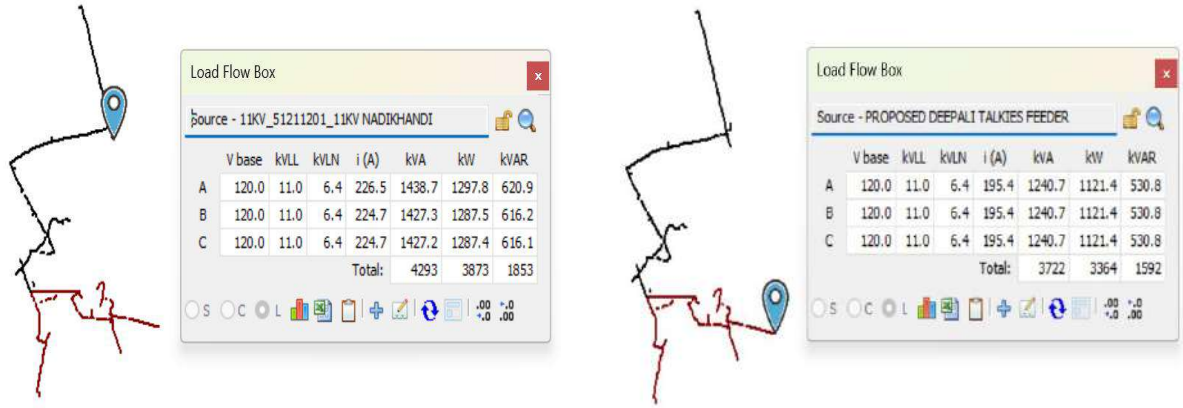
Proposed Summer'27 Loading and projected load at 11 Kv Town-1 & Town-2 Feeder.

Loading after Proposal (FY-27)							
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Tail End Voltage**	**REMARKS**
Biramitrapur	TOWN 02 (RURAL)	3.8	3.3	87%	OK	10.67	OK
Biramitrapur	TOWN 01 (URBAN)	5	1.56	31%	OK	10.9	OK

- After bifurcation the existing 11KV Biramitrapur Town-02 Rural Feeder will be divided into two parts & all the Urban/Town Load will shift to 11KV Biramitrapur Town-01 Feeder & new 11KV feeder will be loaded upto 31% of its capacity.

- This will improve the reliability for the supply of Town area & N-1 for Town 01 & Town 02 Feeder emanating from 33/11 KV Biramitrapur PSS.

Proposed GIS SLD



Scope of Work:

- 0.3 Ckm of 11kV link line using 100 sq.mm AAAC conductor & 11 Mtr WPB poles.
- Installation of 02 Numbers of 400-amp AB switch on DP structure of 11 Mtr WPB poles.

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED, RAJGANGPUR**	
Name of the Sub-Division:	SDO, KUARMUNDA	
Name of Section: -	BIRAMITRAPUR	
Name of the Work: -	Proposal for New Link Feeder from 11KV Biramitrapur Town-01 Feeder and 11 KV Biramitrapur Town-02 Rural Feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11 KV NEW LINE (Refer Annexure-112)	6,28,152.00
2	**PART B:** DP with AB Switch (Refer Annexure-171)	6,16,339.00
	Total Amount	**12,44,491.00**
	Total Amount (In Cr.)	**0.12**
Total estimated cost is Rs.0.12 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.12 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	33kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**BIRAMITRAPUR**	TOWN-01	1222	59				Urban/Town Feeder
	BIRAMITRAPUR	TOWN-02	2597	71				Feeder consists of mixed Town/Urban & Rural Load.
After Proposal	**BIRAMITRAPUR**	TOWN-01	1782	72	**2**	**14410**	**0.6**	The existing 11KV Biramitrapur Town-02 Rural Feeder will now bear only the Rural Part Load & 11KV Biramitrapur Town-01 Feeder will bear the Urban/Town area.
	BIRAMITRAPUR	TOWN-02	2036	55				Improve the reliability for the supply of Town area & N-1 Source for each other

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	12.50	Rs. Lac
B	Load due to load growth	-	516.77	kVA
C	Total kW due to load growth	1.732*33*B*Pf	452	kW

D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2689548	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	38.33	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.60	Rs. Lac
J	Net Revenue Collected	H+I	38.93	Rs. Lac
K	% revenue return	(J/A)*100	311.4	%
L	Pay Back Period	100/K	0.32	Years

Benefit to the system and consumers:

- The Urban/Town Load from Biramitrapur Town-02 Rural Feeder will be shifted to Biramitrapur Town-01 Feeder to get a relaible supply.
- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Biramitrapur Town-02 Rural Feeder & Town 01 Feeder.
- By linking 11KV Biramitrapur Town-02 Rural Feeder from Biramitrapur PSS, can ensure load diversion in case of requirement to maintain reliability ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Low Voltage Mitigation & Reliability (N-1) for 11KV LUKUMBEDA & SORADA Feeder

1.0 Proposal Low Voltage Mitigation of Soroda feeder with new Link Line From Lukumbeda Feeder.

PROPOSAL:

11KV New Link Line Between Lukumbeda & Sorda Feeder for load shifting and N-1 connectivity.

REQUIREMENT/NEED OF THE PROPOSAL:

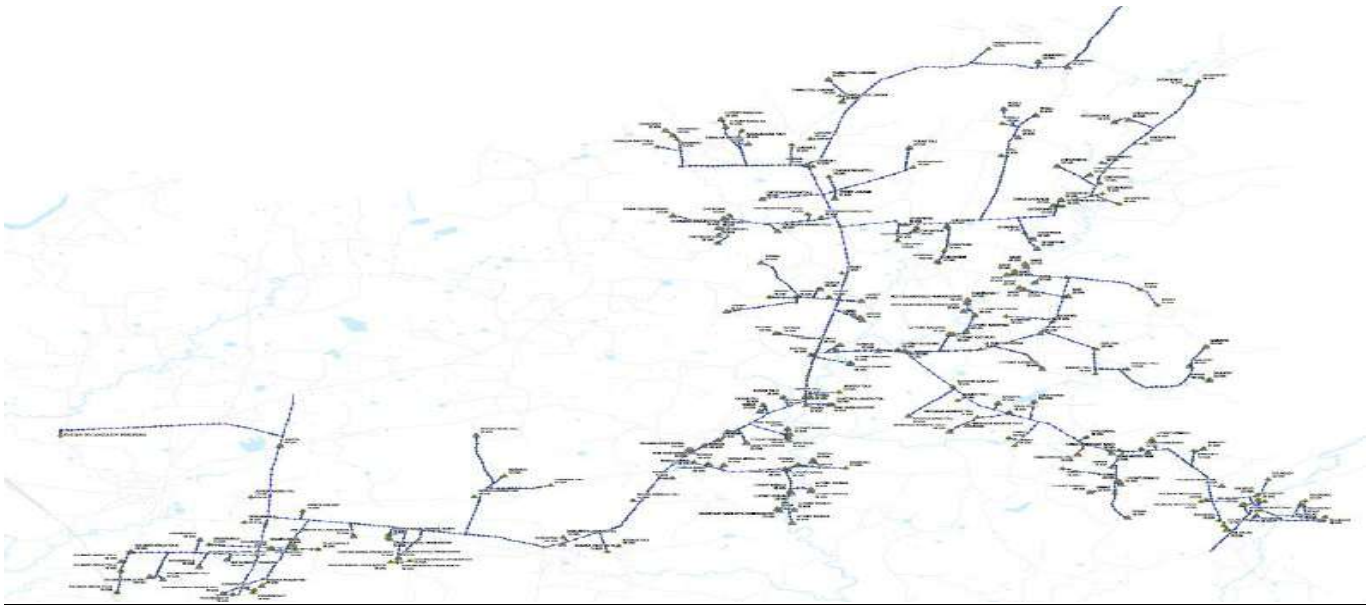
Objective: 11kV new link line of 2 Ckm between 11kV Lukumbeda feeder & 11kV Sorada feeder for Low Voltage Mitigation Of Soroda Feeder as well as For N-1 Connectivity.

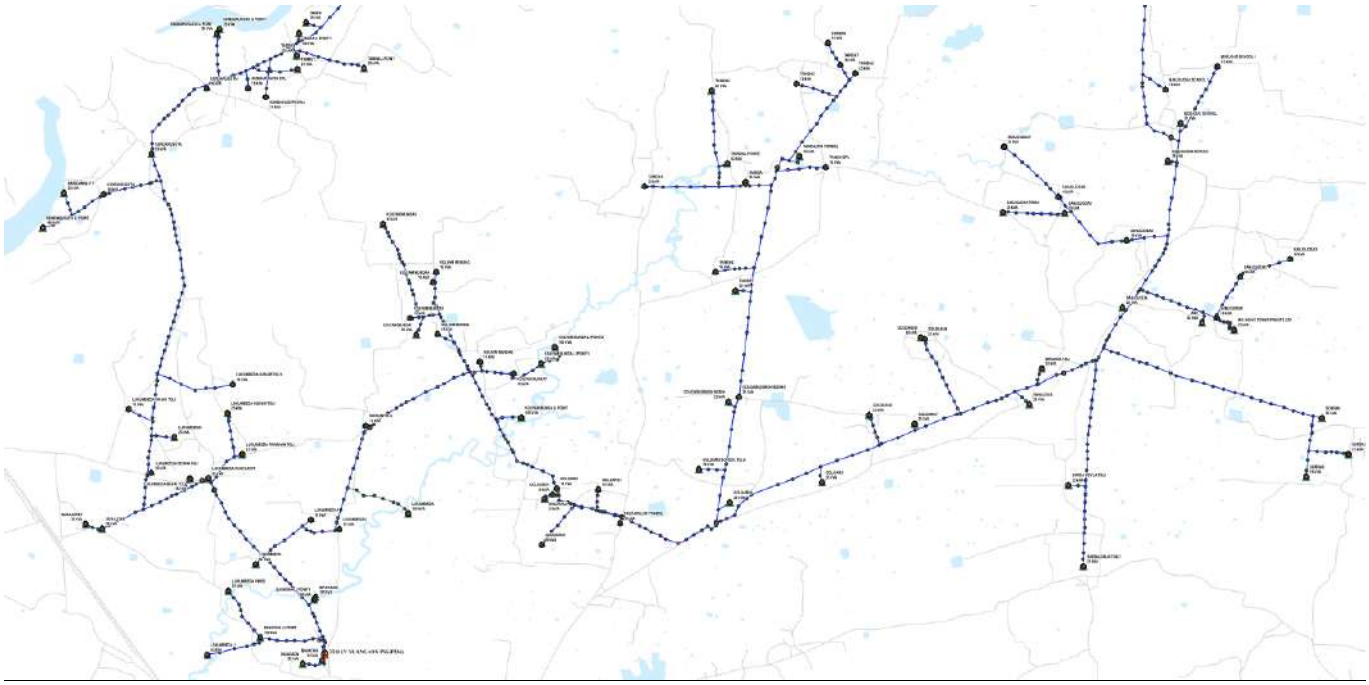
EXISTING SCENARIO: -

- The 11kV Sorada feeder is emanating from 33/11KV Nuagaon PSS with feeder length of 109 Ckms.
- The Tail End Voltage of 11KV Sorada Feeder is 8.67 kV.
- The 11kV Sorada feeder peak load is 146 A. After 1 year load growth the peak load goes up to 170 Amps with feeder end voltage of 8.37kV.
- Due to long feeder length & low tail end voltage there is a huge revenue loss in Sorada Feeder.
- The 11kV Lukumbeda feeder is emanating from Nuagaon PSS with feeder lenth of 50ckms.
- The 11kV Lukumbeda feeder peak loading is 60 Amp & passes nearby 11KV Sorada Feeder.

	Existing Scenario								
Name of PSS	11kV Feeder Name	Feeder Capacity (MVA)	Peak Loading FY-25 (MVA)	% Loading	Feeder Overloading Status (AS IS)	Projected load FY-27 (MVA)	% Loading	Tail End Voltage	Feeder Overloading Status
Nuagaon	Sorada	3.5	2.8	74%	Overload	3.3	86%	8.67 KV	Undervoltage

GIS Map:





Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:

Load Flow Box

Node - 36668614

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	101.1	9.6	5.3	124.4	665.4	577.9	330.0
B	106.4	10.0	5.6	129.8	730.9	648.2	337.7
C	115.3	10.0	6.1	71.2	434.5	379.8	211.0
				Total:	1831	1606	879

Proposed Scenario:

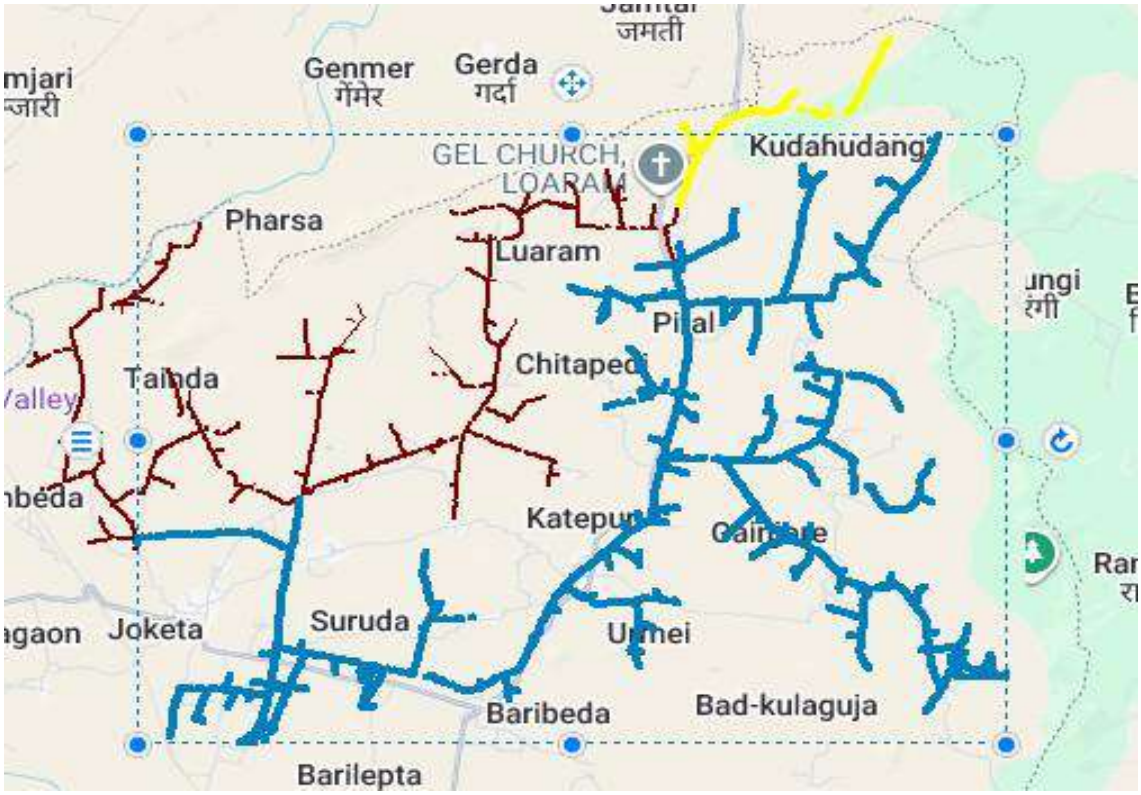
- A 11kV link line(2Ckm) from 11KV Lukumbeda feeder from Tail end Kadalka Location is proposed using insulated AAAC 100Sqmm up to Luaram Location of 11KV Sorada Feeder.
- 1 Nos DP with 1 Nos of AB switch is proposed at tapping point of Lukumbeda feeder.
- Interlinking of 11KV Sorada feeder with 11KV Lukumbeda Feeder from Nuagaon PSS.

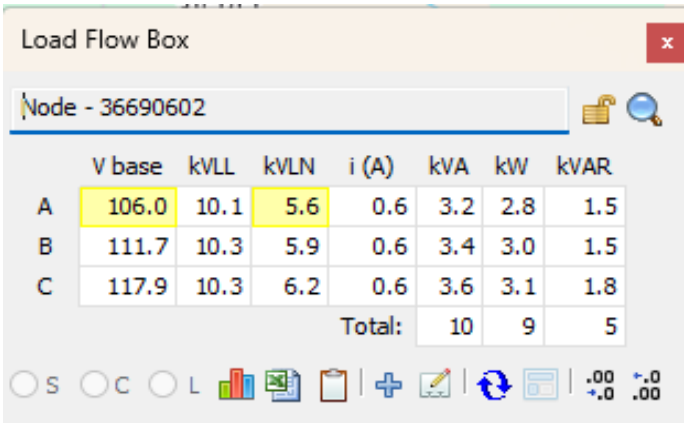
Propose FY'27 Loading and projected load at 11 kV Sorada & Lukumbeda Feeder.

Loading after Proposal (FY-27)							
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Tail End Voltage**	**REMARKS**
Nuagaon	SORADA	3.5	2.7	77%	OK	10.1	OK
Nuagaon	LUKUMBEDA	3.5	1.8	51%	OK	10.5	OK

- After bifurcation the existing 11KV SORADA feeder will be divided into two parts, the existing 11KV LUKUMBEDA feeder will be loaded upto 51% of its capacity and the new 11KV feeder will be loaded upto 77% of its capacity.

Proposed GIS SLD





Scope of Work:

- 2 Ckm of 11kV link line using 100 sq.mm Covered conductor & 11 Mtr WPB poles.
- Installation of 02 Numbers of 400-amp AB switch on DP structure of 11 Mtr WPB poles.

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED, RAJGANGPUR**	
Name of the Sub-Division:	SDO, KUARMUNDA	
Name of Section: -	NUAGAON	
Name of the Work: -	11KV LINK LINE BETWEEN LUKUMBEDA & SORDA FEEDER	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11 KV NEW LINE (Refer Annexure-170)	42,02,067.00
2	**PART B:** DP with AB Switch (Refer Annexure-171)	3,08,262.00
	Total Amount	**45,10,329.00**
	Total Amount (In Cr.)	**0.45 Cr**
Total estimated cost is Rs.0.45 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.45 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	33kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**NUAGAON**	LUKUMBEDA	931	33	**11**	**92266**	**3.8**	No N-1 source for reliability supply
	NUAGAON	SORADA	2288	391				Feeder is 109 Ckms in length with Low Tail End Voltage of 8.37kV.
After Proposal	**NUAGAON**	LUKUMBEDA	1491	42				N-1 Source for Reliability Achieved
	NUAGAON	SORADA	1728	360				Low Voltage Issue Mitigated.

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	45.00	Rs. Lac
B	Load due to load growth	-	217.33	kVA
C	Total kW due to load growth	1.732*33*B*Pf	190	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1131102	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	16.12	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	3.80	Rs. Lac
J	Net Revenue Collected	H+I	19.92	Rs. Lac
K	% revenue return	(J/A)*100	44.3	%
L	Pay Back Period	100/K	2.26	Years

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Sorada feeder.
- By linking 11KV Lukumbeda from Nuagaon PSS, can ensure load diversion in case of requirement to maintain reliability ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Overload Mitigation & Reliability (N-1) for 11KV COLLEGE & HOSPITAL FEEDER

Proposal for reliability improvement and Mitigation of overloading for 11kV College Feeder.

PROPOSAL:

11KV New Link line from 11KV College Feeder to 11 KV Hospital Feeder for Load shifting and with N-1 Connectivity of under Sundergarh Division.

REQUIREMENT/NEED OF THE PROPOSAL:

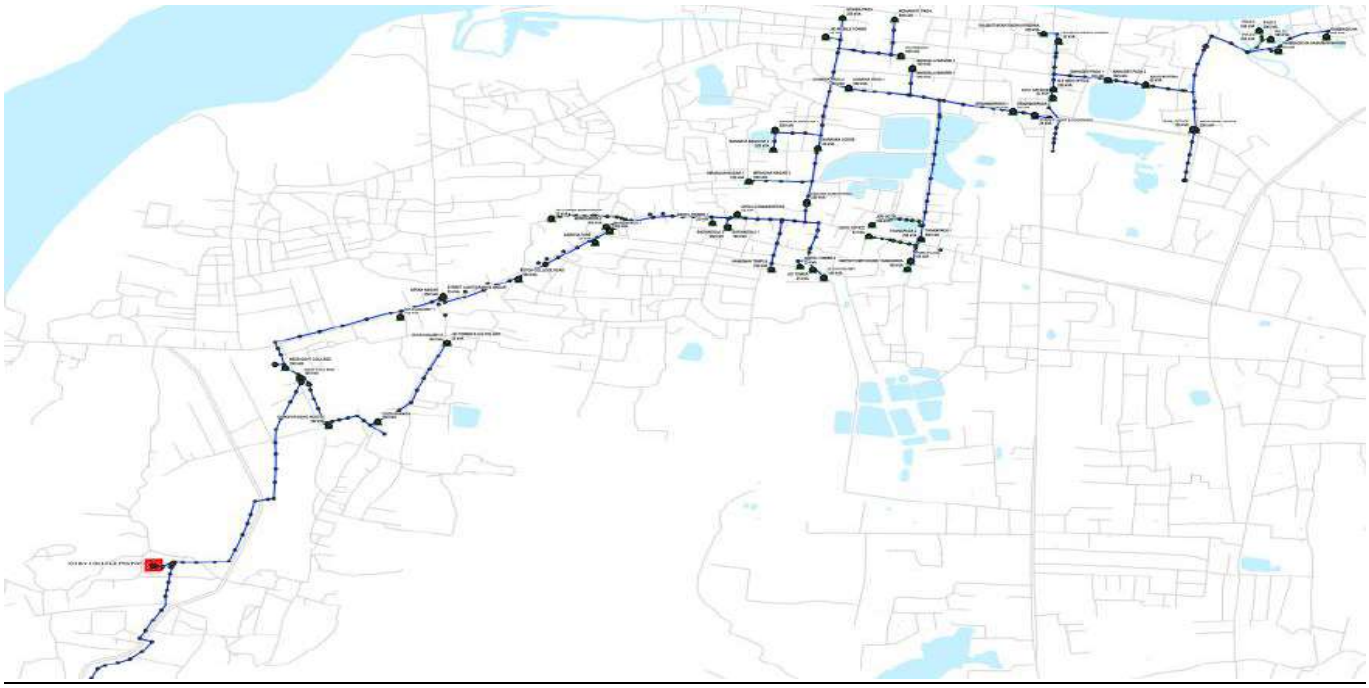
Objective: 11kV new link line 0f 0.1Ckm between 11kV College feeder & 11kV Hospital feeder to mitigate Overload issue of 11kV College feeder and improve reliablity.

EXISTING SCENARIO: -

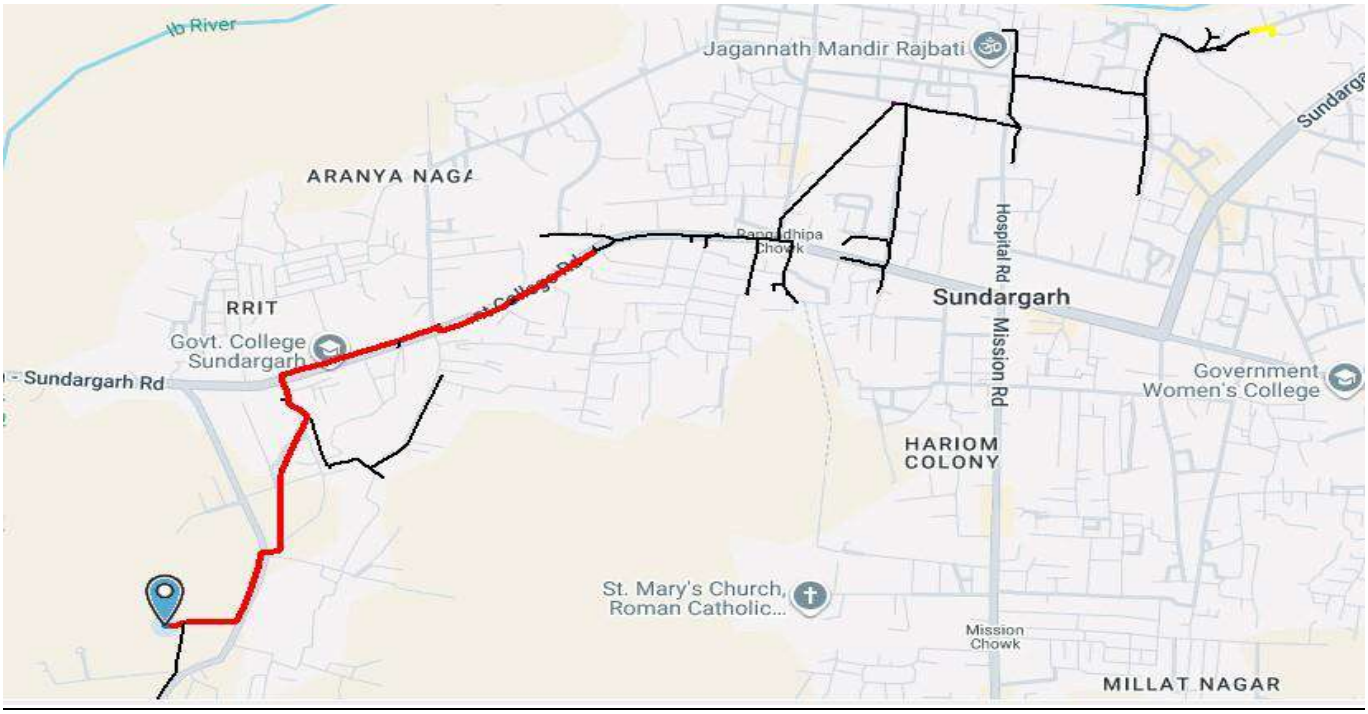
- The 11kV College feeder is emanating from 33/11KV College PSS with feeder length of 11 Ckms.
- The above feeder is a high revenue town feeder feeding the essential load of Sundargarh Town.
- The 11kV College feeder peak load is 215 A. After 1 year load growth the peak load goes up to 256 Amps with feeder end voltage of 10.1 kV.
- The 11kV Hospital feeder is emanating from College PSS with feeder lenth of 3.5 ckms.
- The 11kV Hospital feeder peak loading is 20 Amp & passes nearby 11KV College Feeder.

	Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Tail End Voltage**	**Feeder Overloading Status**
College	College	3.8	4.12	108%	Overload	5.15	136%	10.1 KV	OK

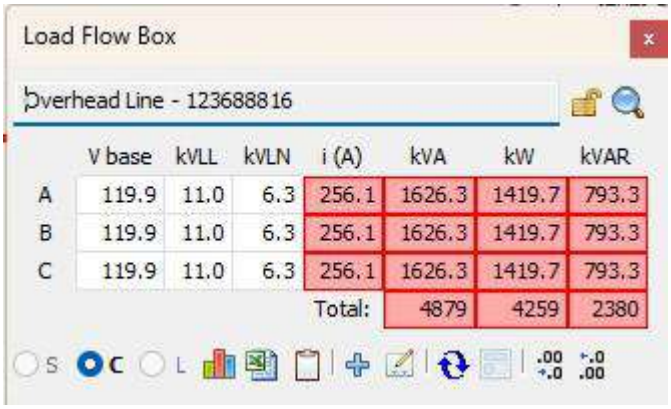
GIS Map:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:


Load Flow Box

Overhead Line - 123688816

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	119.9	11.0	6.3	256.1	1626.3	1419.7	793.3
B	119.9	11.0	6.3	256.1	1626.3	1419.7	793.3
C	119.9	11.0	6.3	256.1	1626.3	1419.7	793.3
				Total:	4879	4259	2380

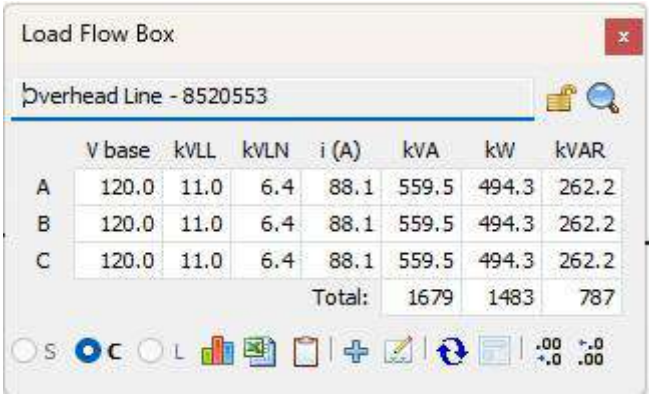
Proposed Scenario:

- A 11kV link line (0.1 Ckm) from 11KV College feeder from Thana Chowk Location is proposed using AAAC 100Sqmm up to Thana Pada Location of 11KV Hospital Feeder.
- 1 Nos 3Way RMU with 01 Nos of AB switch is proposed at tapping point of Hospital feeder.
- Interlinking of 11KV College feeder with 11KV Hospital Feeder from College PSS.
- After bifurcation the existing 11KV COLLEGE feeder will be divided into two parts, the existing 11KV COLLEGE feeder will be loaded upto 42% of its capacity and the new 11KV feeder will be loaded upto 71.1% of its capacity.

Proposed FY'27 Loading and projected load at 11 kV College & Hospital Feeder.

Loading after Proposal (FY-27)							
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Tail End Voltage**	**REMARKS**
Nuagaon	COLLEGE	3.8	5.15	87%	OK		OK
Nuagaon	HOSPITAL	5.18	3.71	71.1%	OK		OK

- After bifurcation the existing 11KV COLLEGE feeder will be divided into two parts, the existing 11KV COLLEGE feeder will be loaded upto 42% of its capacity and the new 11KV feeder will be loaded upto 71.1% of its capacity.



Proposed GIS SLD

Scope of Work:

- 0.1 Ckm of 11kV link line using 100 sq.mm AAAC conductor & 11 Mtr WPB poles.
- Installation of 01 Number Of 3 Way RMU & 01 Nos of 400-amp AB switch on DP structure of 11 Mtr WPB poles.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED, RAJGANGPUR**	
Name of the Sub-Division:	SDO, KUARMUNDA	
Name of Section: -	BIRAMITRAPUR	
Name of the Work: -	11KV New Link line from 11KV College Feeder to 11 KV Hospital Feeder for Load shifting and with N-1 Connectivity.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11 KV NEW LINE (Refer Annexure-112)	2,09,305.00
2	**PART B:** 3-WAY RMU (Refer Annexure-102)	15,49,126.00
	Total Amount	17,58,431.00
	Total Amount (In Cr.)	**0.18**
Total estimated cost is Rs.0.18 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.18 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	33kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**COLLEGE**	COLLEGE	4259	346	**46**	**400645**	**16.4**	The feeder peak load is 215 A. After 1 year load growth the peak load goes up to 256 Amps with feeder end voltage of 10.1 kV. The feeder is a high revenue which feeds the main town area of Sundergarh District
	COLLEGE	HOSPITAL	370	8				
After Proposal	**COLLEGE**	COLLEGE	1409	34				Overload Issue Mitigated With Relaible Supply
	COLLEGE	HOSPITAL	3122	224				N-1 for Relaible Supply

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	18.00	Rs. Lac
B	Load due to load growth	-	291.49	kVA
C	Total kW due to load growth	1.732*33*B*Pf	255	kW

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1517070	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	21.62	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	16.40	Rs. Lac
J	Net Revenue Collected	H+I	38.02	Rs. Lac
K	% revenue return	(J/A)*100	211.2	%
L	Pay Back Period	100/K	0.47	Years

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Sorada feeder.
- By linking 11KV College Feeder from 11KV Hospital feeder from College PSS, can ensure load diversion in case of requirement to maintain reliability ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Mitigation of 11kV Feeder Undervoltage Issue

Proposal for 11KV New feeder to mitigate Low voltage issue of Padiabahal feeder.

Proposal: 11kV New Feeder from 33/11KV Padiabahal PSS to bifurcate 11kV Padiabahal Feeder mitigating Low voltage issue at 11kV Padiabahal Feeder.

Objective:

- To mitigate the undervoltage condition and regular interruption due to lengthy feeder.
- The 11 kV Padiabahal feeder length is 111 Ckm, with a tail-end voltage of 9.8 kV.
- After the proposal of New Bhograpali feeder, the tail-end voltage of the 11 kV Padiabahal feeder will improve to 10.1 kV, while the new Bhograpali feeder will maintain a tail-end voltage of 10.6 kV

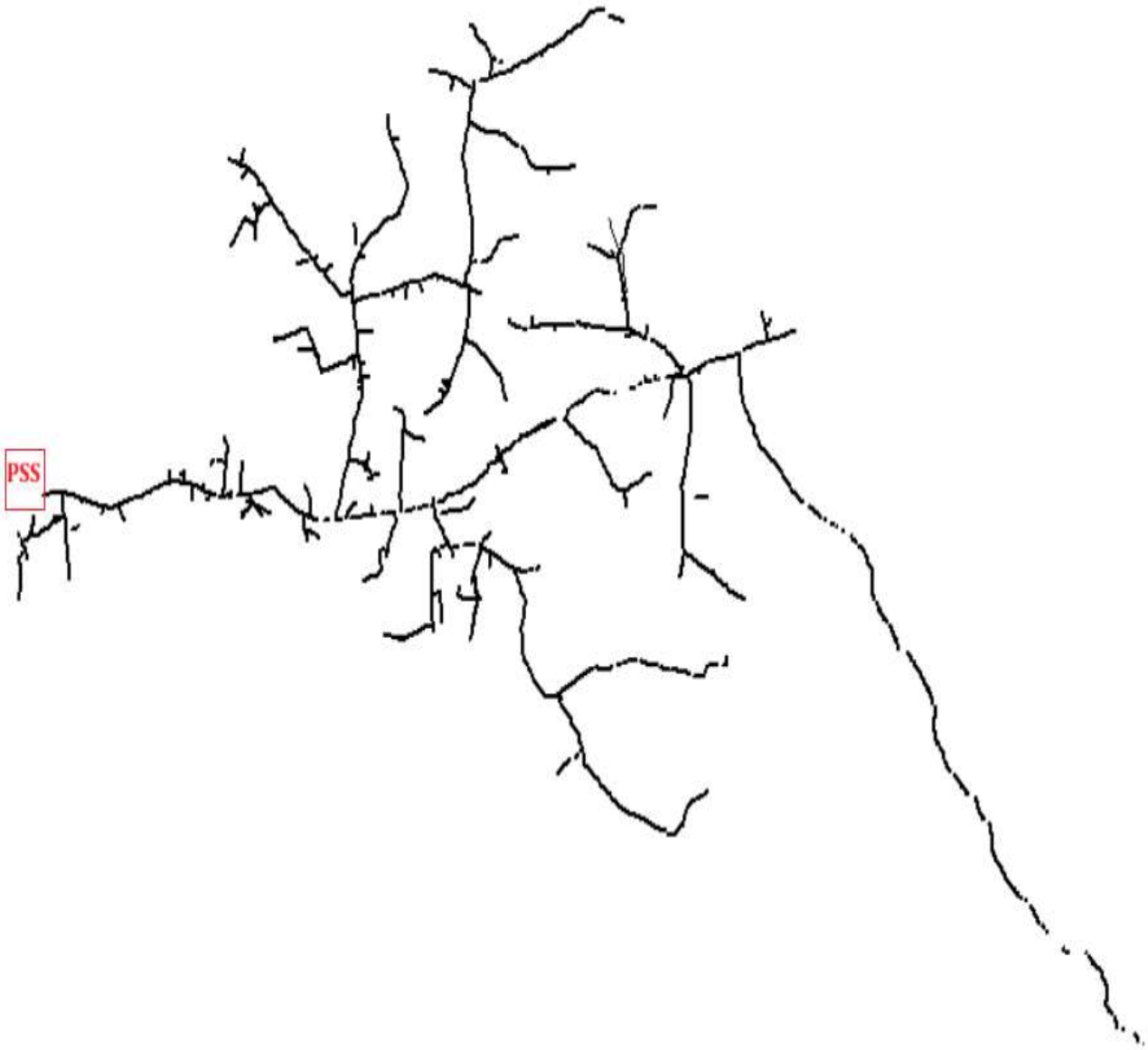
Existing Scenario:

- At present, 11 KV Padiabahal Feeder Emanates from 33/11 Padiabahal PSS and feeder length is 111 Ckm, with a tail-end voltage of 9.8 kV.
- The trunk conductor size of 11 kV Padiabahal feeder emanating from Padiabahal PSS is 55Sq.mm AAAC.
- This feeder is proposed to ensure safe power supply to the domestic as well as commercial consumers.
- At present the feeder is loaded upto 74% and will go upto 87.0% loaded with a 2 Year Load growth.
- Tailend voltage of Padiabahal feeder is 9.8KV which undervoltage.

Existing FY2025 Loading and projected load at 11kV Padiabahal Feeder:

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY25 (MVA)**	**% Loading**	**Feeder Undervoltage Status (AS IS)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Padiabahal	Padiabahal	3.64	2.7	74.1%	Yes	3.19	87.0%	Undervoltage

Existing SLD : 11 KV PADIABAHAL feeder :-



Load Flow Study of 11KV Padiabahal feeder existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 77190930

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	86.4	9.8	5.5	0.4	2.0	1.8	0.9
B	92.9	10.0	5.9	0.4	2.1	1.9	0.9
C	90.2	9.8	5.7	0.4	2.1	1.8	1.0
				Total:	6	5	3

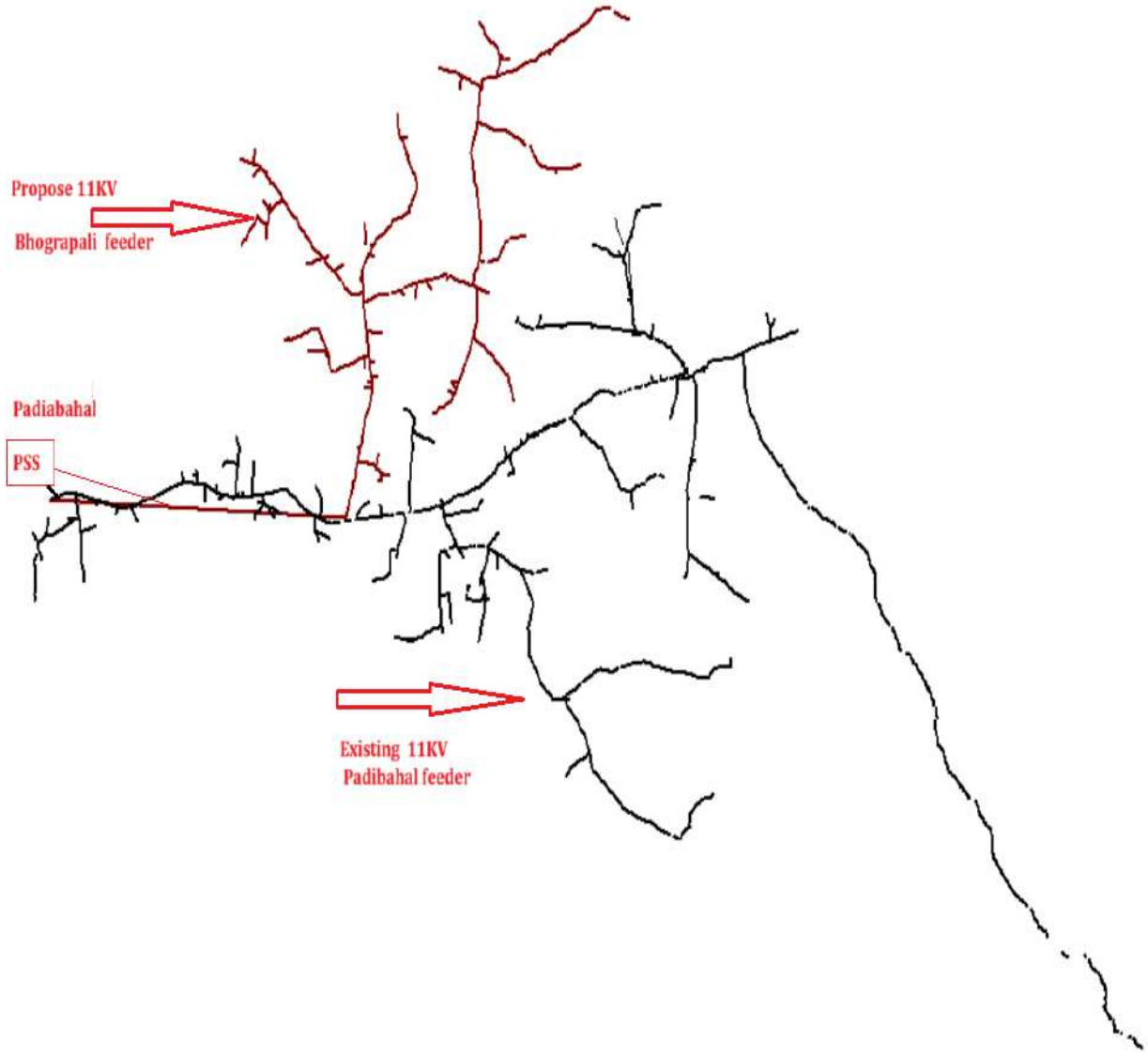
S C L

Proposed Scenario:

- One no. of 11KV New outgoing Feeder is proposed from Padiabahal PSS to Bhograpali near Maltijhor canal for load Bifurcation from existing 11KV Padiabahal Feeder.
- 11KV New line 7.0 CKm propose with 100Sqmm AAA conductor from Padiabahal PSS to Maltijhor River Bhograpali Tapping Point.
- Existing Padiabahal feeder length reduce to 77Ckm and New Bhograpali feeder length 41Ckm.

Loading after Proposal (FY27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY27 (MVA)**	**% Loading**	**Feeder Undervoltage Status**
Bhograpali	Bhograpali	5.33	0.85	15.0%	Ok
Padiabahal	Padiabahal	3.64	2.0	55.0%	Ok

Proposed SLD - 11 KV Padiabahal feeder & Propose 11KV Bhograpali feeder



Load Flow Study of proposed scenario at Tailend of feeder in Cyme Software

At 11 KV Padiabahal feeder :

Load Flow Box

Overhead Line - 76538552

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	94.8	10.6	6.0	0.3	2.0	1.8	1.0
B	98.3	10.7	6.2	0.3	2.1	1.9	1.0
C	96.6	10.6	6.1	0.3	2.1	1.8	1.0
				Total:	6	5	3

At 11KV Bhograpali feeder :

Load Flow Box

Overhead Line - 77210989

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	90.4	10.2	5.7	1.9	10.9	9.9	4.6
B	94.6	10.3	6.0	1.9	11.4	10.3	4.8
C	92.8	10.1	5.9	1.9	11.2	10.1	4.9
				Total:	33	30	14

Detailed Scope of Work:

- One Number 11KV RMU will be installed to ensure reliable switching and protection for the outgoing 11kV feeder.
- New 7.452 Ckm 11kV line will be constructed starting from Padiabahal PSS.
- One No. 11kV bay equipped with an isolator will be provided to control and isolate the power supply when needed.
- 11 KV DP with AB Switch and Road crossing arrangement will be provided with cradle guard to ensure safety and structural support where the line crosses the road as per require

BOQ:

ANNEXURE					
TP WESTERN ODISHA DISTRIBUTION LIMITED					
Name of the Division :-		**SEED**			
Name of the Sub-Division : -		Dhanupali			
Name of Section:-		Padiabahal			
Name of the Work :-		Proposal for New Feeder from 33/11KV Padiabahal PSS to mitigate Low voltage issue at 11kV Padiabahal Feeder.			
Names of Schemes: -		TPWODL CAPEX (FY 26-27)			
	ABSTRACT OF ESTIMATE				
Sl No	**Scope Of Work**	**Unit**	**Qty**	**Rate (Rs)**	**Amount (Rs) (in Cr)**
1	11 KV RMU (Refer Annexure-102)	Nos	1	1943646	1943646
2	11 KV New Line (Refer Annexure-112)	CKm	7.4525	2108729	15694187.00
3	11 KV DP with AB Switch (Refer Annexure-171)	Nos	5	0308262	1541310.00
		Total			**19179143.00**
	Total Amount (In Cr.)				**1.92**
Total estimated cost is Rs.1.92Crore. (On TPWODL Capex Scheme)					

Cost Estimate: ₹ 1.92 Cr. (For detailed BoQ refer Annexure).

Cost Benefit Analysis :

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	Padiabahal	Padiabahal	2138	197	34	296724	12.2	
After Proposal	Bhograpali	Bhograpali	1501	98				
	Padiabahal	Padiabahal	566	27				

Revenue Return Sheet - Bhograpali Feeder				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	191.79	Rs. Lac
B	Load due to load growth	-	232.85	kVA
C	Total kW due to load growth	1.732*33*B*Pf	204	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1211890	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	17.27	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	12.20	Rs. Lac
J	Net Revenue Collected	H+I	29.47	Rs. Lac
K	% revenue return	(J/A)*100	15.4	%
L	Pay Back Period	100/K	6.51	Years

Benefit:

- Undervoltage mitigation of 11 KV Padiabahal feeder.
- Reduce length of feeders and Improve Voltage profile.
- Ensuring reliable power supply to consumers.

Proposal for improving reliability by reducing line length of 11 KV Jarabaga feeder

Proposal:

11 kV New link line for load shifting of 11 KV Jarabaga feeder and Rengalbeda feeder.

Objective:

To ensure reliable power supply of 11 KV Jarabaga feeder reducing the line length of existing 11 KV Jarabaga feeder by constructing two nos. of link lines.

Existing Scenario:

- Presently, 11 KV Jarabaga feeder is having line length of 204.5 CKMs having tail end voltage of 9.8 KV. The interruption level of the said feeder is very high & the O&M is facing very difficult in restoration of power supply during faulty season.
- The Rangiatikra PSS constructed under ODSSP is having one unutilized 11 KV bay namely Rengalbeda.

NOTE:

In another CAPEX proposal ,

Link line of 0.2 CKMs is proposed to divert 18.9 CKMs of 11 KV Jarabaga feeder to 11 KV Kesaibahal feeder.

To further reduce the line length of 11 KV Jarabaga feeder:

(a) 6 CKMs from Rangiatikra PSS to Rengalbeda Bedkholia-I 25 KVA DSS

(b) 2.1 CKMs from Nuadihi to Khuntabahal

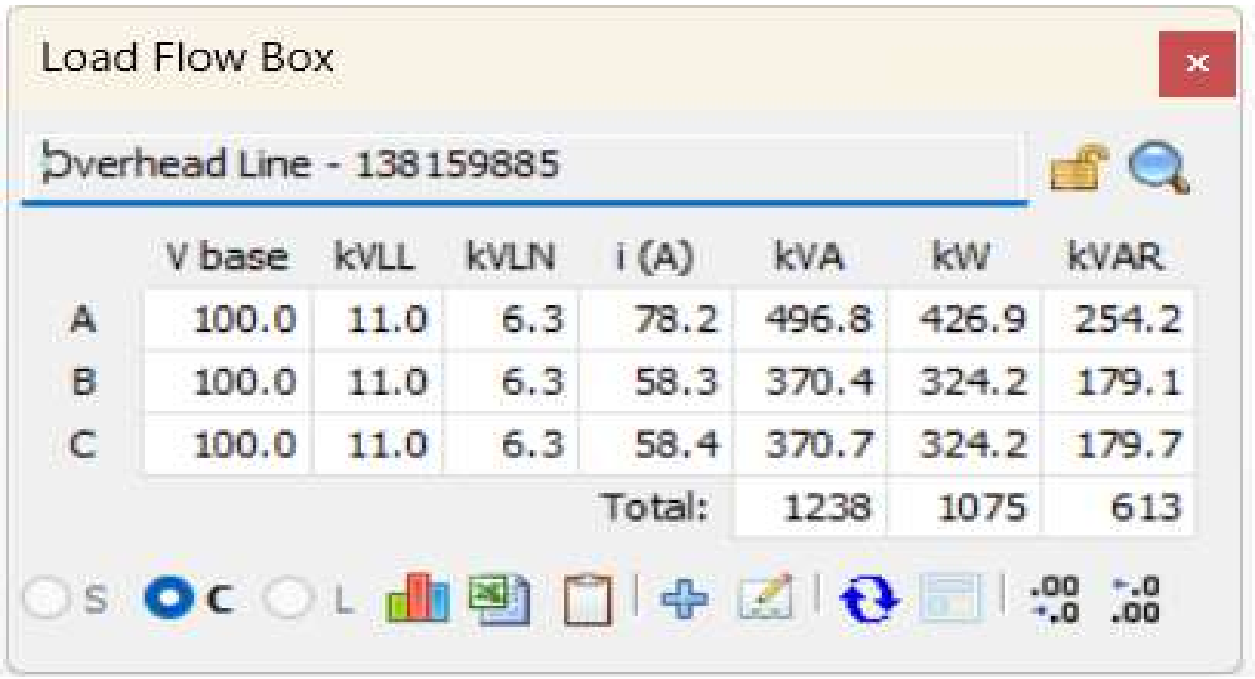
Is proposed.

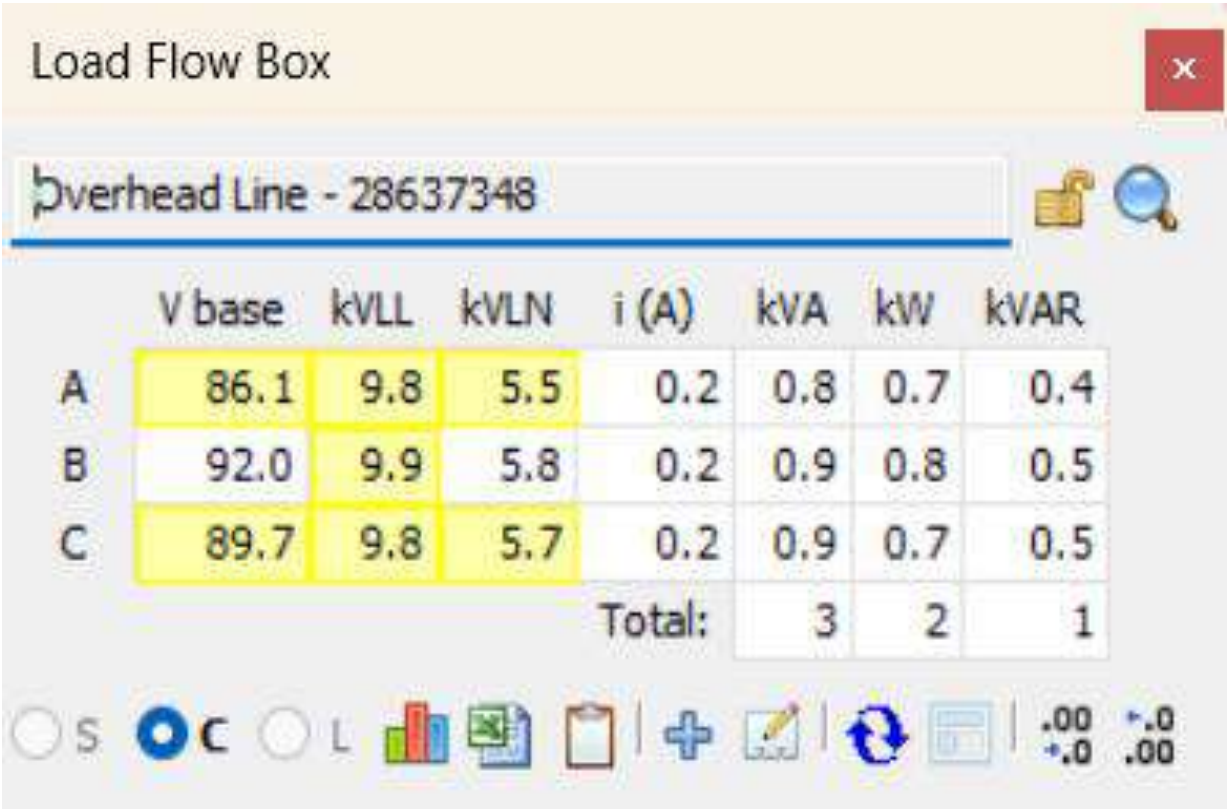
Existing FY'25 Loading and projected load of 11 KV Jarabaga Feeder:

Load Flow Study of existing scenario in Cyme Software:

11 KV Feeder Name	Size of Conductor (mm^2)	Peak Loading FY 25 (Amp)	% of Loading	Projected load FY 26 (Amp)	Feeder Under Voltage Status FY 26
Jarabaga	34/55	54.00	29	78	9.8 KV

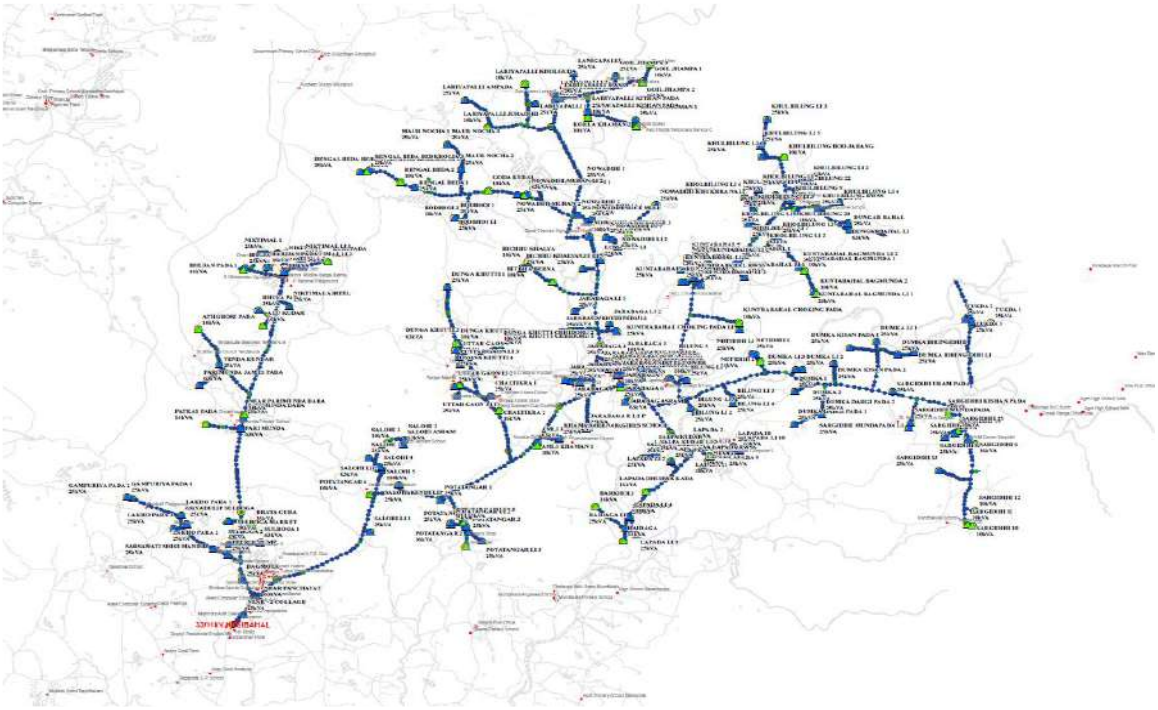
Load Flow Study in CYME:



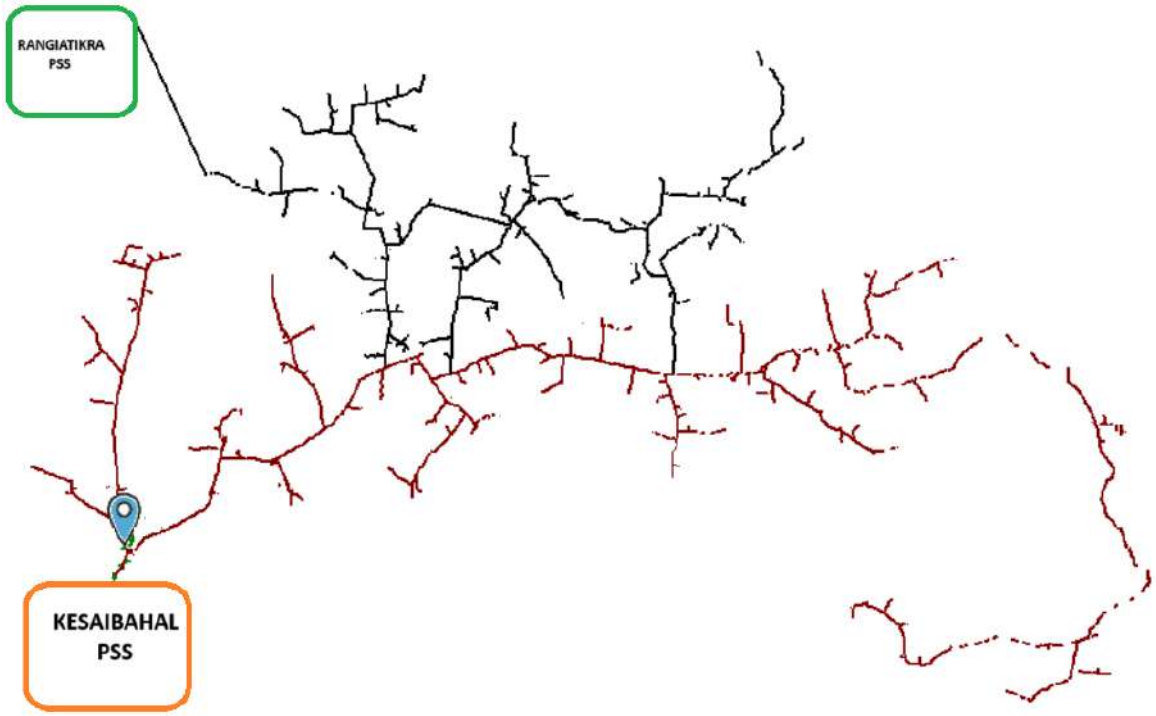


Existing SLD:

11 KV Jarabaga Feeder :-



11 KV Rengalbeda Feeder :-



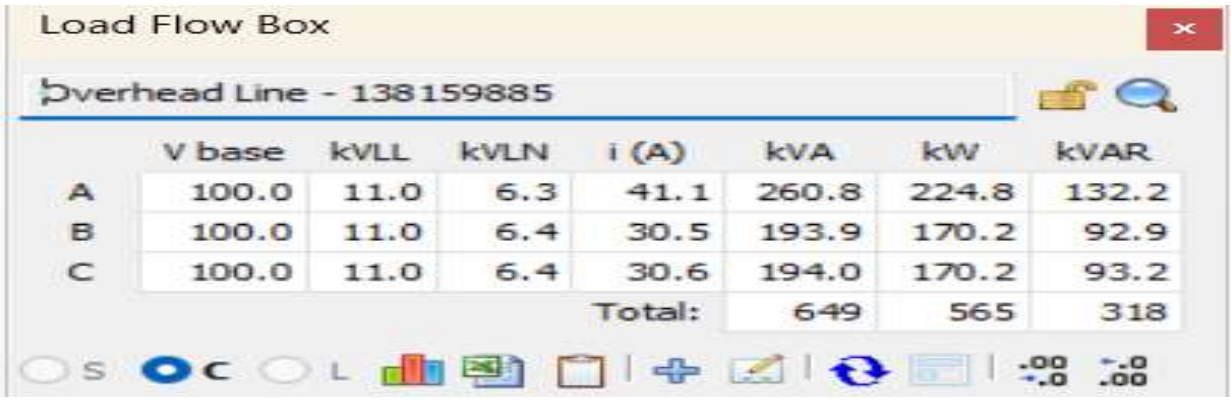
Proposed Scenario:

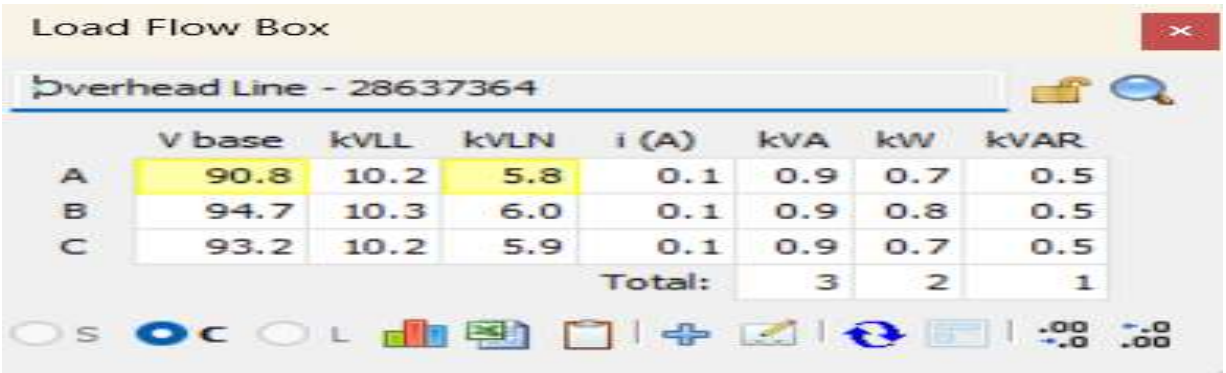
- By construciton of 11 KV new line from existing Rangiatikra PSS up to Rengalbeda Bedkholia-I DSS utilizing the spare bay meant for Rengalbeda feeder

- By construciton of 11 KV new link line from Nuadihi to Khuntabahal
- Bifurcation of 11 KV Jarabaga feeder by construction of
- 6.35 CKMs from Rangiatikra PSS to Rengalbeda Bedkholia-I 25 KVA DSS
- 2.1 CKMs from Nuadihi to Khuntabahal
- (This is in addition to scope proposed in another Proposal of utilizing the Rengalbeda spare bay of Rangiatikra PSS and construction of 8.45 CKMs of new line to split the Jarabaga feeder.)

11 kV Feeder Name	Feeder Loading (Amps)	Conductor Size (sqmm)	Total Line Length (CKMs)	Feeder Overloading Status (%)	Feeder Undervoltage Status (KV)
Jarabaga	41.1	50	129	25.45	10.2
Rengalbeda	27.9	100	83	31.67	
Kesaibahal	23.6	50	24.2	12.75	

Load Flow Study in CYME:





Jarabaga Feeder

Load Flow Box

Overhead Line - 107

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	98.4	10.9	6.2	27.9	177.0	152.8	89.2
B	99.2	10.9	6.3	21.5	136.3	119.8	64.9
C	98.8	10.9	6.3	21.5	136.3	119.8	65.0
				Total:	450	392	219

Rengalbeda Feeder

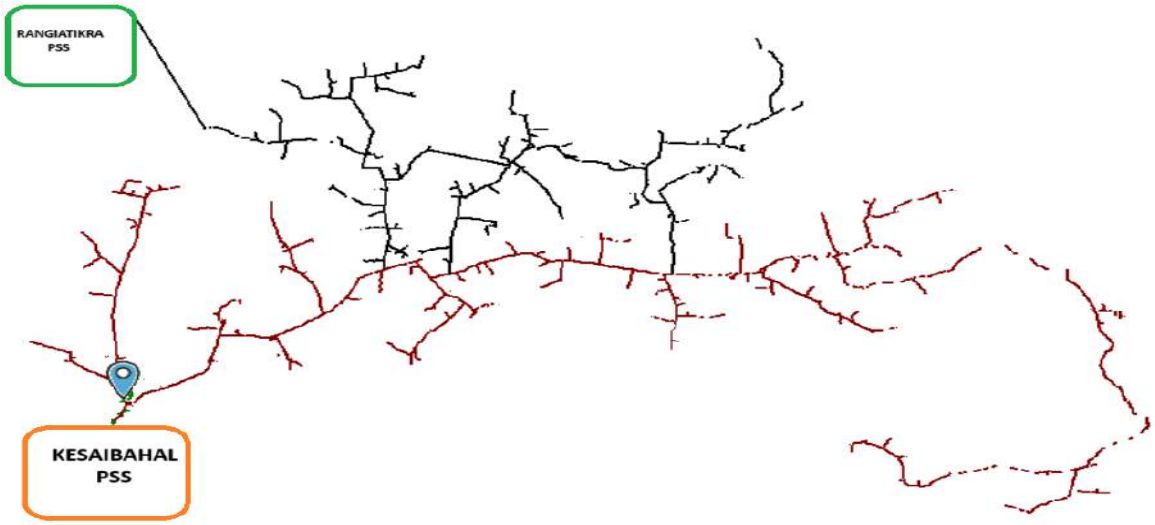
Load Flow Box

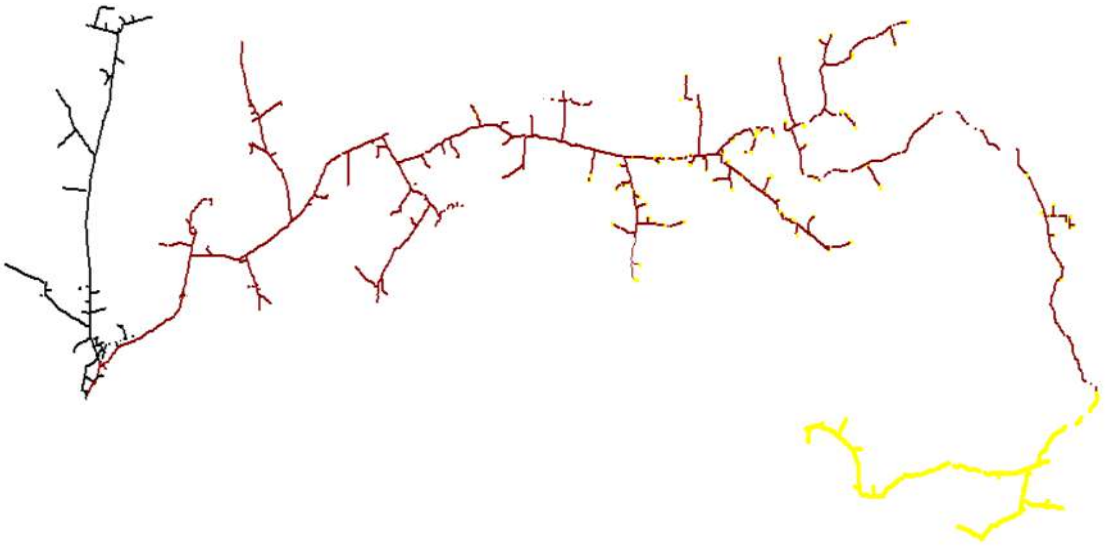
Overhead Line - 24987266

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	100.0	11.0	6.4	23.6	150.1	130.8	73.6
B	100.0	11.0	6.4	21.6	137.0	120.1	65.8
C	100.0	11.0	6.4	21.6	137.0	120.1	65.8
				Total:	424	371	205

Kesaibahal Feeder

Proposed SLD:





Scope of work :-

- 6.35 CKMs from Rangiatikra PSS to Rengalbeda Bedkholia-I 25 KVA DSS
- 2.1 CKMs from Nuadihi to Khuntabahal
- 4nos of 11 KV Line DP with AB Switch

Detailed Scope of Work:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**JED JHARSUGUDA**	
Name of the Sub-Division : -	JED	
Name of theSection:-	Jarabaga	
Name of the Work :-	11 KV new link line for load shifting of 11 KV Jarabaga feeder and Rengalbeda feeder	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount in Rs**
1	11 KV line with 100 sqmm AAAC (Refer Annexure-112)	4428330.9000
2	11 KV line with 100 sqmm AAAC (insulated) (Refer Annexure-170)	**18152338.6000**
3	11 KV Line DP with AB Switch (Refer Annexure-171)	**1233048.0000**
	Total Amount	**23813717.5000**
	Total Amount (In Cr.)	**2.38**
Total estimated cost is Rs. 2.38 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 2.388 Cr.

Cost Benefit Analysis

Stage	PSS	11 kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	Kesaibahal	Jarabaga	1075	112	19	169876	7.0	Under voltage of 9.8 KV at tail end.
	Kesaibahal	Kesaibahal	293	7				OK
After Proposal	Rangiatikra	Rengalbeda	392	24				Load shifted from 11 KV Jarabaga feeder to 11 KV Rengalbeda feeder that led to overcome the under voltage
	Kesaibahal	Jarabaga	565	45				Load shifted from 11 KV Jarabaga feeder to 11 KV Rengalbeda feeder that led to overcome the under voltage
	Kesaibahal	Kesaibahal	371.03	8.76				11 KV line shifted to Kesaibahal feeder leading to under voltage mitigated

Revenue Return Sheet (Jarabaga to Rengalbeda) & (Jarabaga to Kesaibahal)				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	2380.00	Rs. Lac
B	Load due to load growth	-	109.81	kVA
C	Total kW due to load growth	1.732*11*B*Pf	96	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	571493	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	8.14	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	7.00	Rs. Lac
J	Net Revenue Collected	H+I	15.14	Rs. Lac
K	% revenue return	(J/A)*100	6.0	%
L	Pay Back Period	100/K	16.55	Years

Benefit:

- Reduction in interruption level and improve voltage level of 11 KV Jarabaga feeder by Reduction in line length of 11 KV Jarabaga feeder.
- Easy to maintenance & Consumer satisfaction.

Proposal for improving reliability by reducing line length of 11 KV Jarabaga feeder

Proposal:

11kV New link line between Jarabhaga feeder and Kesaibahal feeder to shift existing line from Jarabaga feeder to Kesaibahal feeder.

Objective:

To ensure reliable power supply of 11 KV Jarabaga feeder reducing the line length of existing 11 KV Jarabaga feeder by constructing two nos. of link lines.

Existing Scenario:

- Presently, 11 KV Jarabaga feeder is having line length of 204.5 CKMs having tail end voltage of 9.8 KV. The interruption level of the said feeder is very high & the O&M is facing very difficult in restoration of power supply during faulty season.

Note : In another CAPEX proposal, link line of

(a) 6 CKMs from Rangiatikra PSS to Rengalbeda Bedkholia-I 25 KVA DSS

(b) 2.1 CKMs from Nuadihi to Khuntabahal

Are proposed to shift 75 .8 CKMs of 11 KV line from Jarabaga feeder to Rengalbeda feeder.

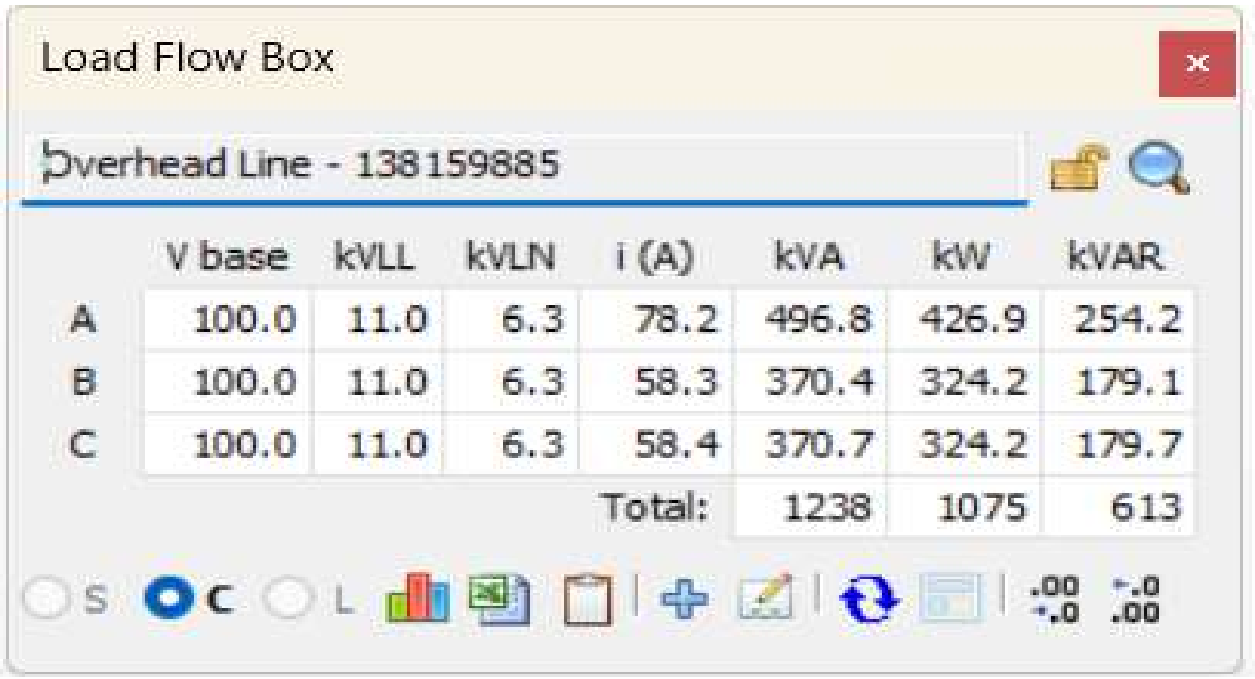
To further reduce the line length of 11 KV Jarabaga feeder, the said scheme is proposed for construciton of 0.2 CKMs of 11 KV new line to shift 18.9 CKMs of existing line from Jarabaga feeder to Kesaibahal feeder.

Existing Summer'25 Loading and projected load of 11 KV Jarabaga Feeder:

Load Flow Study of existing scenario in Cyme Software:

11 KV Feeder Name	Size of Conductor (mm^2)	Peak Loading FY 25 (Amp)	% of Loading	Projected load FY 26 (Amp)	Feeder Under Voltage Status FY 26
Jarabaga	34/55	54.00	29	78	9.8 KV

Load Flow Study in CYME:

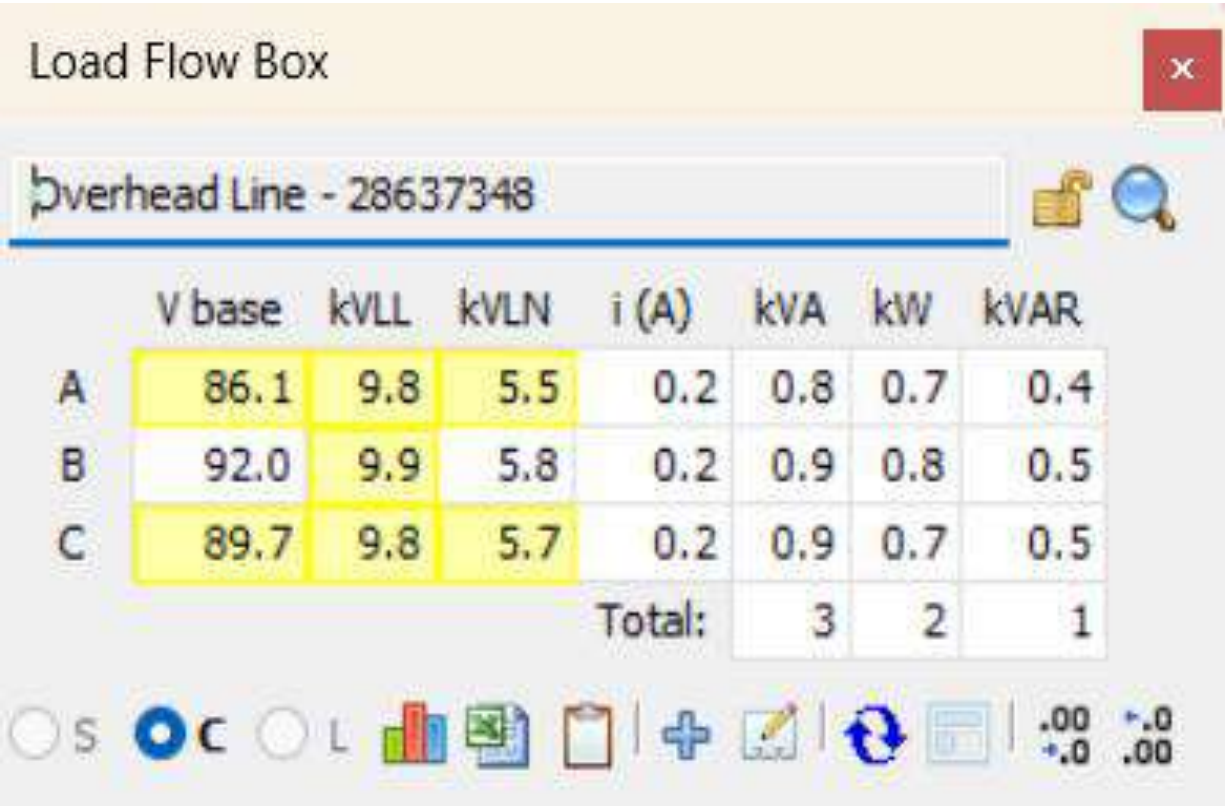


Load Flow Box

Overhead Line - 138159885

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	100.0	11.0	6.3	78.2	496.8	426.9	254.2
B	100.0	11.0	6.3	58.3	370.4	324.2	179.1
C	100.0	11.0	6.3	58.4	370.7	324.2	179.7
				Total:	1238	1075	613

S C L



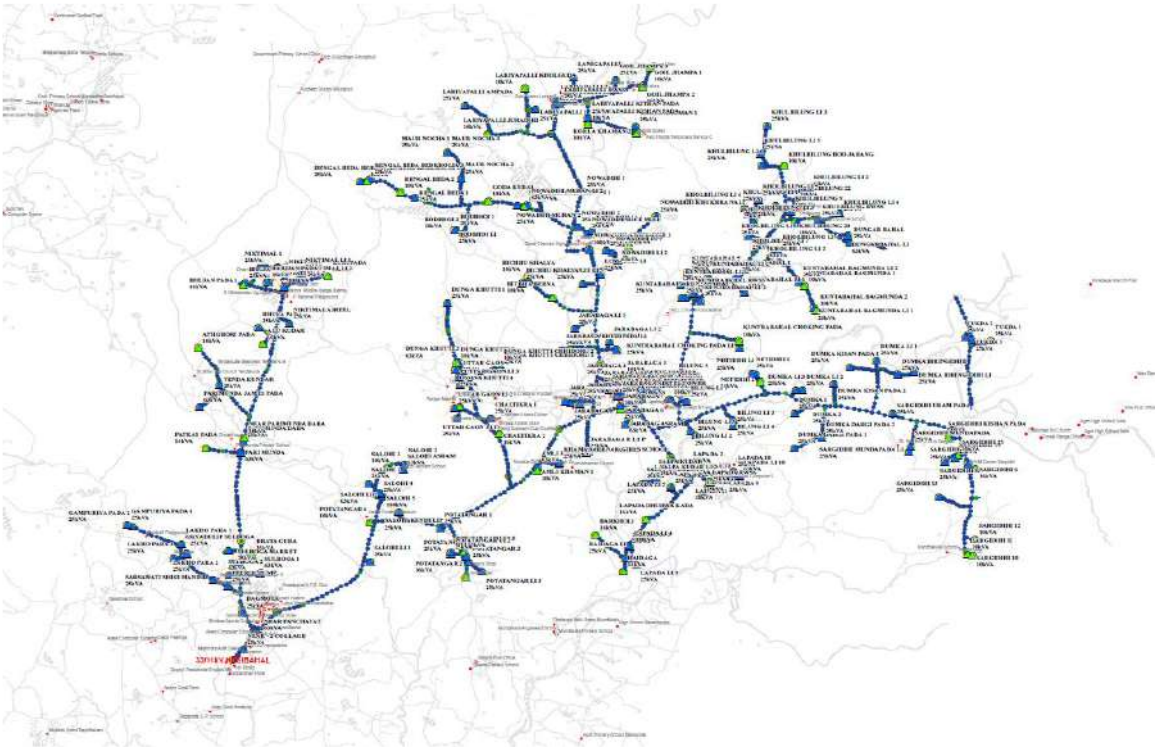
Load Flow Box

Overhead Line - 28637348

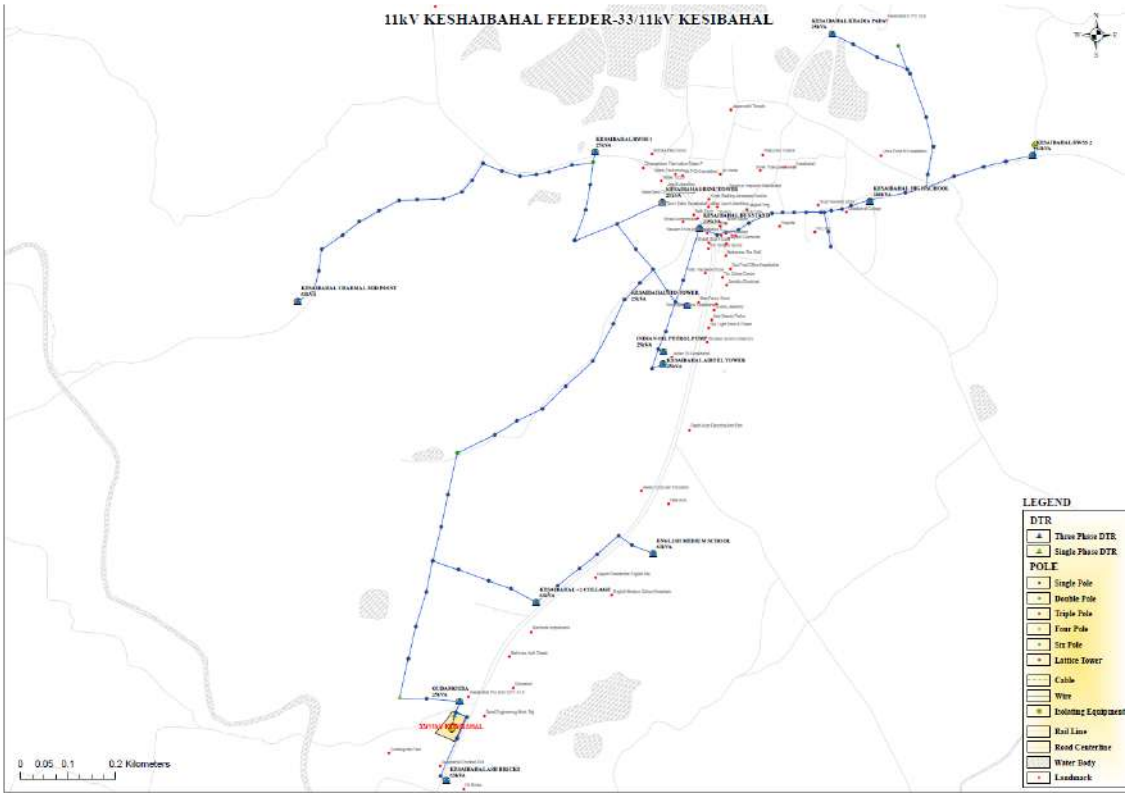
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	86.1	9.8	5.5	0.2	0.8	0.7	0.4
B	92.0	9.9	5.8	0.2	0.9	0.8	0.5
C	89.7	9.8	5.7	0.2	0.9	0.7	0.5
				Total:	3	2	1

S C L

Existing SLD:



11 KV Jarabaga Feeder



11 KV Kesaibahal Feeder

Proposed Scenario:

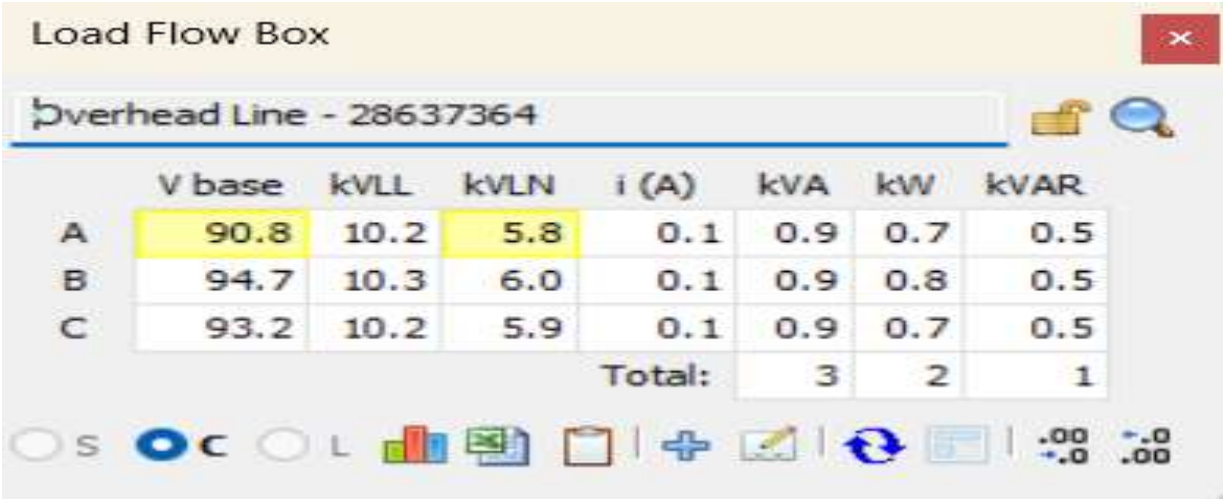
- Bifurcation of 11 KV Jarabaga feeder by construction of 0.2 CKMs of new 11 KV line to shift 18.9 CKMs of line from 11 KV Jarabaga feeder to 11 KV Kesaibahal feeder.

  (This is in addition to scope proposed in another Proposal of utilizing the Rengalbeda spare bay of Rangiatikra PSS and construction of 8.1 CKMs of new line to split the Jarabaga feeder.)

11 kV Feeder Name	Feeder Loading (Amps)	Conductor Size (sqmm)	Total Line Length (CKMs)	Feeder Overloading Status (%)	Feeder Undervoltage Status (KV)
Jarabaga	41.1	50	129	25.45	10.2
Rengalbeda	27.9	100	83	31.67	
Kesaibahal	23.6	50	24.2	12.75	

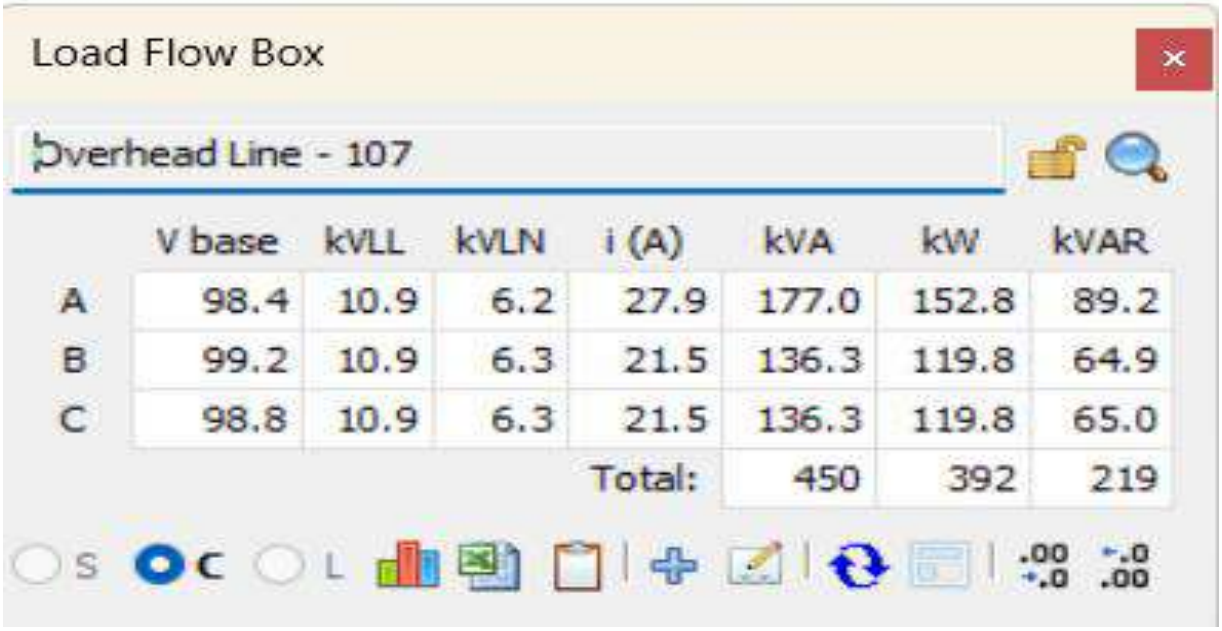
Load Flow Study in CYME:

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	100.0	11.0	6.3	41.1	260.8	224.8	132.2
B	100.0	11.0	6.4	30.5	193.9	170.2	92.9
C	100.0	11.0	6.4	30.6	194.0	170.2	93.2
				Total:	649	565	318

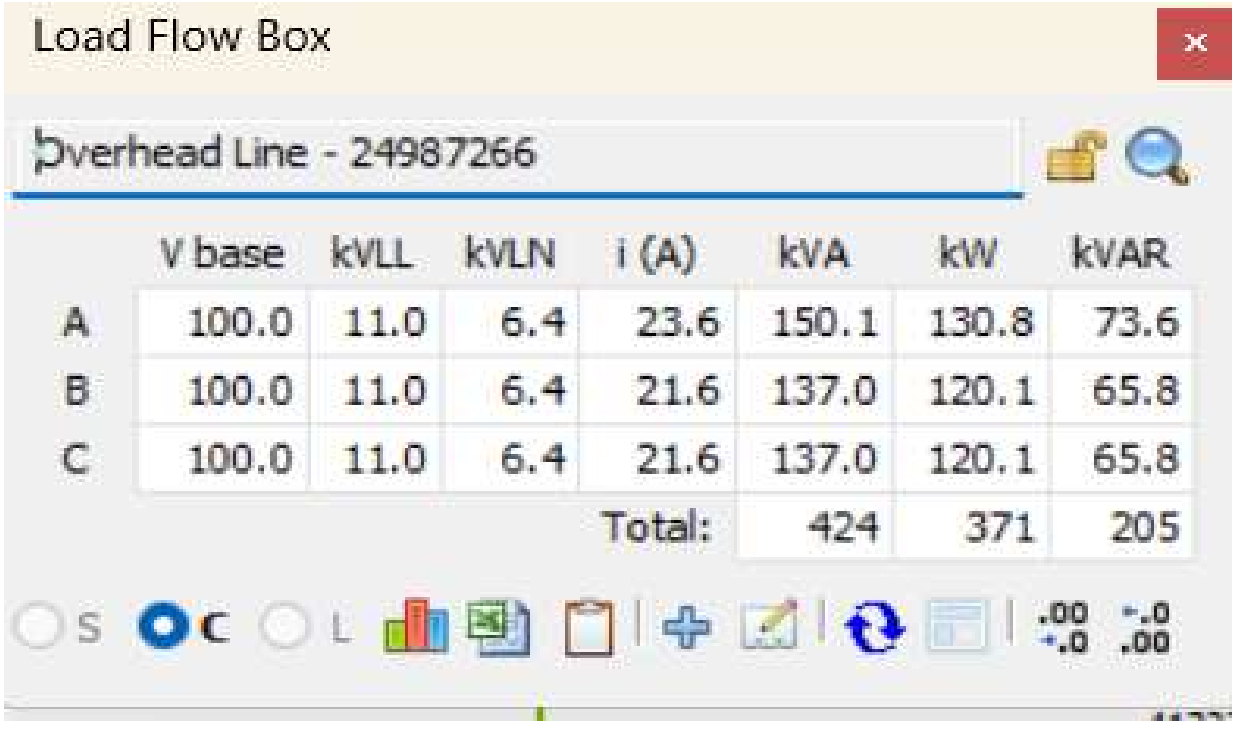


	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	90.8	10.2	5.8	0.1	0.9	0.7	0.5
B	94.7	10.3	6.0	0.1	0.9	0.8	0.5
C	93.2	10.2	5.9	0.1	0.9	0.7	0.5
				Total:	3	2	1

Jarabaga Feeder

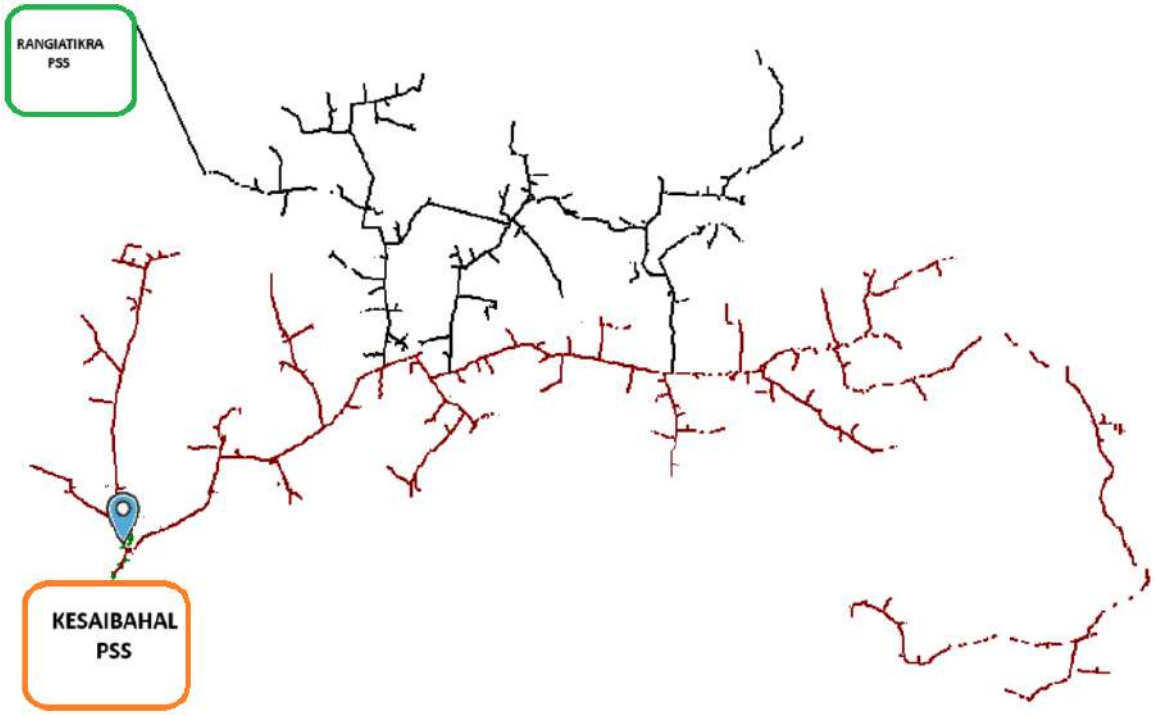


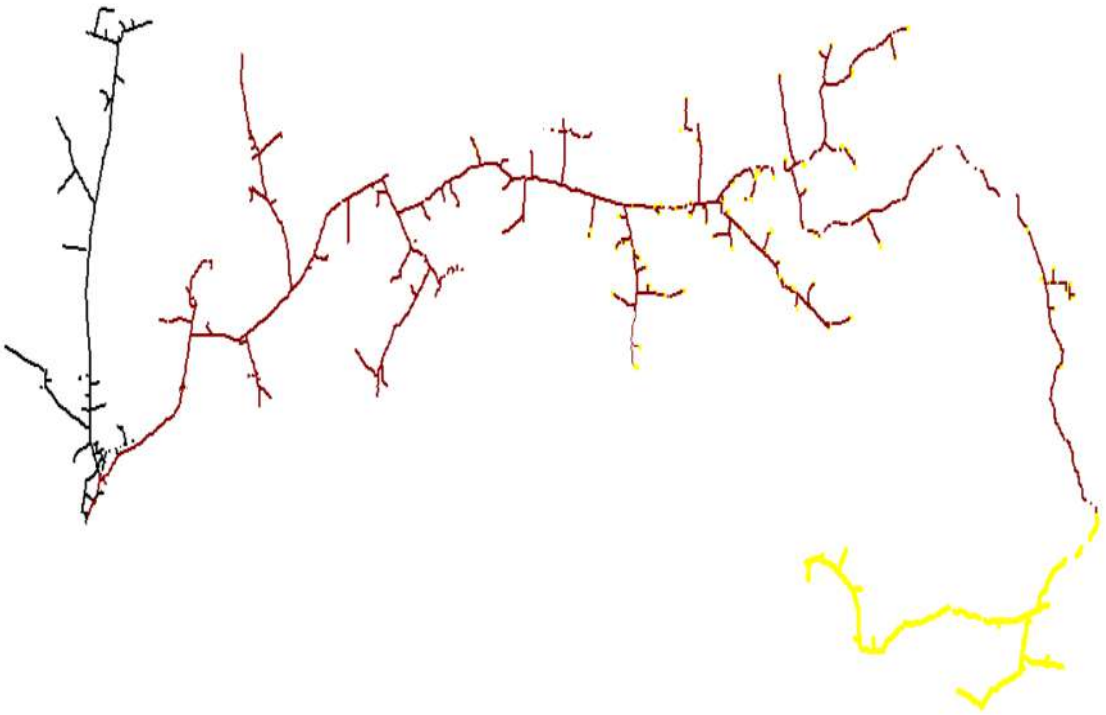
Rengalbeda Feeder



Kesaibahal Feeder

Proposed SLD:





Detailed Scope of Work:

1. 0.2 CKMs of 11 KV new line using 100 Sqmm Overhead bare conductor
2. 2 nos. of line AB switches.

ANNEXURE					
TP WESTERN ODISHA DISTRIBUTION LIMITED					
Name of the Division :-	**SEED**				
Name of the Sub-Division : -					
Name of Section:-	Dhanupali				
Name of the Work :-	11KV link Line and Conductor Augmentation at 11KV Dhanupali Feeder				
Names of Schemes: -	TPWODL CAPEX (FY 26-27)				
	ABSTRACT OF ESTIMATE				
Sl No	**Scope Of Work**	**Unit**	**Qty**	**Rate (Rs)**	**Amount (Rs) (in Cr)**
1	11 KV line with 100 sqmm AAAC (insulated) (Refer Annexure-170)	Ckm	0.2	2351379.00	467608.00
2	11 KV Line DP with AB Switch (Refer Annexure-171)	Nos	2	308262.00	616339.00
		Total			**1192528.00**
	Total Amount				**1192528.00**
Total estimated cost is Rs.0.119Crore. (On TPWODL Capex Scheme)					

Cost Estimate: ₹ 0.119 Cr.

Cost Benefit Analysis

Stage	PSS	11 kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	Kesaibahal	Jarabaga	1075	112	19	169876	7.0	Under voltage of 9.8 KV at tail end.
	Kesaibahal	Kesaibahal	293	7				OK
After Proposal	Rangiatikra	Rengalbeda	392	24				Load shifted from 11 KV Jarabaga feeder to 11 KV Rengalbeda feeder that led to overcome the under voltage
	Kesaibahal	Jarabaga	565	45				Load shifted from 11 KV Jarabaga feeder to 11 KV Rengalbeda feeder that led to overcome the under voltage
	Kesaibahal	Kesaibahal	371.03	8.76				11 KV line shifted to Kesaibahal feeder

								leading to under voltage mitigated

Revenue Return Sheet (Jarabaga to Rengalbeda) & (Jarabaga to Kesaibahal)				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	250.70	Rs. Lac
B	Load due to load growth	-	109.81	kVA
C	Total kW due to load growth	1.732*11*B*Pf	96	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	571493	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	8.14	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	7.00	Rs. Lac
J	Net Revenue Collected	H+I	15.14	Rs. Lac
K	% revenue return	(J/A)*100	6.0	%
L	Pay Back Period	100/K	16.55	Years

Benefit:

- Reduction in interruption level and improve voltage level of 11 KV Jarabaga feeder by Reduction in line length of 11 KV Jarabaga feeder.
- Easy to maintenance & Consumer satisfaction.

Proposal for overload mitigation of 11 KV Kalimandir feeder by construction of a new 11 KV line from Purna PSS

Proposal:

11kV New feeder from Purna PSS to bifurcate Kalimandir feeder for overload mitigation of existing 11 KV Kalimandir feeder.

Objective:

To ensure reliable power supply, mitigation of overloading of existing 11 KV Kalimandir feeder feeding to Jharsuguda main township area.

Existing Scenario:

- 11 KV Kalimandir feeder has emanated from Purna ODSSP PSS under JED Jharsuguda.
- The said feeder is feeding the heart of Jharsuguda town i.e. Badheimunda chowk, Pahadi Mandir chowk, Kali Mandir, Gandhi Chowk, Railway station road, Purna Basti area.
- The said 11 KV feeder is experiencing overloading of 280 Ampere being equipped with 100 mm^2 AAAC in trunk line and 34/55 mm^2 AAAC in different branch lines in FY26.
- After necessary load growth 11 KV Kalimandir feeder is experiencing a loading of 340 Amperes and hence overloaded.

Existing FY-25 Loading of 11kV Kalimandir Feeder:

11 kV Feeder Name	Size of Conductor (mm^2)	Peak Loading FY 25 (Amp)	Projected load FY 27 (Amp)	Feeder Overloading Status FY-27 (%)
Kalimandir	34/55/100	280	341.1	**131**

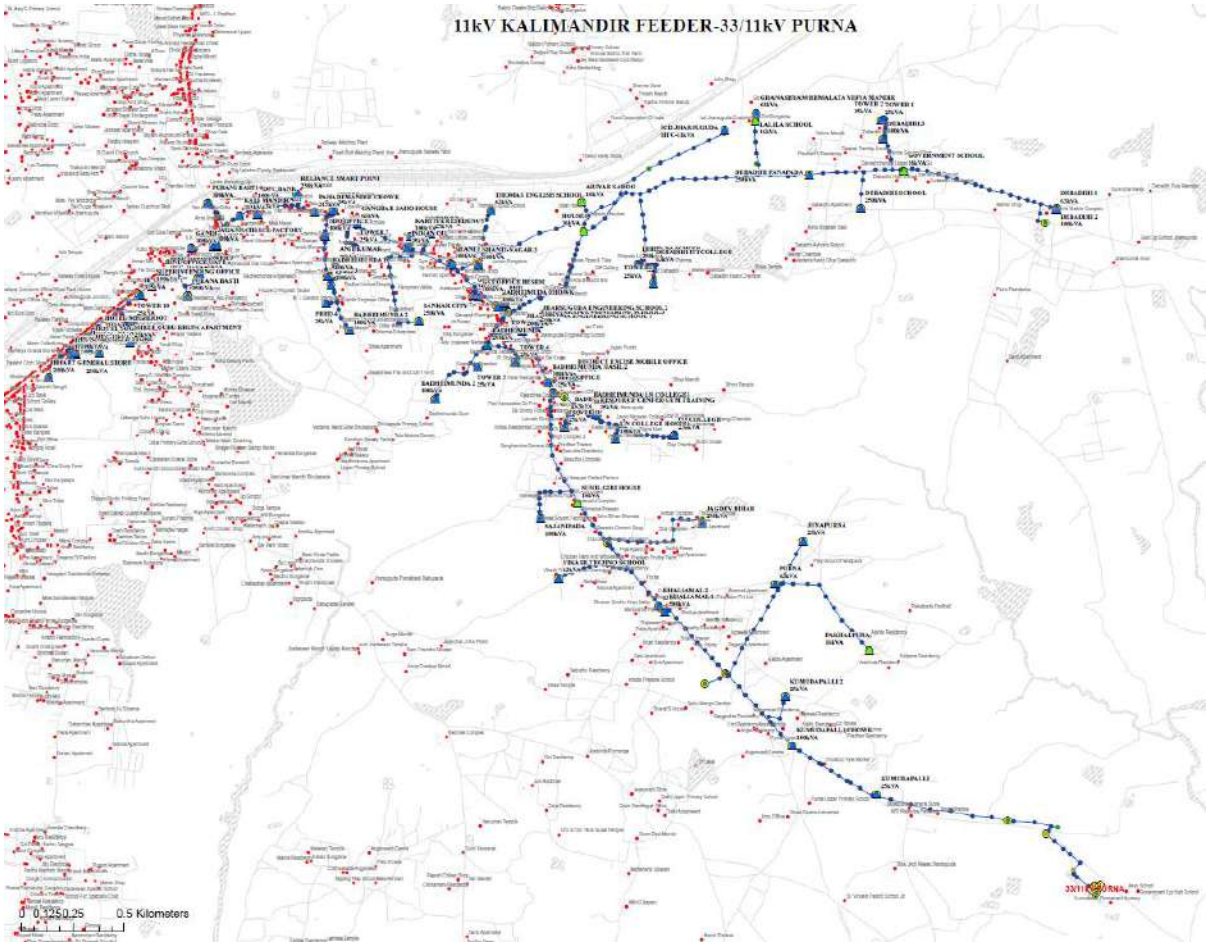
Load Flow Study of existing scenario after 2 years load growth Cyme Software:

Load Flow Box

Cable - 75801143

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	78.9	8.7	5.0	6.9	34.6	30.1	17.1
B	79.6	8.7	5.1	6.9	35.0	30.4	17.3
C	79.3	8.7	5.0	6.9	34.8	30.2	17.4
				Total:	104	91	52

Existing SLD:

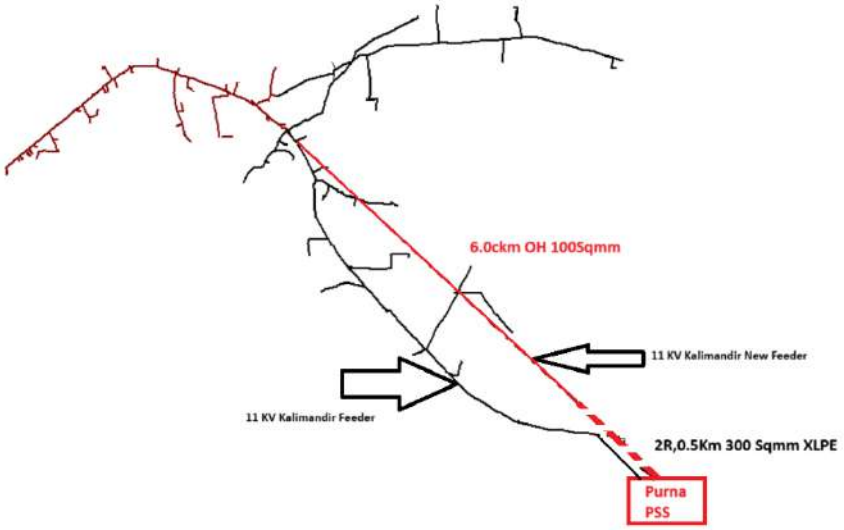


Proposed Scenario:

- 11 KV existing Kalimandir feeder bifurcation by construction of a new 11 KV feeder from Purna PSS to Niharika DSS to mitigate ongoing overload at source end and under voltage issues at tail end and branch lines.

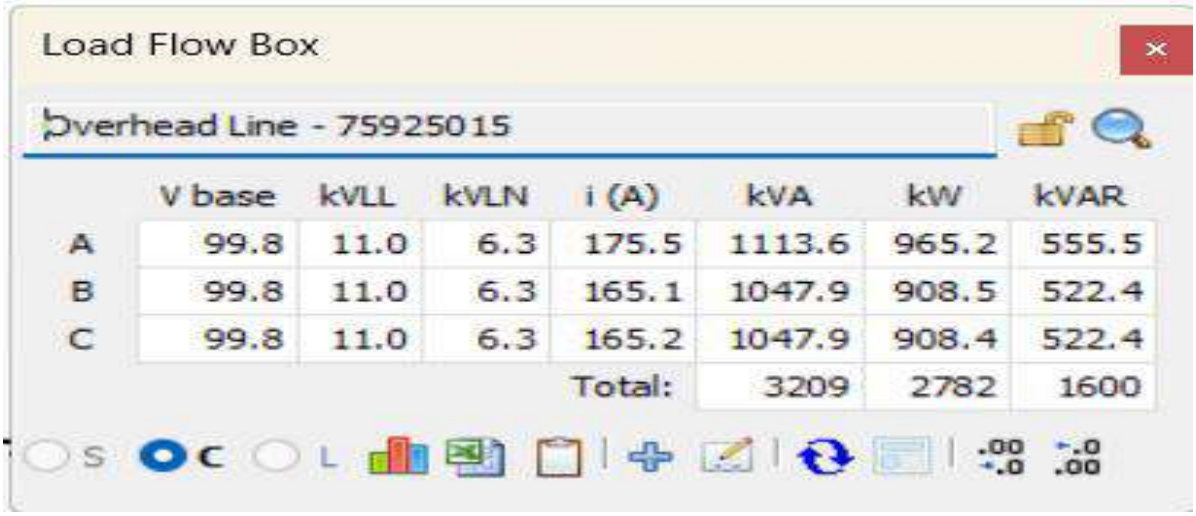
11 kV Feeder Name	Feeder Loading (Amps)	Feeder Overloading Status (%)	Feeder Voltage Status (KV)
Kalimandir	175	67	10.3
Kalimandir New	270	98	10.1

Proposed SLD:



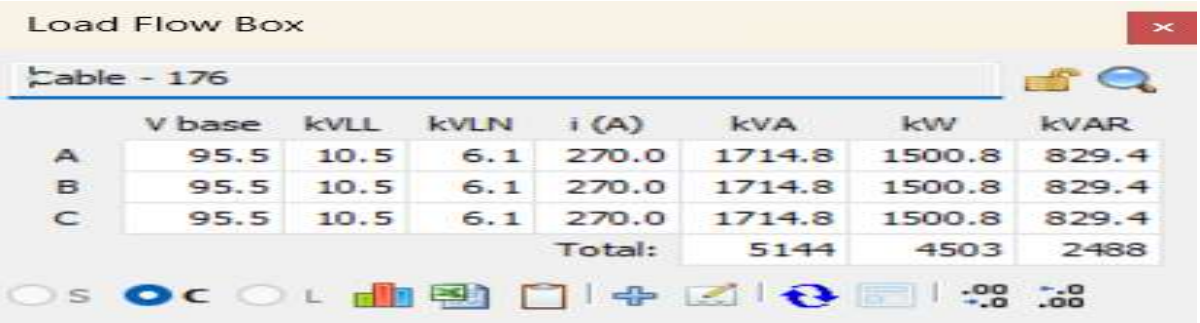
Load Flow Study of proposed scenario in Cyme Software:

For Existing 11 KV Kalimandir Feeder



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	99.8	11.0	6.3	175.5	1113.6	965.2	555.5
B	99.8	11.0	6.3	165.1	1047.9	908.5	522.4
C	99.8	11.0	6.3	165.2	1047.9	908.4	522.4
				Total:	3209	2782	1600

For 11 KV Kalimandir New Feeder



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	95.5	10.5	6.1	270.0	1714.8	1500.8	829.4
B	95.5	10.5	6.1	270.0	1714.8	1500.8	829.4
C	95.5	10.5	6.1	270.0	1714.8	1500.8	829.4
				Total:	5144	4503	2488

Detailed Scope of Work:

- 1 No. 11 KV 4way RMU for 11 KV new feeder outgoing
- 11 KV UG with 3C, 300 sqmm XLPE Cable (610 Mtr)
- 4 nos.of DP with AB switch.
- Indoor VCB proposed for existing feeder separation with breaker protection.
- 7 Kms of 100 mm^2 overhead line using 13-meter pole (40%) and 11 meter pole (60%).

TP WESTERN ODISHA DISTRIBUTION LIMITED					
Name of the Division :-		**JED JHARSUGUDA**			
Name of the Sub-Division : -		Jharsuguda -1			
Name of Section:-		Jharsuguda -1			
Name of the Work :-		11kV New feeder from Purna PSS to bifurcate Kalimandir feeder for overload mitigation of existing 11 KV Kalimandir feeder.			
Names of Schemes: -		TPWODL CAPEX (FY 26-27)			
	ABSTRACT OF ESTIMATE				
Sl No	**Scope Of Work**	**Unit**	**Qty**	**Rate (Rs)**	**Amount (Rs) (in Cr)**
1	11 KV 4 WAY RMU (Refer Annexure-101)	Nos	1	1943646	1943646
2	11 KV UG (BURIED) with 3C, 300 sqmm XLPE Cable (600 mtr) (Refer Annexure-166)	CKm	0.61	6157556	3756109.16
3	11 KV indoor VCB (Refer Annexure-164)	Nos	1	2205374	2205374
4	DP with AB Switch (Refer Annexure-171)	Nos	4	308262	1233048
5	11 KV line with 100 sqmm AAAC (insulated) (Refer Annexure-170)	CKm	7	2858636	20010452
		Total			**29148629**
	Total Amount (In Cr.)				**2.91**
Total estimated cost is Rs. 2.910 Crore. (On TPWODL Capex Scheme)					

Cost Estimate: ₹ 2.91 Cr.

Cost Benefit Analysis:-

Stage	PSS	11 kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Purna**	Kalimandir	5594	1055	**255**	**2231028**	**91.6**	Feeder Overloading & under voltage of 8.7 KV at tail end
After Proposal	**Purna**	Kalimandir	2784	163				Over load mitigated/ Under voltage mitigaed
	Purna	Kalimandir New	4503	351				Over load mitigated/ Under voltage mitigaed

Revenue Return Sheet (Kalimandir)				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	291.00	Rs. Lac
B	Load due to load growth	-	409.93	kVA
C	Total kW due to load growth	1.732*11*B*PF	359	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2133487	KWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	30.40	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	91.60	Rs. Lac
J	Net Revenue Collected	H+I	122.00	Rs. Lac
K	% revenue return	(J/A)*100	41.9	%
L	Pay Back Period	100/K	2.39	Years

Benefit:

- Overload mitigation of 11 KV Kalimandir feeder and improving reliability of power supply to Jharsuguda town area.
- Improvement in voltage.

Mitigation of 11kV Feeder Undervoltage Issue

1.0 Proposal for reliability improvement and Mitigation of undervoltage for 11kV Samarkhai Feeder:

Proposal:

11kV New Link line for load shifting of Samarkhai feeder to Basaloi & Dangasingha to mitigate undervoltage issue and improve reliablity.

Objective:

To ensure reliable power supply mitigation of undervoltage and by strengthening of the existing network and providing N-1 connectivity to Rural Area.

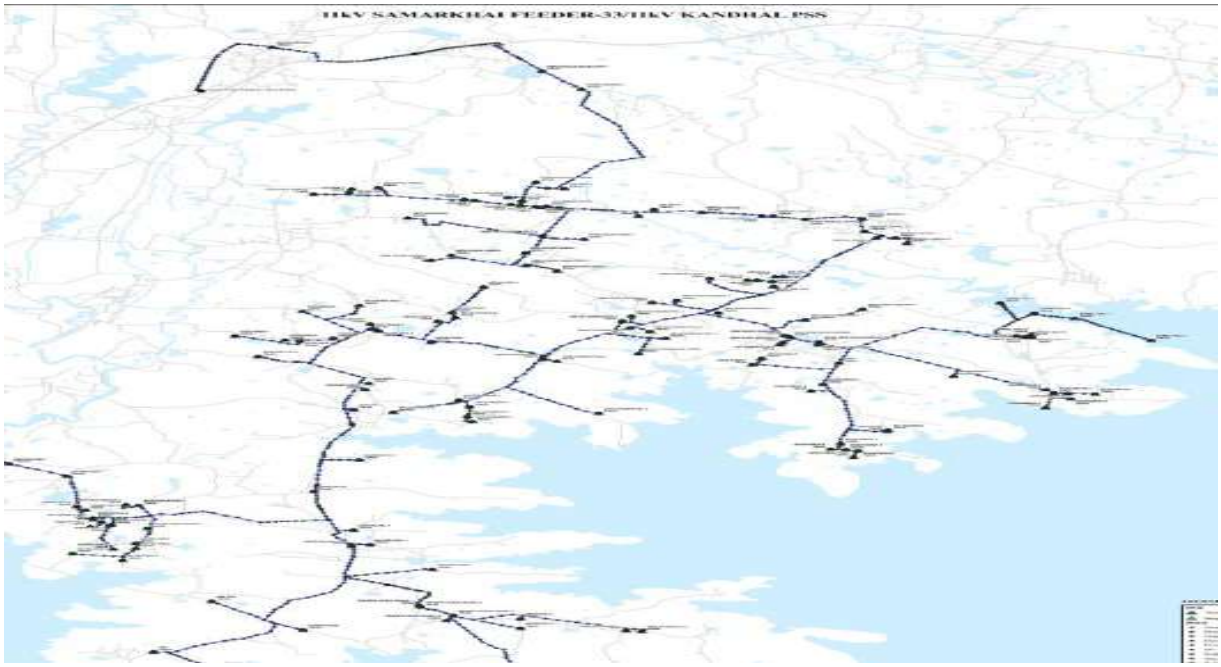
Existing Scenario:

- At present, 11kV Samarkhai feeder emanates from Kandhal PSS having length 60.5CKM and conductor size is 34/55SQMM ACSR/AAAC. feeder peak load at summer,25 is 47AMP and tail end voltage is 9.9KV. The feeder is experiencing low voltage problem.

Existing Summer'25 Loading and projected load at 11kV Samarkhai Feeder:

SL NO	NAME OF THE PSS	11 KV FEEDER NAME	FEEDER PEAK LOAD (AMP)	FEEDER LENGTH (CKM)	EXISTING CONDUCTOR SIZE (SQ.MM)	TAIL END VOLTAGE IN KV
1	KANDHAL	SAMARKHAI	47 AMP	60.5 CKM	34/55SQ.MM	9.9

Existing SLD of Samarkhai feeder



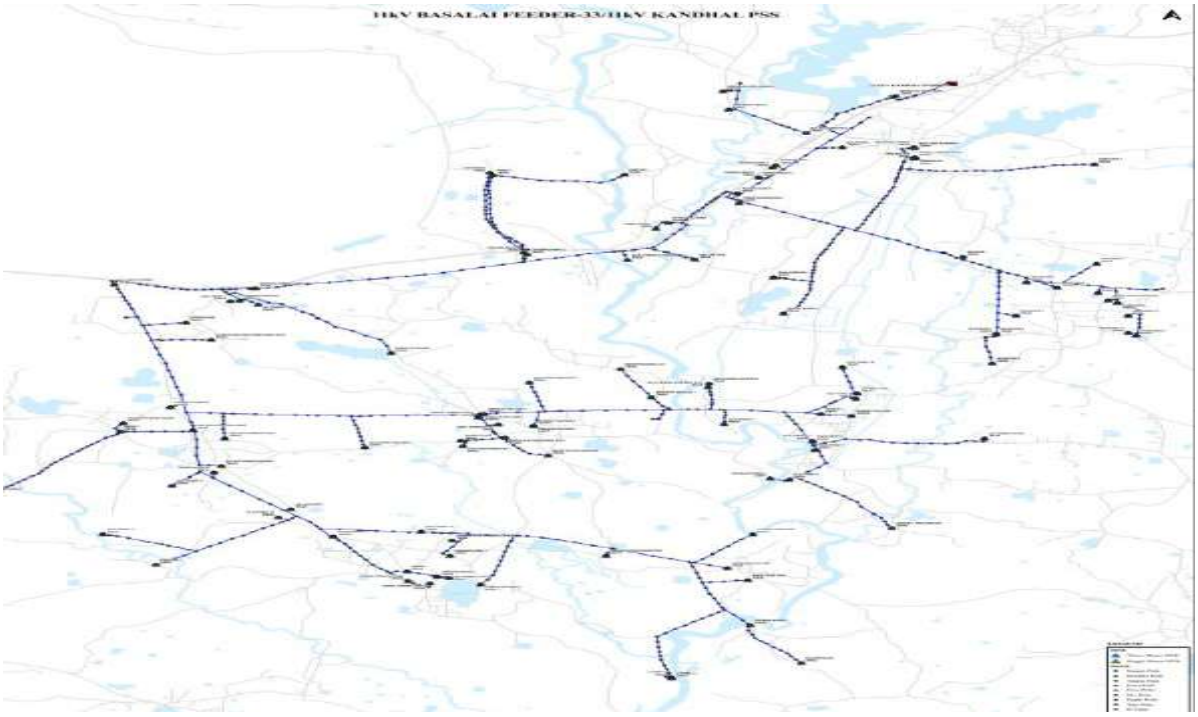
11Kv Samarkhai Feeder Load Flow Study of existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 54511581

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	84.3	10.0	5.4	0.2	1.2	1.1	0.6
B	97.1	10.3	6.2	0.2	1.4	1.2	0.7
C	92.7	9.9	5.9	0.2	1.3	1.2	0.7
				Total:	4	3	2
				LOSS	0.07		

Existing SLD of Basaloi feeder



11Kv Basaloi Feeder Load Flow Study of existing scenario in Cyme Software:

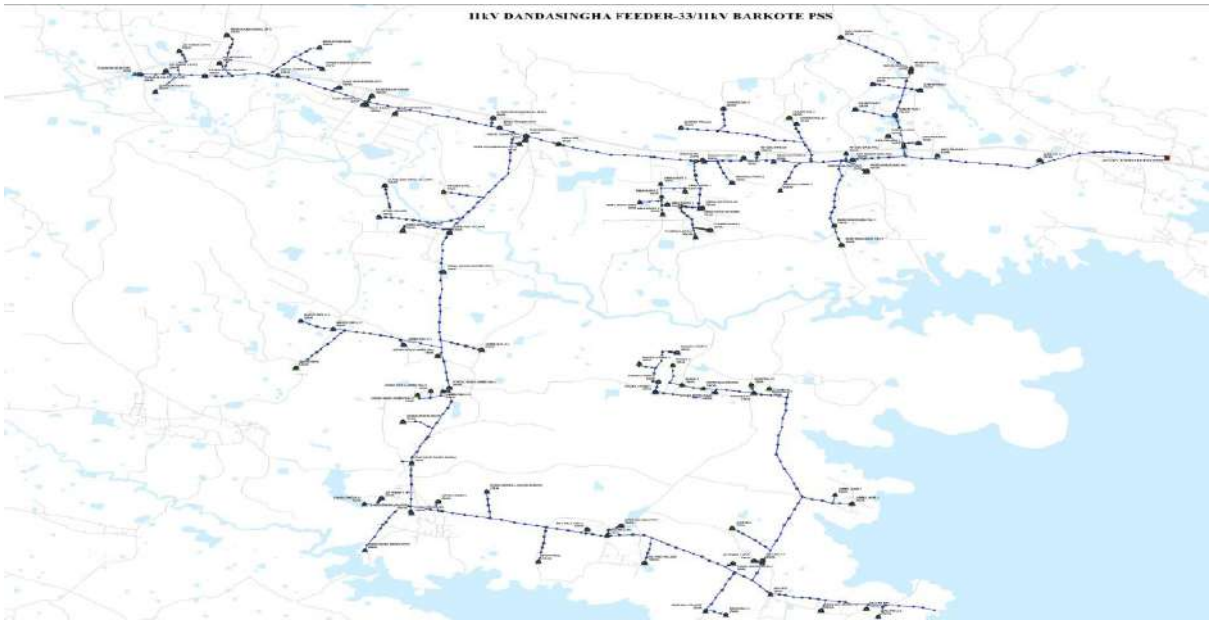
Load Flow Box

Overhead Line - 54545310

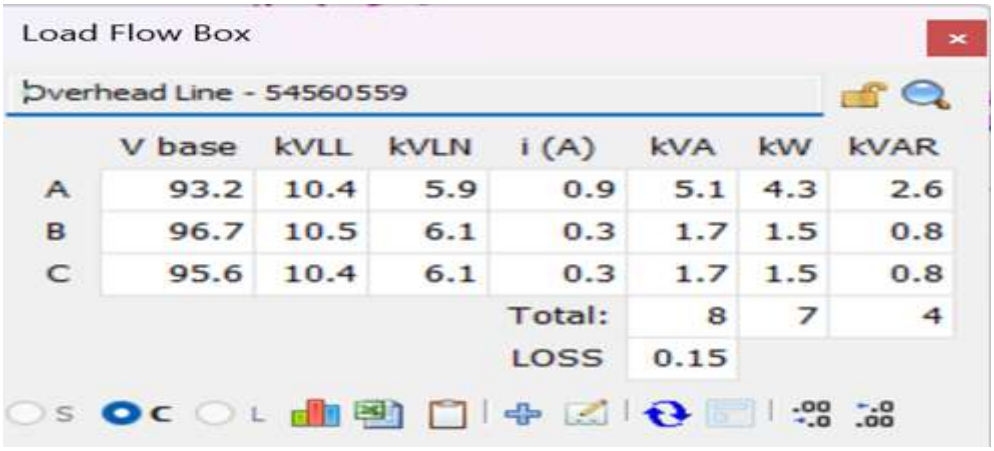
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	95.5	10.6	6.1	0.6	3.5	3.0	1.8
B	96.9	10.6	6.2	0.3	1.5	1.4	0.7
C	96.4	10.6	6.1	0.3	1.5	1.4	0.7
				Total:	7	6	3
				LOSS	0.14		

s

Existing SLD of Dangasingha feeder



11KDangasingha Feeder Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	93.2	10.4	5.9	0.9	5.1	4.3	2.6
B	96.7	10.5	6.1	0.3	1.7	1.5	0.8
C	95.6	10.4	6.1	0.3	1.7	1.5	0.8
				Total:	8	7	4
				LOSS	0.15		

Proposed Scenario:

- Feeder segregation of 11kv Samarkhai feeder to 11kv Basaloi feeder and 11kv Dangasingha feeder to mitigate under voltage issue.

SL NO	NAME OF THE PSS	11 KV FEEDER NAME	FEEDER PEAK LOAD (AMP)	FEEDER LENGTH (CKM)	PROPOSED CONDUCTOR SIZE (SQ.MM)	TAIL END VOLTAGE IN KV
1	KANDHAL	SAMARKHAI	36 AMP	50 CKM	100 SQ.MM	10.4

Proposed SLD:

Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 54512634

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	91.5	10.4	5.8	0.5	2.8	2.3	1.5
B	98.6	10.6	6.3	0.0	0.0	-0.0	-0.0
C	96.1	10.4	6.1	0.0	0.0	0.0	-0.0
				Total:	3	2	1
				LOSS	0.06		

Detailed Scope of Work:

1. 0.5CKM of new line from Komalnali-2 25KVA DTR to 25KVA RWSS dangasingha and NOP point at 16KVA new Goud suguda-3 DTR.
2. 1CKM of new line from Bichnapur-2 100KVA DTR to 25KVA Saloni shahi DTR and NOP point at 16KVA Bachrapal-1 DTR.

BoQ:

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED					
Name of the Division :-		**DED**			
Name of the Sub-Division : -		Deogarh			
Name of Section:-		Deogarh			
Name of the Work :-		Conductor Augmentation at 11kV Samarkhai Feeder.			
Names of Schemes: -		TPWODL CAPEX (FY 26-27)			
	ABSTRACT OF ESTIMATE				
Sl No	**Scope Of Work**	**Unit**	**Qty**	**Rate (Rs)**	**Amount (Rs) (in Cr)**
1	11 KV line. with 100 sqmm AAAC (Refer Annexure-112)	Ckm	1.5	0.1681452	0.2522178
2	11 KV AB Switch with DP (Refer Annexure-171)	Nos.	1	0.0308262	0.0154131
		Total			**0.283044**
	Total Amount (In Cr.)				**0.28**
Total estimated cost is Rs.0.28Crore. (On TPWODL Capex Scheme)					

Cost Estimate: ₹ 0.28Cr.

Benefit:

- Undervoltage mitigation of 11KV Samarkhai feeder.
- Length of 11kV Samarkhai feeder reduced to improve reliability of the network.
- Improved N-1 connectivity with 11kV Dangasingha feeder and 11kv Basaloi feeder.
- Ensuring reliable power supply of the Rural Area.

Mitigation of 11kV Risda Feeder Under Voltage Issue

Proposal:

11kV New link line for bifurcation of Risda feeder to ensure reliable power supply, mitigation of undervoltage and by strengthening of the existing network.

Requirement/ Need of the proposal:

Objective: To ensure reliable power supply, mitigation of undervoltage and by strengthening of the existing network and providing reliable power supply to the consumers.

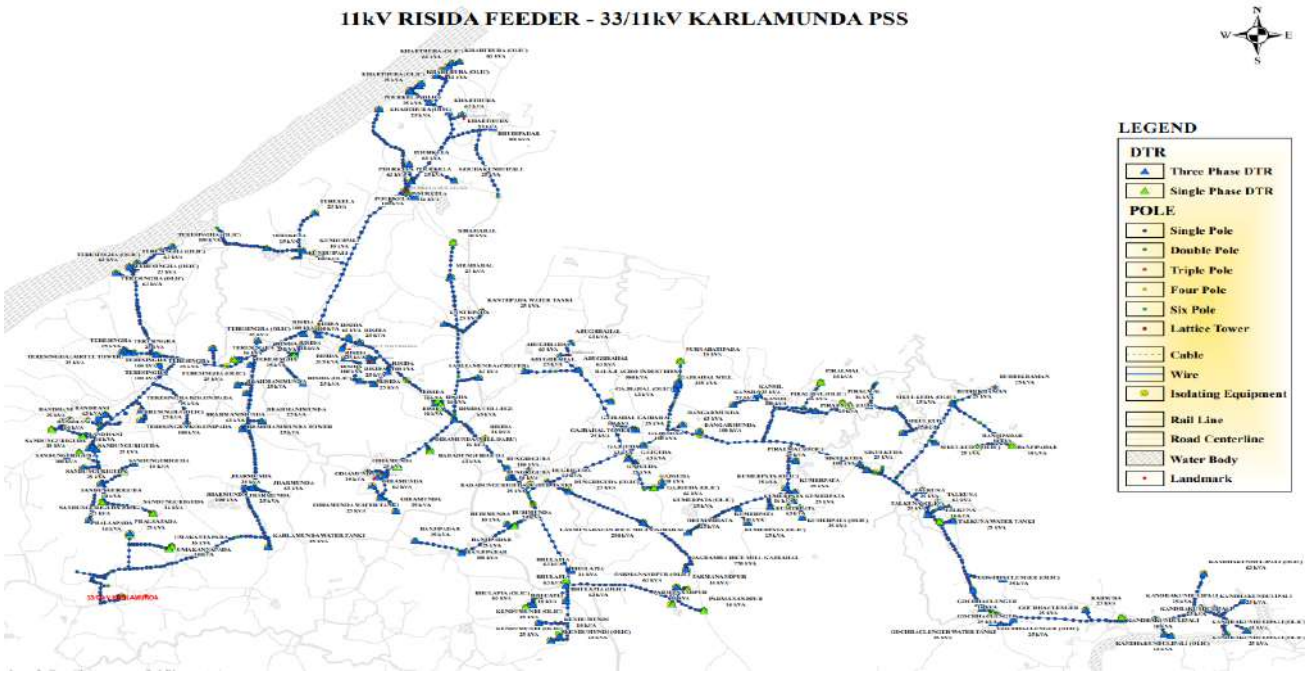
Existing Scenario:

- Currently the 11 KV Risida feeder originates from the 33/11 kV Karlamunda PSS, with a total route length of 111 Ckm.
- The existing feeder infrastructure comprises of 9mtr PSC pole and 55sqmm AAAC conductor and has a peak load of 125 amp and the tailend voltage is 9.2KV.
- To mitigate the undervoltage issue of this feeder it is proposed to bifurcate some load with 11KV Putigaon feeder and 11kv Borighat feeder.

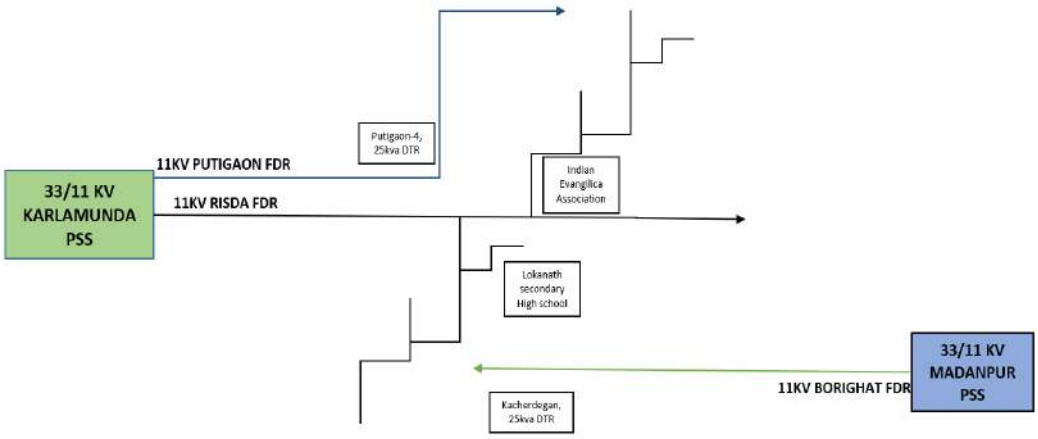
Existing Fy25 Loading and projected load at 11 kV Risida Feeder:

Existing Scenario and Projected Scenario after 1 Yr. Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy27 (MVA)**	**% Loading**	**Feeder Overloading/Undervoltage Status**
KARLAMUNDA	RISDA	3.8	2.16 MVA	56.84 %	NO	2.53 MVA	66.57%	9.2 KV
KARLAMUNDA	PUTIGAON	3.8	0.64 MVA	16.84 %	NO	0.75 MVA	19.76 %	10.6 KV
MADANPUR	BORIGHAT	3.8	0.56 MVA	14.73 %	NO	0.65 MVA	18.77 %	10.7 KV

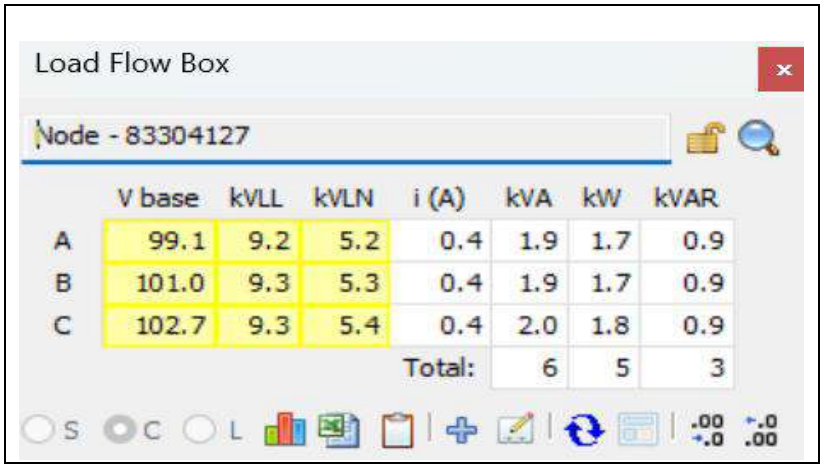
GIS Map:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software with Load Growth:



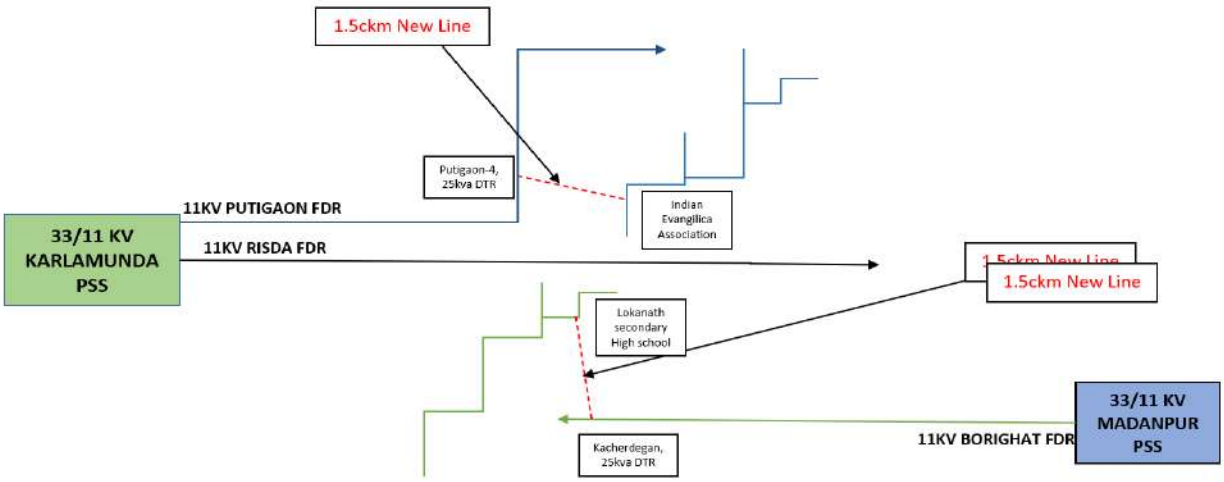
Proposed Scenario:

- 1.5 Ckm new line between 11kV Risda feeder and 11KV Putigaon feeder from Putigaon-4, 25kva DTR to Near Indian Evangilica Association using 100sqmm AAAC 11mtr WPB Pole.
- Another 1.5ckm line between 11kv Risdafeeder and 11kv Borighat feeder from Kacherdegan, 25kva DTR to Lokanath secondary High school using 100sqmm AAAC and 11mtr WPB pole.
- Two no of DP with AB Switch for maintenance.

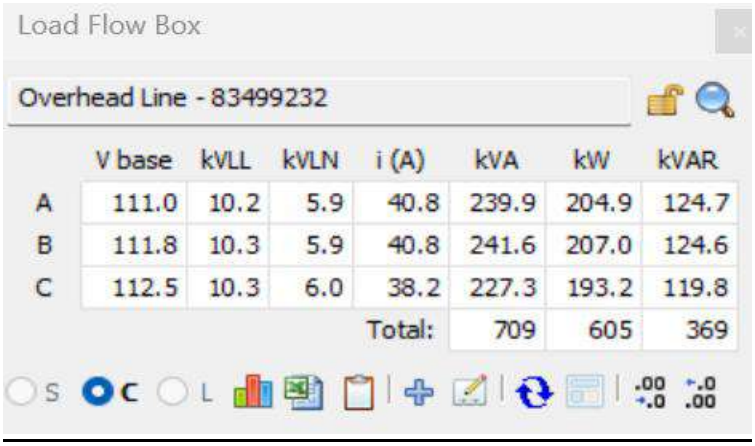
Proposed Loading:

Loading after Proposal (FY'27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
KARLAMUNDA	RISDA	3.8	1.52 MVA	40.5%	10.2 KV
KARLAMUNDA	PUTIGAON	3.8	1.03 MVA	27.1 %	10.5 KV
MADANPUR	BORIGHAT	3.8	0.8 MVA	21.05 %	10.6 KV

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	111.0	10.2	5.9	40.8	239.9	204.9	124.7
B	111.8	10.3	5.9	40.8	241.6	207.0	124.6
C	112.5	10.3	6.0	38.2	227.3	193.2	119.8
				Total:	709	605	369

Scope of Work:

- 1.5ckm new line between 11kV Risda feeder and 11KV Putigaon feeder from Putigaon-4, 25kva DTR to Near Indian Evangilica Association using 100sqmm AAAC 11mtr WPB Pole.
- Another 1.5ckm line between 11kv Risdafeeder and 11kv Borighat feeder from Kacherdegan, 25kva DTR to Lokanath secondary High school using 100sqmm AAAC and 11mtr WPB pole.
- Two no of DP with AB Switch for maintenance.

Proposed Cost with Estimate Break-up:

ANNEXURE-12.1					
TP WESTERN ODISHA DISTRIBUTION LIMITED					
Name of the Division :-		**SEED**			
Name of the Sub-Division : -		Dhanupali			
Name of Section:-		Dhanupali			
Name of the Work :-		Conductor Augmentation at 11kV Sunapali Feeder.			
Names of Schemes: -		TPWODL CAPEX (FY 26-27)			
	ABSTRACT OF ESTIMATE				
Sl No	**Scope Of Work**	**Unit**	**Qty**	**Rate (Rs)**	**Amount (Rs) (in Cr)**
1	11 KV line Aug. with 100 sqmm AAAC (Refer Annexure-92)	Ckm	2.5	0.1681452	0.420363
2	11 KV AB Switch with DP (Refer Annexure-171)	Nos.	1	0.0154131	0.0154131
		Total			**0.4357761**
	Total Amount (In Cr.)				**0.44**
Total estimated cost is Rs.0.44Crore. (On TPWODL Capex Scheme)					

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**KEED**	
Name of the Sub-Division: -	Narla	
Name of Section: -	Madanpur	
Name of the Work: -	11kv New line for Load bifurcation of 11 KV Risda feeder for Undervoltage mitigation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART A: 11 KV NEW LINE (Refer Annexure-112)	63,20,128.00
2	PART B: DP WITH AB SWITCH (Refer Annexure-171)	6,16,339.00
	Total Amount	**69,36,467.00**
	Total Amount (In Cr.)	**0.69 Cr.**
Total estimated cost is Rs.0.69 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.69 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS Name	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg. Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	Karlamunda	Risida	2360	286	46	404927	16.6	
	Karlamunda	Putigaon	707	27				
	Madanpur	Borighat	616	18				
After Proposal	Karlamunda	Risida	1328	96				
	Karlamunda	Putigaon	1012	35				
	Madanpur	Borighat	1242	102				

Revenue Return Sheet				
Sr. No.	Description	Formula	Value	UoM
A	Total cost of scheme	-	69.00	Rs. Lac
B	Load due to load growth	-	188.9475	kVA
C	Total kW due to load growth	1.732*33*B*Pf	165	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	983384	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	14.01	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	16.60	Rs. Lac
J	Net Revenue Collected	H+I	30.61	Rs. Lac
K	% revenue return	(J/A)*100	44.4	%
L	Pay Back Period	100/K	2.25	Years

Benefit to the system and consumers:

- Under Voltage issue of the feeder will be mitigated.
- The existing network will be strengthened, and the reliability will be catered

Length Reduction of Both 11 KV Town-3 and Doordarshan Feeder

Proposal:

11kV new link between Doordarshan feeder & Town-3 feeder to merge two nos of Short 11 KV Feeders (Doordarshan & Town-3 Feeder) for ease of Maintainance and augmentation of the new 11 KV Town-3 Feeder.

Proposal:

To merge two nos of Short 11 KV Feeders (Doordarshan & Town-3 Feeder) for ease of Maintainance and augmentation of the new 11 KV Town-3 Feeder.

Requirement/ Need of the proposal:

Objective: Summation of Town-3 feeder and Doordarshan feeder with augmentation of Town-3 feeder.

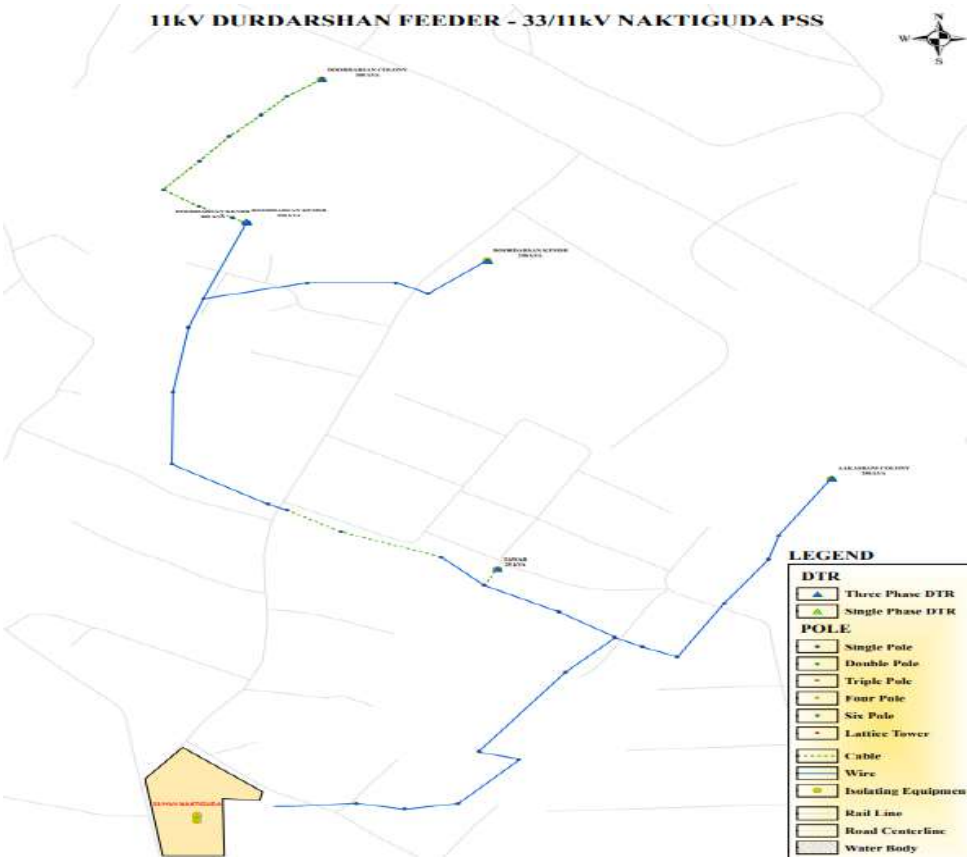
Existing Scenario:

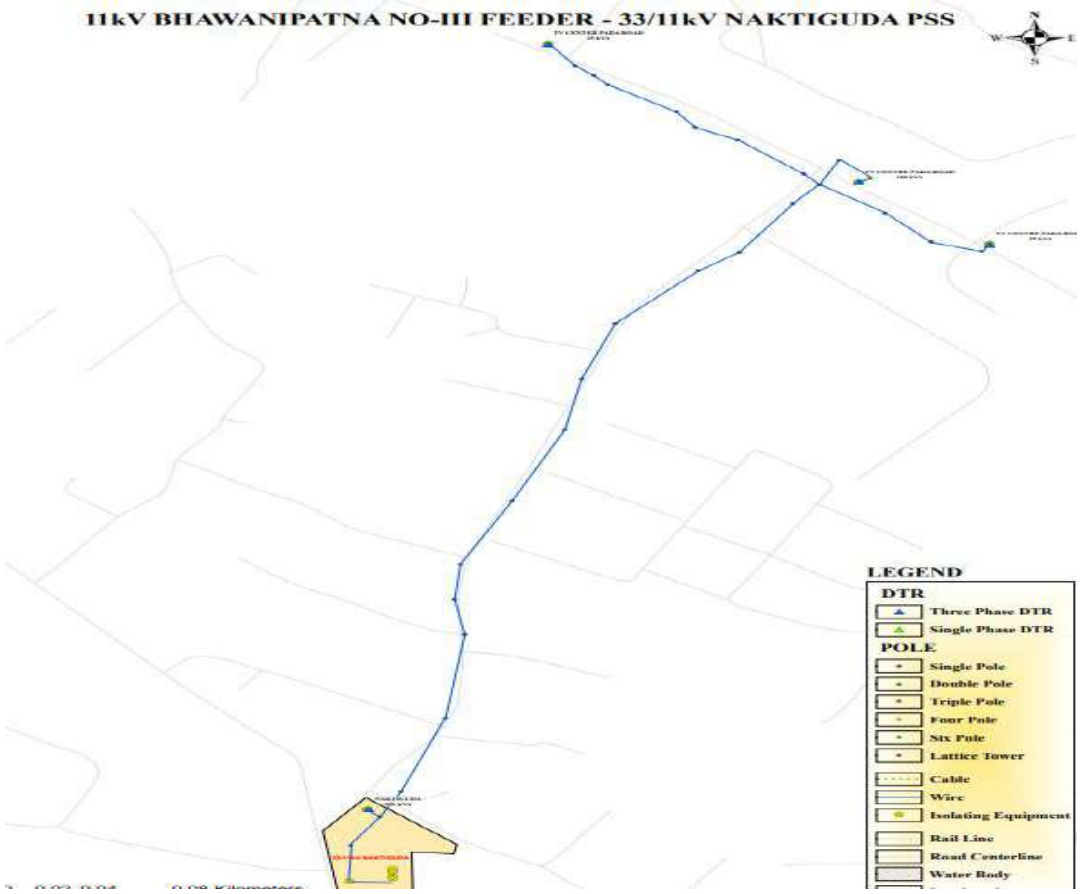
- Currently the 11 kV Doordarsan feeder originates from the 33/11 kV Naktiguda PSS, with a total route length of 1.04 Ckm and a connected load of 8 Amps.
- The 11 kV Town-3 feeder also originates from the 33/11 kV Naktiguda PSS, with a total route length of 1.2 Ckm and a connected load of 30 Amps.
- Both feeders pass through residential areas and crowed place raising significant safety concerns.
- Additionally, both feeders pass through private plantation areas, leading to frequent power supply disruptions during fault conditions and posing operational challenges.
- To enhance safety and ensure reliable power supply and to reduce unnecessary maintenance, it is proposed to merge both feeders as a one feeder as Towm-3 Feeder and augment the 11kv Town-3 feeder from Naktiguda PSS to the TV centre pada chowk as the existing infrastructure is damaged condition and the ground clearance is low.
- This will help for unusual routine maintenance, and the length of the total feeder will be reduced.

Existing Loading :

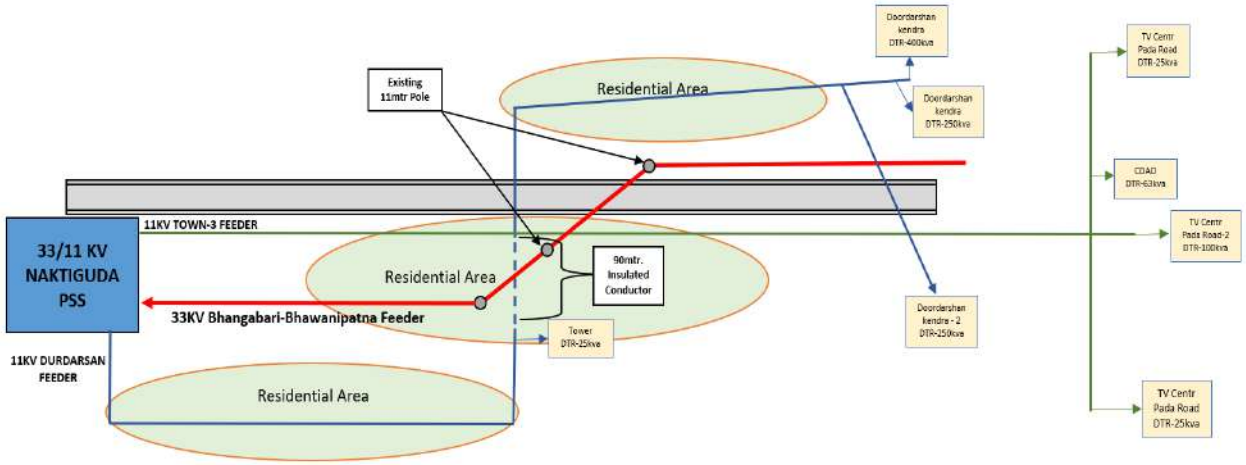
Existing Scenario and Projected Scenario after 1 Yr. Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY 25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Naktiuda	Town-3	3.8 MVA	0.58 MVA	15.26%	NO	0.68 MVA	17.89 %	SAFETY ISSUE/ LENGTH REDUCTION
Naktiuda	DOORDARSHAN	3.8 MVA	0.15 MVA	3.94 %	NO	0.18 MVA	4.7 %	SAFETY ISSUE/ LENGTH REDUCTION

Existing GIS SLD:

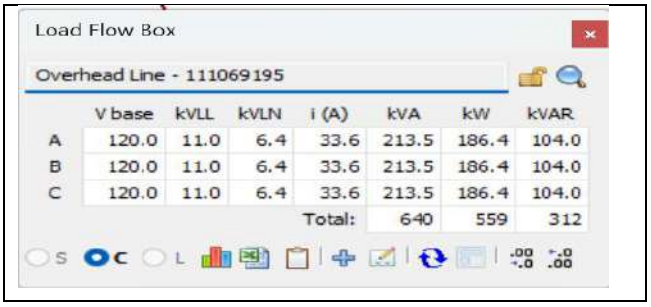




Existing SLD:



Load Flow Study of existing scenario in Cyme Software with Load Growth:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	120.0	11.0	6.4	33.6	213.5	186.4	104.0
B	120.0	11.0	6.4	33.6	213.5	186.4	104.0
C	120.0	11.0	6.4	33.6	213.5	186.4	104.0
				Total:	640	559	312

Proposed Scenario:

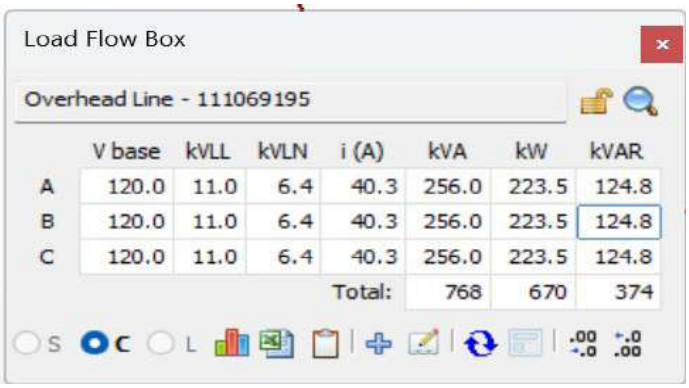
- 1.2ckm augmentation of 11kV Town-3 feeder using 100sqmm Covered conductor is proposed from Naktiguda PSS to TV centre pada.
- Bifurcation of the 11kv Doordarsan feeder in the newly augmented 11KV Town-3 feeder to mitigate tripping issue and safety concern.

Proposed Loading:

Loading after Proposal (Summer'27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Naktiuda	TOWN-3 (TOWN-3 + DOORDARSHAN)	5 MVA	0.86 MVA	17.2%	OK

Proposed SLD:

Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	120.0	11.0	6.4	40.3	256.0	223.5	124.8
B	120.0	11.0	6.4	40.3	256.0	223.5	124.8
C	120.0	11.0	6.4	40.3	256.0	223.5	124.8
				Total:	768	670	374

Scope of Work:

1.2 Ckm augmentation of 11 KV Town-3 feeder using 11mtr WPB pole and 100sqmm covered conductor.

Proposed Cost with Estimate Break-up:

TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**KEED**	
Name of the Sub-Division: -	SDO-Powerhouse	
Name of Section: -	ESO-IV	
Name of the Work:-	11 KV DOORDARSHAN AND TOWN-3 FEEDER SUMMATION FOR LENGTH REDUCTION AND TOWN-3 FEEDER AUGMENTATION	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART A: 11 KV LINE AUGMENTATION FROM NAKATIGUDA PSS TO TV CENTER PADA (Refer Annexure-92)	21,42,339.00
	Total Amount	**21,42,339.00**
	Total Amount (In Cr.)	**0.21 Cr.**
Total estimated cost is Rs.0.21 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.21 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS Name	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg. Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Naktiguda**	Doordarshan	111	1	**0**	**4364**	**0.2**	
	Naktiguda	Town-3	559	12				
After Proposal	**Naktiguda**	Doordarshan	0	0				
	Naktiguda	Town-3	670	12				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	21.00	Rs. Lac
B	Load due to load growth	-	32.16	kVA
C	Total kW due to load growth	1.732*33*B*Pf	28	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	167404	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	2.39	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	8.62	Rs. Lac
J	Net Revenue Collected	H+I	11.01	Rs. Lac
K	% revenue return	(J/A)*100	52.4	%
L	Pay Back Period	100/K	1.91	Years

Benefit to the system and consumers:

- Reduction in unnecessary maintenance of both feeders.
- Strengthening of 11kV Town-3 feeder to improve reliability of the network.
- Ensuring reliable power supply of the Urban Area.

N-1 Link Line between Behera Feeder and Dhamagarh Feeder

1.0 Proposal for N-1 Connectivity between Behera Feeder and Dharmagarh Town Feeder.

Proposal:

11kV New link line between Behera Feeder and Dharmagarh Town feeder to Provide N-1 Connectivity between 11 KV Behera and 11 KV Dharmagarh Town Feeder

Requirement/ Need of the proposal:

Objective: To Provide N-1 Connectivity between 11 KV Behera and 11 KV Dharmagarh Town Feeder.

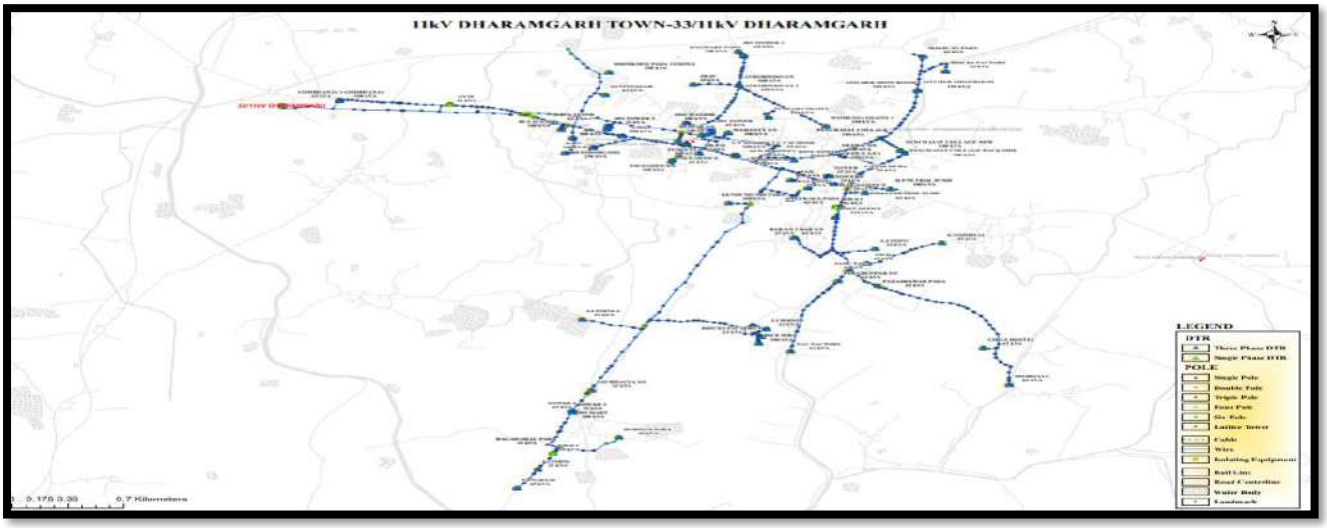
Existing Scenario:

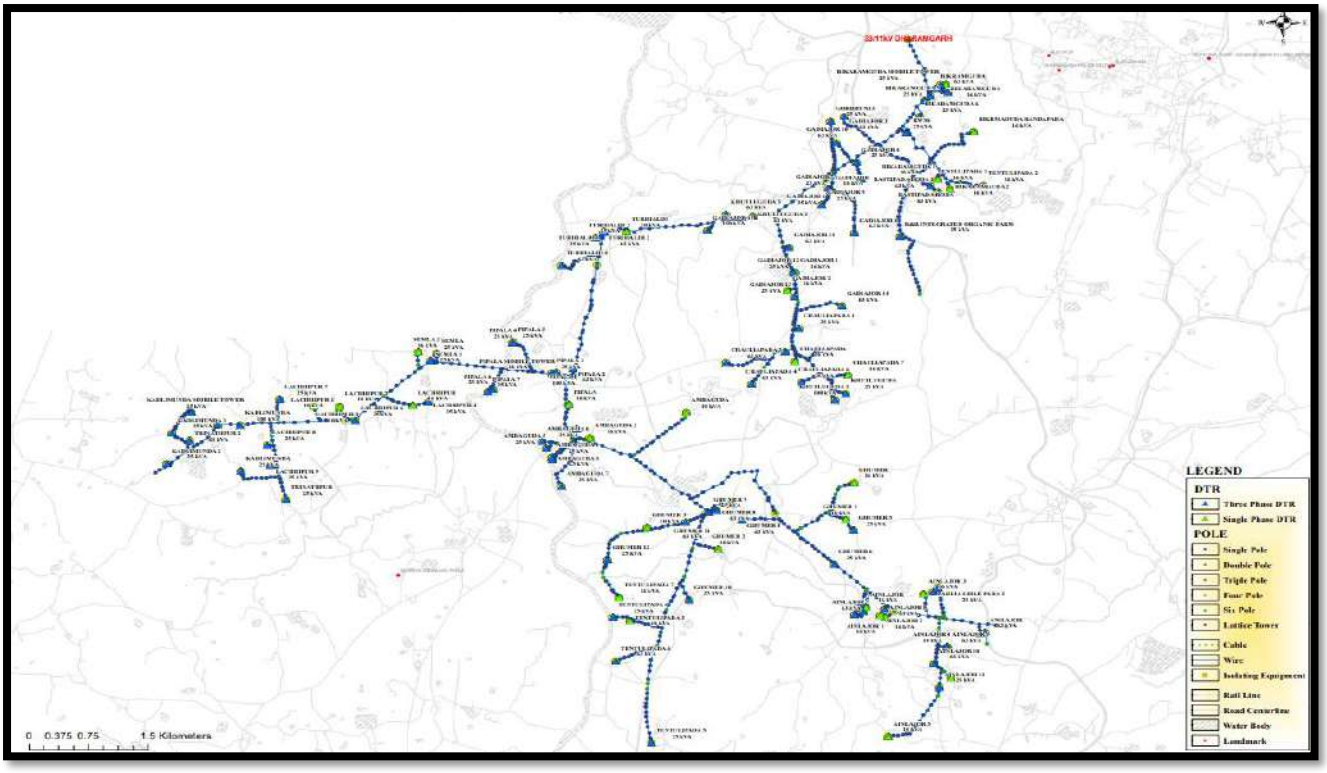
- Currently 11 KV Behera feeder, originates from the 33/11 KV Dharmagarh PSS, has a total length of 61 Ckm and is equipped with 100/55 sq.mm ACSR conductors. The feeder supports a peak load of 45 Amps.
- This feeder is an old feeder and a radial one for which in maintenance period and breakdown period the total feeder got blackout.
- This 11 KV Behera feeder feeds 2 nos of areas Tentuliapada & KBD which comes under NAC area and the population growth of this area is high and multifloored buildings are in progress for which a rise in Load is expected.
- So, it is essential to erect a link line of 3 Ckm between 11 KV Behera feeder and 11 KV Dharmagarh Town feeder for N-1 connectivity and after the erection of the Link line the load of Tentuliapada & KBD (2 X 100 KVA) will be shifted on 11 KV Dharmagarh Town feeder for better reliability towards this area.

Existing Loading :

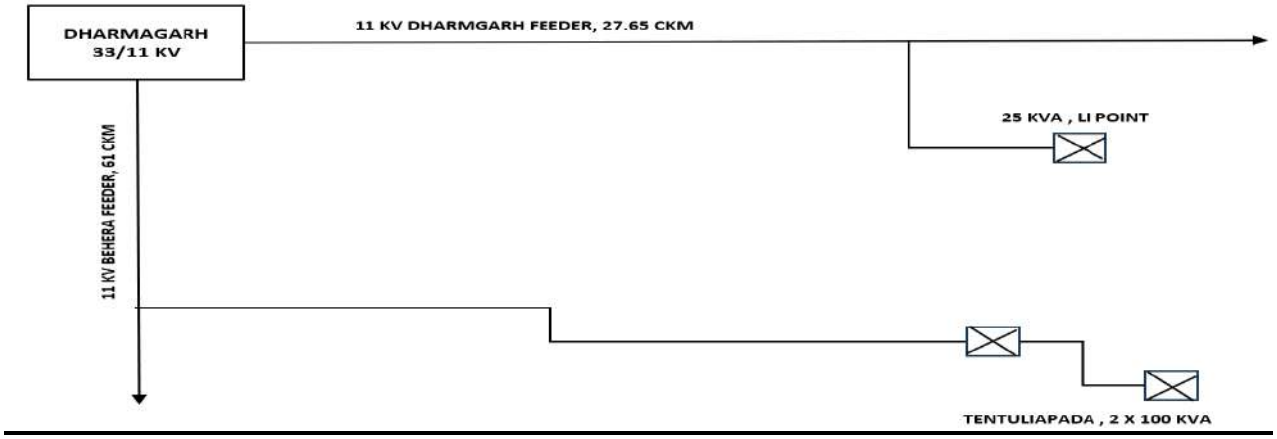
Existing Scenario and Projected Scenario after 1 Yr. Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY 25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Dharmagarh	Town	4 MVA	3.8 MVA	95 %	NO	4.44 MVA	111 %	**OVERLOADED (BIFURCATION PROPOSAL IS GIVEN IN CAPEX FY 27 SHEET)**
Dharmagarh	Behera	4 MVA	0.87 MVA	21.75 %	NO	1.02 MVA	25.5 %	NO

Existing GIS SLD:





Existing SLD:



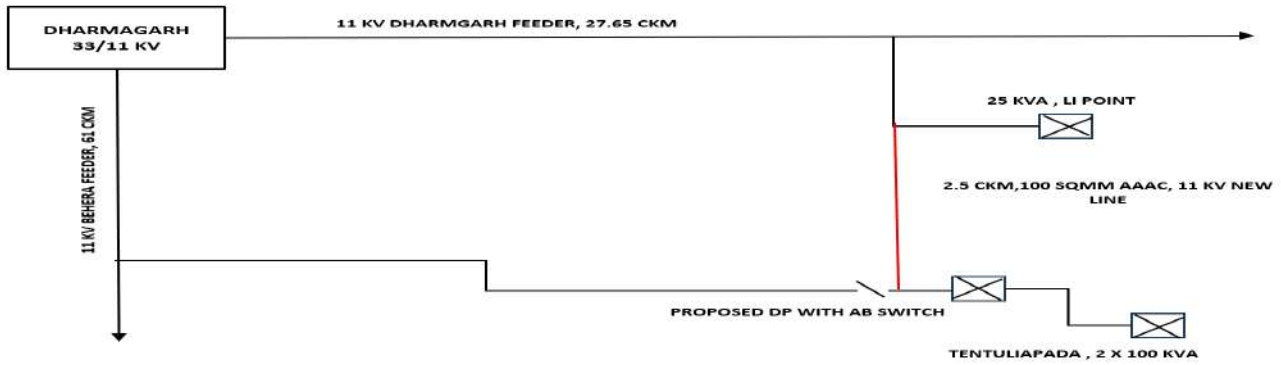
Proposed Scenario:

- To mitigate the reliability issue hereby, it is proposed to erect a line line of 2.5 Ckm from RWSS 100 KVA point on 11 KV Dharmagarh Town feeder to Tentuliapada Village on 11 KV Behera feeder with 100 Sqmm AAAC using 11 Mtr WPB Pole.
- 1 no of DP with AB Switch will be required for NO & NC Operation.

Proposed Loading:

Loading after Proposal					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY27 (MVA)**	**% Loading**	**Feeder N-1 Status**
Dharmagarh	Town	4 MVA	4.44 MVA	111 %	OK
Dharmagarh	Behera	4 MVA	1.02 MVA	25.5 %	OK

Proposed SLD:



Scope of Work:

- 2.5 Ckm of 11 KV New line with 100 sqmm AAAC Conductor using 11 Mtr WPB poles.
- 1 nos of DP with AB Switch (400Amp) using 11 Mtr WPB pole for NO & NC Operation.

Proposed Cost with Estimate Break-up:

ANNEXURE-12.1		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**KEED**	
Name of the Sub-Division: -	SDO-Powerhouse	
Name of Section: -	ESO-IV	
Name of the Work: -	11 KV N-1 LINE BETWEEN BEHERA FEEDER AND DHARMAGARH FEEDER	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART A: 11 KV N-1 LINE BETWEEN BEHERA FEEDER AND DHARMAGARH FEEDER (Refer Annexure-112)	52,66,020.00
2	PART A: DP WITH AB SWITCH (Refer Annexure-171)	3,08,262.00
	Total Amount	**55,74,282.00**
	Total Amount (In Cr.)	**0.56 Cr.**
Total estimated cost is Rs.0.56 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.56 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS Name	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Dharamgarh**	Town-1	3769	168	**6**	**53441**	**2.2**	
	Dharamgarh	Behera	862	7				
After Proposal	**Dharamgarh**	Town-1	3269	135				
	Dharamgarh	Behera	1362	27				

Sl. No.	Description	Formula	Value	UoM
A	Total cost of scheme	-	56.00	Rs. Lac
B	Load due to load growth	-	479.33	kVA
C	Total kW due to load growth	1.732*33*B*Pf	419	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2494709	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	35.55	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	2.22	Rs. Lac
J	Net Revenue Collected	H+I	37.77	Rs. Lac
K	% revenue return	(J/A)*100	67.4	%
L	Pay Back Period	100/K	1.48	Years

Benefit to the system and consumers:

- N-1 Connectivity will be achieved for both feeders.

Mitigation of 11kV Dharmagarh Town Feeder Overloading Issue

1.0 Proposal for Overloading mitigation and Reliability improvement of 11kV Dharmagarh Town Feeder:

Proposal:

11kV New link line for bifurcation of Dharmagarh Town feeder to strengthen the existing network as well as to mitigate the Overloading issue of the feeder.

Requirement/ Need of the proposal:

Objective: To strengthen the existing network as well as to mitigate the Overloading issue of the feeder.

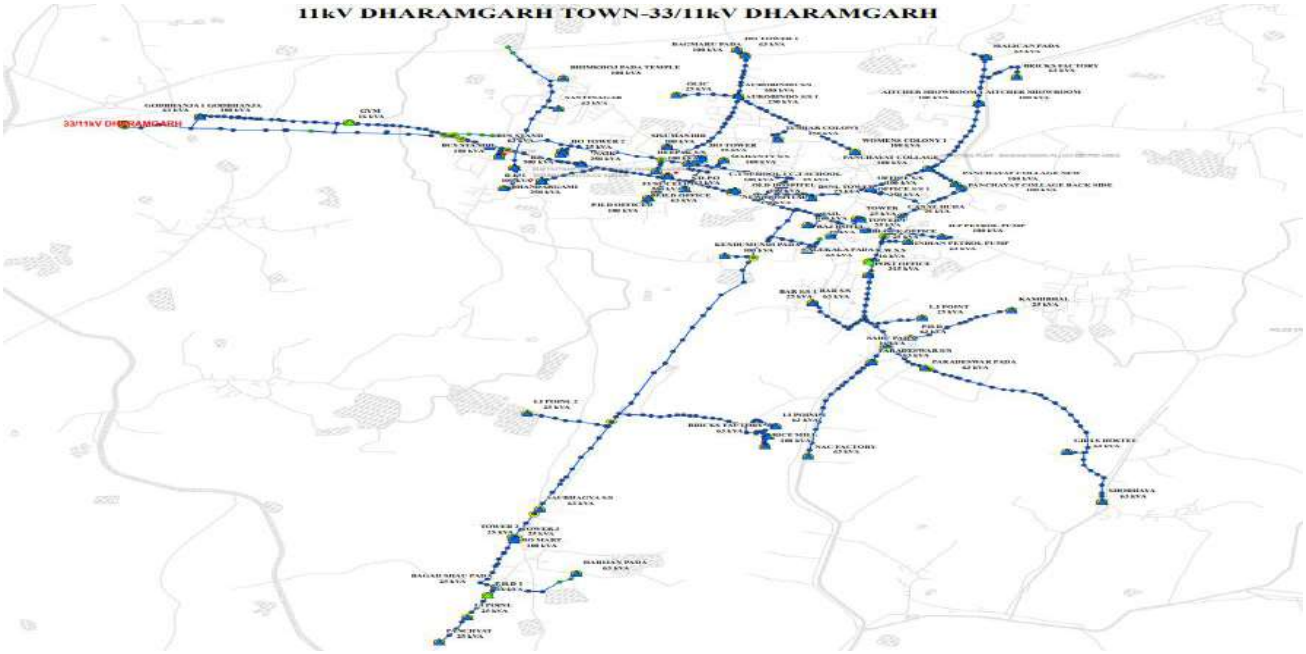
Existing Scenario:

- Currently the 11 kV Dharmagarh Town feeder originates from the 33/11 kV Dharmagarh PSS, with a total route length of 27.6Ckm.
- The existing feeder infrastructure comprises of 9/11mtr PSC/RSJ pole and 55/34 sqmm AAAC conductor with a peak load of 195amp.
- At present the feeder is loaded up to 82% and will go up to 126% loaded with a 2 Year Load growth.
- This several break-down on 11kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, load bifurcation of this feeder is proposed for improving reliability.

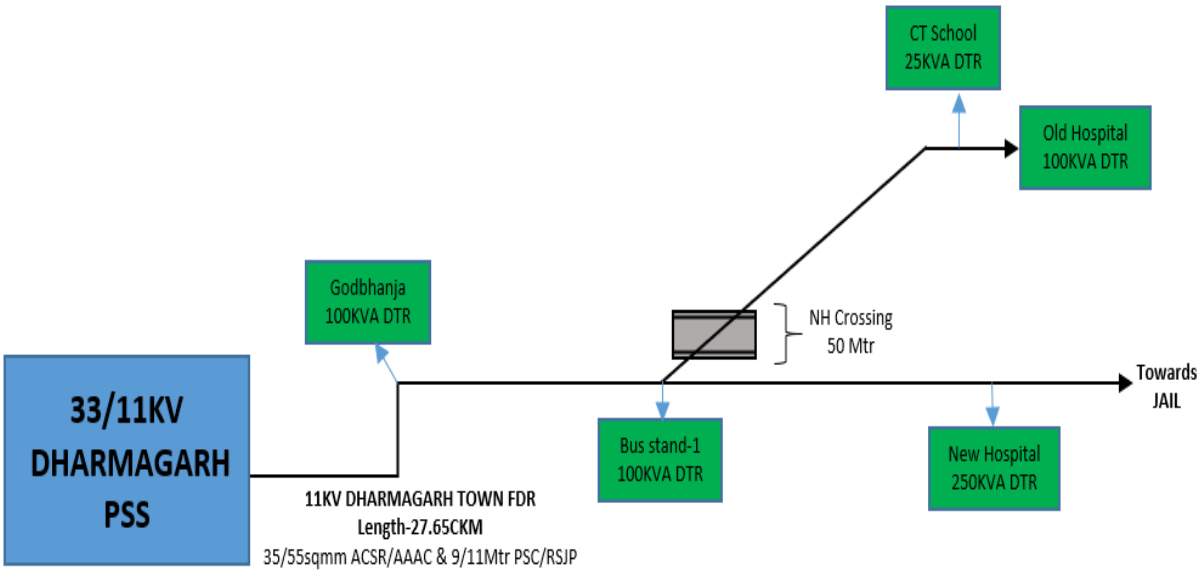
Existing Loading :

Name of PSS	11kV Feeder Name	Feeder Capacity (MVA)	Peak Loading FY-25 (MVA)	Existing % Loading	Feeder Overloading Status (AS IS)	Projected load after 2year (MVA)	Proposed % Loading	Feeder Overloading/Undervoltage Status
DHARMAGARH	TOWN	4.5 MVA	3.7 MVA	82.2 %	YES	5.7 MVA	126 %	Overloading

Existing GIS SLD:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software with Load Growth:

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	106.6	9.9	5.6	0.3	1.7	1.5	0.8
B	108.0	9.9	5.7	0.3	1.7	1.5	0.8
C	109.7	9.9	5.8	0.3	1.8	1.6	0.8
				Total:	5	5	2

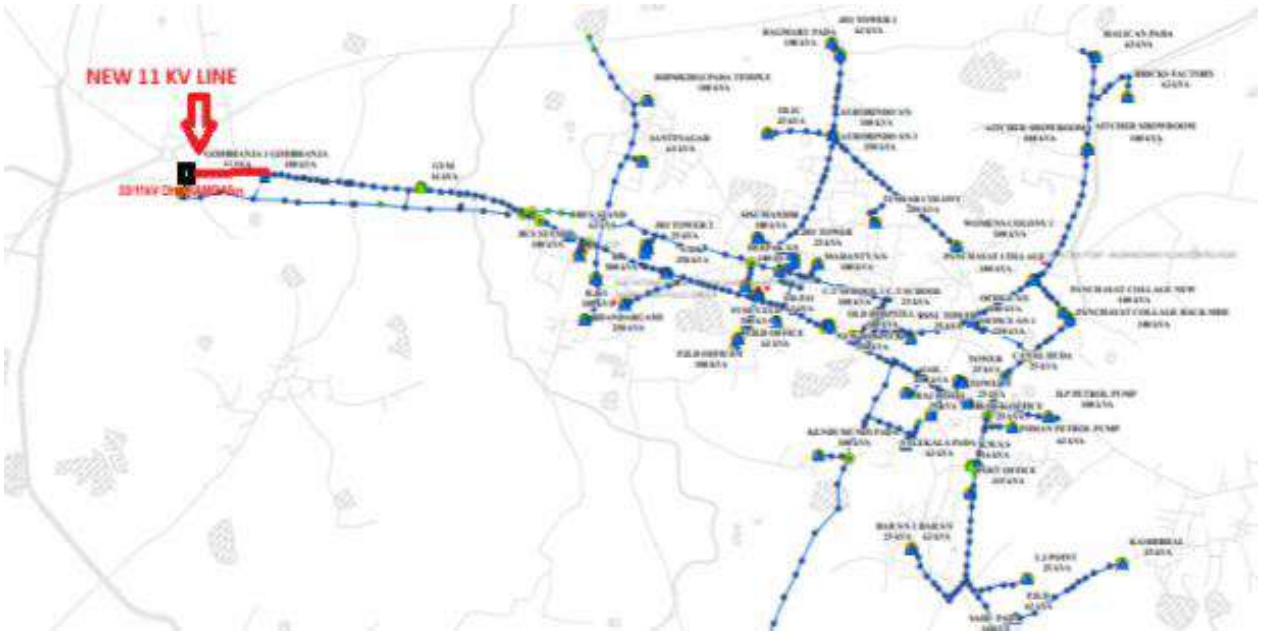
Proposed Scenario:

- One no. of 11KV New Feeder is proposed from Dharmagarh PSS to Godbhanga-1 63KVA DTR for load Bifurcation from existing 11KV Dharmagarh Feeder.

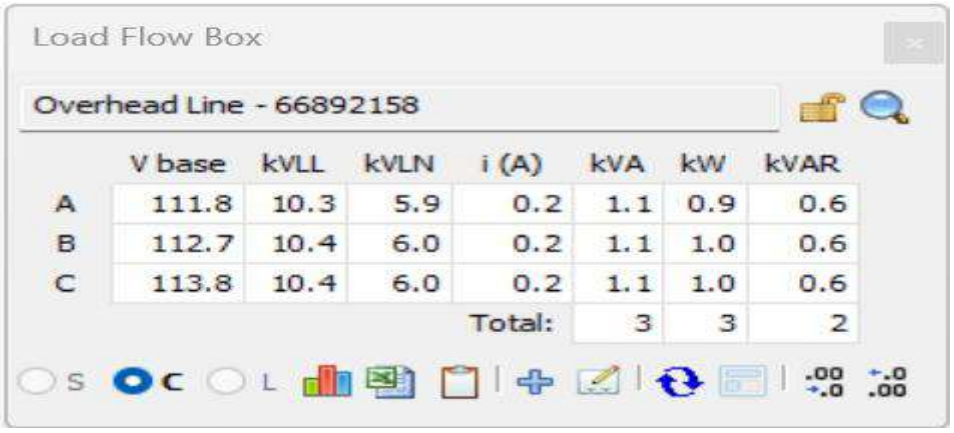
Proposed Loading:

Loading after Proposal					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Dharmagarh	Town	4.5	2.8	64%	OK
	New Town-2	4	2.9	70%	OK

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software:



Scope of Work:

1. Construction of 01 No. of 11 kV O/D Bay, VCB at Dharmagarh PSS.
2. Proposal for a new 11KV Feeder from 33/11KV Dharmagarh PSS using 100sqmm AAAC of 0.5CKM.
3. 1 no of DP with AB Switch (400 A) in the line for maintenance purpose using 11 Mtr WPB Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**KWED**	
Name of the Sub-Division: -	DHARMAGARH	
Name of Section: -	ESO-2	
Name of the Work: -	11 KV Dharmagarh Town feeder Overloading mitigation	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	PART B: 11KV O/D BAY, VCB AT DHARMAGARH PSS (Refer Annexure-163)	20,77,325.00
2	PART B: 11 KV NEW LINE FROM DHARMAGARH PSS TO GODBHANJA-1 DTR (Refer Annexure-112)	10,54,457.00
3	PART C: DP WITH AB SWITCH (Refer Annexure-171)	3,08,262.00
	Total Amount	**34,40,044.00**
	Total Amount (In Cr.)	**0.34 Cr.**
Total estimated cost is Rs 0.34 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.34 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS Name	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Dharamgarh**	Town-1	3769	215				
After Proposal	**Dharamgarh**	Town-1	2225	64	**4**	**31991**	**1.3**	
	Dharamgarh	Town-2	2919	143				

Sl. No.	Description	Formula	Value	UoM
A	Total cost of scheme	-	34.00	Rs. Lac
B	Load due to load growth	-	239.74125	kVA
C	Total kW due to load growth	1.732*33*B*Pf	210	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1247742	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	17.78	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	1.30	Rs. Lac
J	Net Revenue Collected	H+I	19.08	Rs. Lac
K	% revenue return	(J/A)*100	56.1	%
L	Pay Back Period	100/K	1.78	Years

Benefit to the system and consumers:

- Overloading issue of the feeder will be mitigated.
- The existing network will be strengthened, and the reliability will be catered.

Construction of 11 kV New Line
Annexure: 39.26

To enable N-1 connectivity with high revenue feeder.

Proposal for reliability improvement and Mitigation of overloading for 11kV Bandutikra Feeder:

PROPOSAL:

11kV New link line between AshaKiran feeder and Bandutikra feeder to provide N-1 connectivity to both HR feeders which feeds power to Bargarh Town areas.

REQUIREMENT/NEED OF THE PROPOSAL:

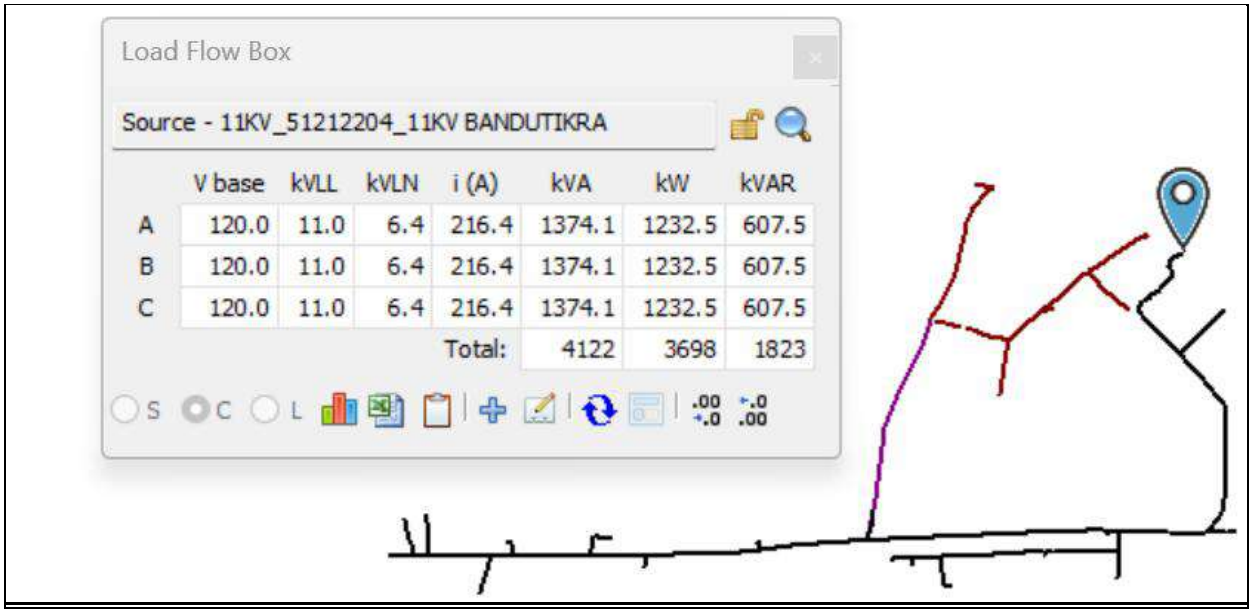
Objective: 11kV new link line of 0.6Ckm between high revenue 11kV Bandutikra feeder & 11kV Ashakiran feeder to provide N-1 connectivity to both HR feeders which feeds power to Bargarh Town areas. Presently, the 11kV Bandutikra feeder feeds power to commercial consumer of Bargarh town areas. Hence, load mitigation of 11kV Bandutikra feeder can be achieved.

EXISTING SCENARIO: -

- The 11kV Bandhutikra feeder is emanating from Division-2 New PSS. It is a high revenue feeder which feeds Power Supply to many commercial consumers of Bargarh Town areas.The 11kV Bandhutikra feeder peak loading is 170 A & the conductor of 100 sq.mm AAA is used in the trunk line.
- The 11kV Ashakiran feeder is emanating from Division-1 Old PSS.The 11kV Ashakiran feeder peak loading is 228 A & the conductor of 100 sq.mm AAA is used in the trunk line.
- The 11kV Ashakiran bifurcation plan is proposed in Capex Fy 22-23 for which the work is in progress. After the bifurcation, the existing Ashakiran feeder will have peak loading of 48.50A & New Ashakiran will have a peak loading of 178 A.
- Presently, the N-1 Supply arrangement for the 11kV Bandhutikra feeder is not available & considering the high revenue category of the Bandhutikra feeder, it is very essential to arrange a N-1 supply for the Bandhutikra feeder.

Existing Scenario							
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder N-1 Availability Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**
Division-II	Bandutikra	5.18	3.21	62%	No	4.1	79%

Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



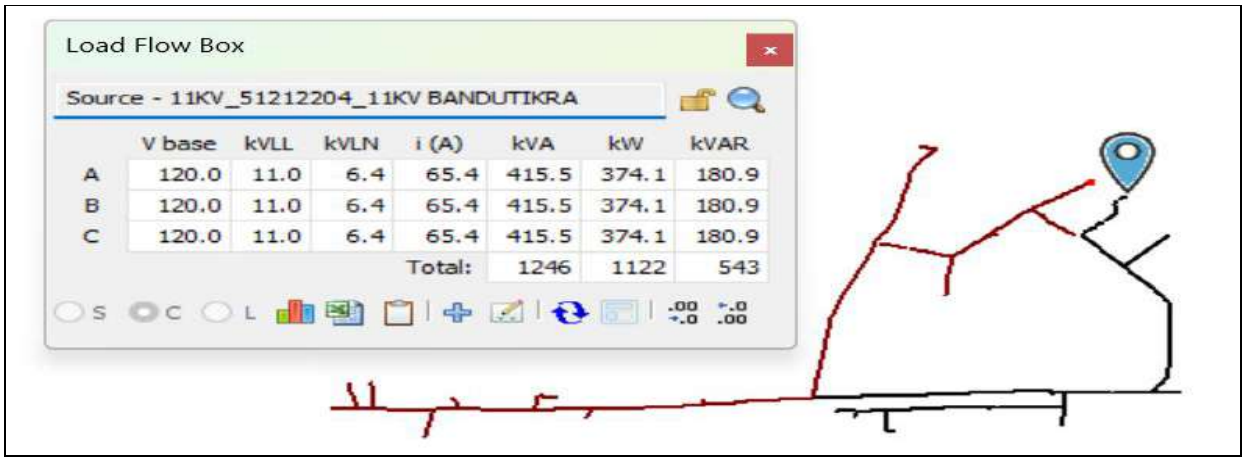
Proposed Scenario:

- A 11kV link line(0.6Ckm) from 11kV Ashkiran feeder near 630kVA DTR is proposed using insulated AAAC 100Sqmm up to Bandutikra Chowk & will connect with 11kV Bandutikra feeder.
- 1 No of. DP with AB switch is proposed at tapping point of Bandutikra feeder.
- Interlinking of 11KV Bandutikra feeder from Division-II PSS with 11KV Ashakiran feeder from Division-I PSS.

Proposed FY-27 Loading and projected load at 11 kV Bandutikra Feeder.

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder N-1 Availability Status (AS IS)**
Division-II PSS	11KV Bandutikra feeder	5.18	4.1	79%	OK with N-1

Proposed GIS SLD



Scope of Work:

- 0.6 Ckm of 11kV link line using 100 sq.mm Covered conductor & 11 Mtr WPB poles.
- Installation of two 400-amp AB switch on DP of 11 Mtr WPB poles.
- Installation of cradle guard in one span for local road crossing.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BED-BARGARH**	
Name of the Sub-Division: -	Bargarh-I	
Name of Section: -	Eso-II	
Name of the Work: -	11kV link line between 11kV Bandutikra with 11kV Ashkiran feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11KV NEW LINK LINE OF 0.6CKM USING 11Mtr WPB POLES & AAAC 100 SQMM (Covered) (Refer Annexure-170)	₹ 17,17,677.00
2	**PART-B:** ESTIMATE OF 11KV DP WITH ABS (2 NOS) (Refer Annexure-171)	₹ 6,16,339.00
	Total Amount	**₹ 23,34,016.00**
	Total Amount (In Cr.)	**0.23**
Total estimated cost is Rs.0.23 Crore. (On TPWODL Capex Scheme)		

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg. Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**TOWN-1**	ASHAKIRAN	983	13	**3**	**30550**	**1.3**	
	TOWN-II	BANDU TIKRA	3398	100				
After Proposal	**TOWN-1**	ASHAKIRA	1260	17				
	TOWN-II	BANDU TIKRA	3113	88				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	23.34	Rs. Lac
B	Load due to load growth	-	353.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	309	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1837201	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	26.18	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	1.30	Rs. Lac
J	Net Revenue Collected	H+I	27.48	Rs. Lac
K	% revenue return	(J/A) *100	117.7	%
L	Pay Back Period	100/K	0.85	Years

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Bandutikra feeder.
- By linking 11KV Ashakiran from Division-1 PSS, can ensure load diversion in case of requirement to maintain reliability ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Mitigation of 11kV Feeder Overloading Issue

Proposal for reliability improvement and Mitigation of overloading for 11kV Nadikhandi Feeder.

PROPOSAL:

11kV New link line between Hatpada feeder and Nadikhandi feeder to mitigate overloading of 11kV Nadikhandi feeder and improve reliablity.

REQUIREMENT/NEED OF THE PROPOSAL:

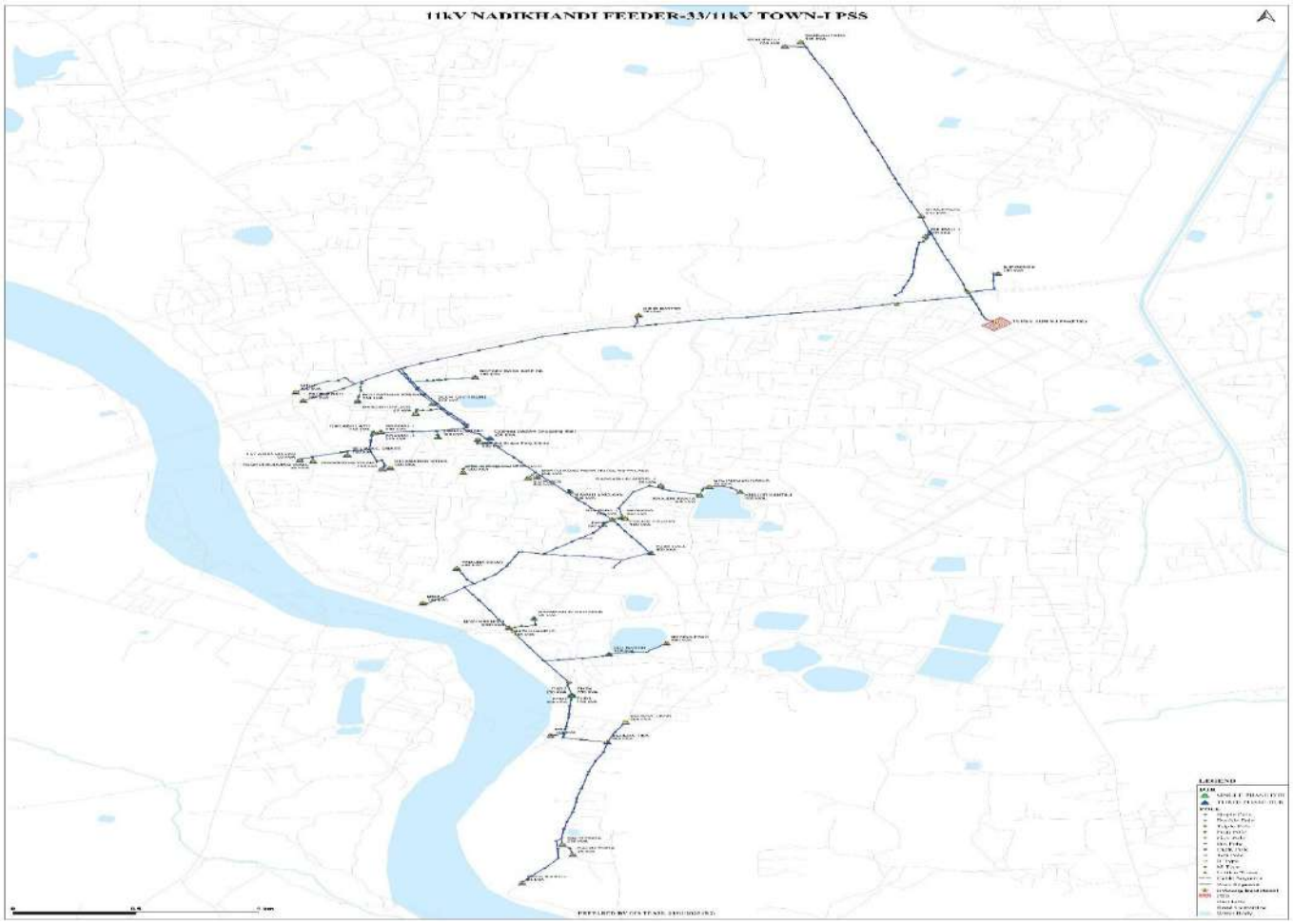
Objective: 11kV new link line of 1.5Ckm between high revenue 11kV Deepali Takies feeder & 11kV Nadikhandi feeder to mitigate overloading of 11kV Nadikhandi feeder and improve reliablity.

EXISTING SCENARIO: -

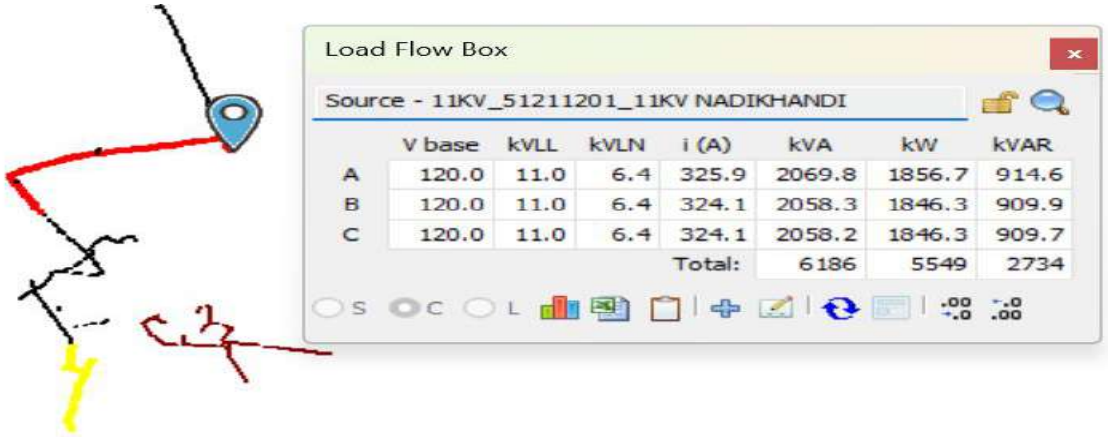
- The 11kV Nadikhandi feeder is emanating from Division-1 New PSS. It is a high revenue feeder which feeds Power Supply to many commercial consumers of Bargarh Town areas.The 11kV Nadikhandi feeder peak load is 299 A. After 1 year load growth the peak load goes up to 325Amps with feeder feeder end voltage of 10kV.
- The 11kV Hatpada feeder is emanating from Pradhanpali PSS. The 11kV Hatpada feeder peak loading is 265 A.
- Now a new Panchayat College PSS is going to charge & the existing Hatpada feeder load will bifurcated into 3 different feeder. After bifurcation the new 11kV Deepali feeder will have load 110Amps & passing at 1.5Km from 11kV Nadikhandi feeder.

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Division-1	Nadikhandi	5.18	5.69	110%	Overload	6.80	119%	Overload

Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



Proposed Scenario:

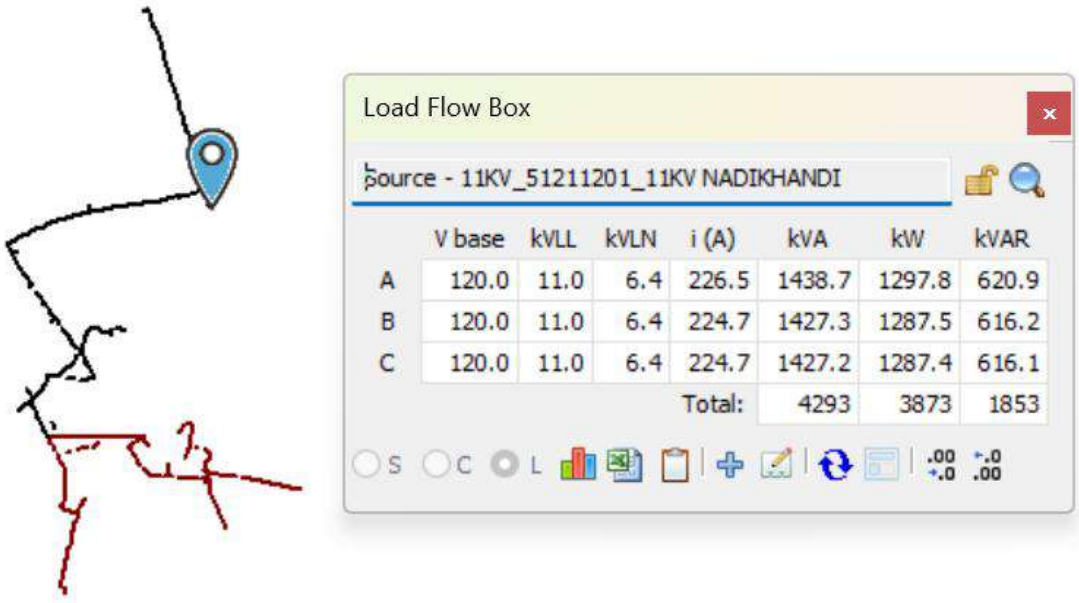
- A 11kV link line(0.6Ckm) from Deepali Takies feeder near Majlibandh 500kVA DTR is proposed using insulated AAAC 100Sqmm up to Lengu Mishra Chowk. From Lengu Mishra Chowk, using AAAC 100Sqmm (Bare) of 0.9Ckm is proposed up to near Jira River to connect with 11kV Nadikhandi feeder.
- 1 No. of DP with AB switch is proposed at tapping point of Nadikhandi feeder.
- Interlinking of 11KV Nadikhandi feeder from Division-1 PSS with 11KV Deepali Takies Feeder from Panchayat College PSS.

Proposed FY-27 Loading and projected load at 11 kV Nadikhandi Feeder.

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Division-1 PSS	11KV Nadikhandi feeder	5.18	2.39	46.13%	OK
Panchayat College	11KV Deepali Takies	5.18	3.71	71.1%	OK

- After bifurcation the existing 11KV Nadikhandi feeder will be divided into two parts, the existing 11KV Nadikhandi feeder will be loaded upto 42% of its capacity and the new 11KV feeder will be loaded upto 71.1% of its capacity.

Proposed GIS SLD



Scope of Work:

- 0.6 Ckm of 11kV link line using 100 sq.mm Covered conductor & 11 Mtr WPB poles.
- 0.9 Ckm of 11kV link line using 100 sq.mm Bare conductor & 11 Mtr WPB poles.
- Installation of one 400-amp AB switch on DP using 11 Mtr WPB poles.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division:-	**BED-BARGARH**	
Name of the Sub-Division: -	Bargarh-I	
Name of Section: -	Eso-IV	
Name of the Work:-	11kV link line between 11kV Deepali Takies (Earlier 11kV Hatpada feeder) Near Manjilibandh DTR to 11kV Nadikhandi feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11KV NEW LINK LINE USING 11Mtr RSJ & AAAC 100 SQMM (Covered) (Refer Annexure-170)	17,17,677.00
2	**PART-B:** 11KV NEW LINK LINE USING 11Mtr RSJ & AAAC 100 SQMM (Bare) (Refer Annexure-112)	18,93,201.00
3	**PART-C:** ESTIMATE OF 11KV DP WITH ABS (1 NOS) (Refer Annexure-171)	3,08,262.00
	Total Amount	**39,19,140.00**
	Total Amount (In Cr.)	**0.39**
Total estimated cost is Rs.0.39 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.39Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	**PSS**	**11kV Feeder**	**Peak Loading (kW)**	**Losses at peak loading (kW)**	**Avg.Loss reduction (kW) (LLF – 0.470)**	**Unit saved annually (kWH)**	**Annual saving (Rs Lacs) (Rs 4.105/Unit)**	**Remarks**
Before Proposal	**TOWN-1**	NADIKHANDI	6003	476	**81**	**713099**	**29.3**	
	PANCHAYAT COLLEGE	DEEPALI TAKIES	1991	34				
	TOWN-1	NADIKHANDI	4158	208				

After Proposal	**PANCHAYAT COLLEGE**	DEEPALI TAKIES	3664	129				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	39.19	Rs. Lac
B	Load due to load growth	-	610.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	534	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	3174766	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	45.24	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	29.30	Rs. Lac
J	Net Revenue Collected	H+I	74.54	Rs. Lac
K	% revenue return	(J/A)*100	190.2	%
L	Pay Back Period	100/K	0.53	Years

Benefit to the system and consumers:

- Overloading mitigation of existing 11KV Nadikhandi feeder.
- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Nadikhandi feeder.
- By linking 11KV Nadikhandi from Division-1 PSS, can ensure load diversion in case of requirement to maintain reliability ensuring N-1 Connectivity.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

To enable N-1 connectivity Reliability Improvement of Critical Feeder

Proposal for reliability improvement and to provide steady power supply to critical consumer such as Bargarh DHH & Kendiya Vidyalaya

PROPOSAL:

11kV New feeder from Khedapali PSS to bifurcate Bardol Feeder to provide quality power to critical consumers.

REQUIREMENT/NEED OF THE PROPOSAL:

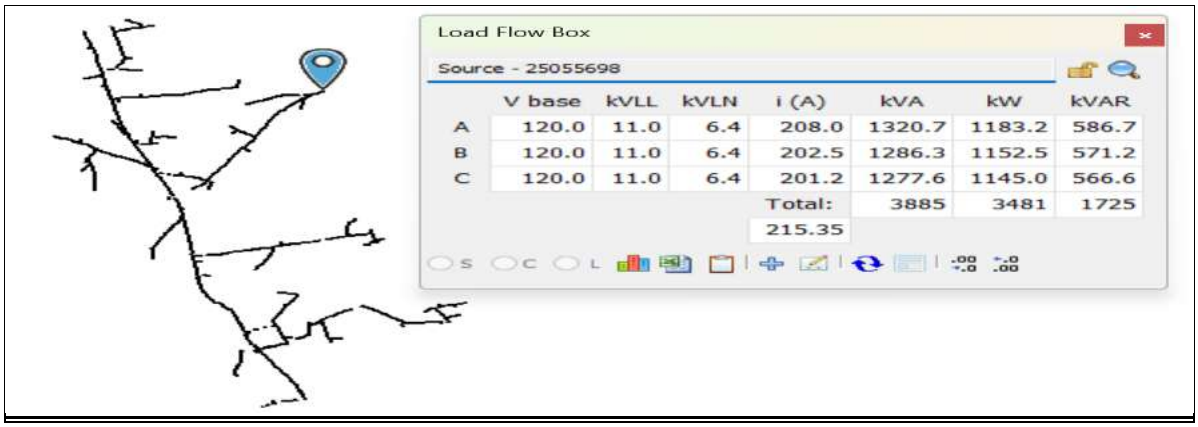
Objective: 11kV new line of 4.5Ckm from Khedapali PSS to link with 11kV Bardol feeder. Presently Khedapali DHH, Bargarh Polytechnic College & Kendriya Vidyalaya are getting power supply from this feeder. These consumers are getting affected by frequent tripping of this 11kV Bardol feeder. So, to provide quality power to these critical consumers this new line is proposed.

EXISTING SCENARIO: -

- The 11kV Bardol feeder is emanating from Khedapali PSS. Presently Khedapali DHH, Bargarh Polytechnic College & Kendriya Vidyalaya are getting power supply from this feeder.
- The total length of 11kV Bardol feeder is 31.5Ckm & feeder peak loading is 178 A with the trunk line conductor size of 100 sq.mm AAAC.
- In present scenario, due to frequent tripping of this Bardol feeder the critical consumers like Khedapali DHH, Bargarh Polytechnic College & Kendriya Vidyalaya are getting affected.
- So, to provide steady & reliable power to these critical consumers this new line is proposed to bifurcate the 11kV Bardol feeder.

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**N-1 Availability (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder N-1 Availability (AS IS)**
33/11kv Khedapali	11kv Bardol	5.18	3.2	62%	No	4.0	77.2 %	OK with N-1

Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



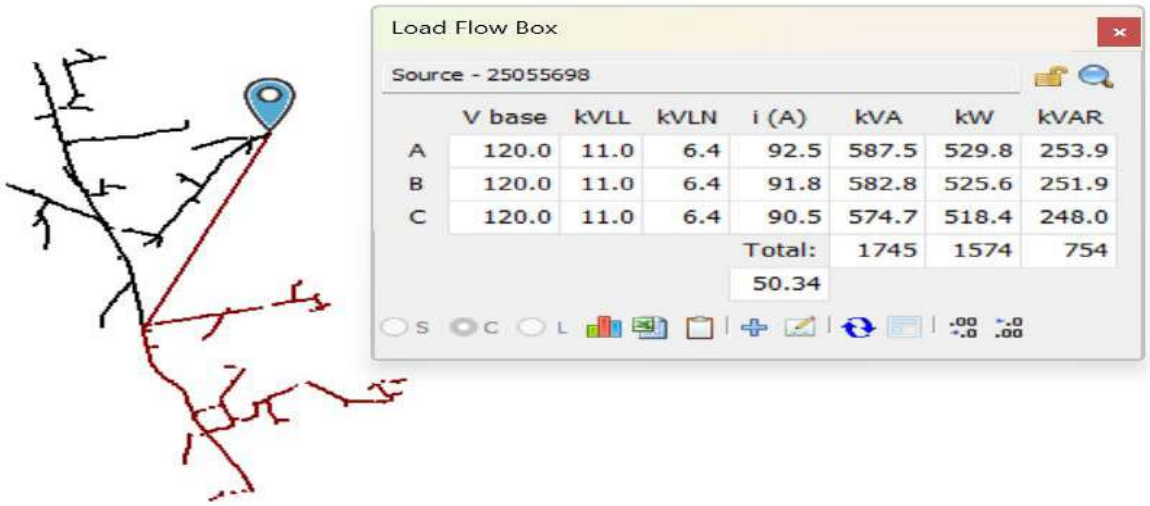
Proposed Scenario:

- It is proposed 4.6Ckm 11kV new line from Khedapali PSS & will connect at Goud Pada 63kVA DTR.
- 1 Nos DP with AB switch is proposed at tapping point near Goudpada DTR.

Proposed FY-27 Loading and projected load at 11 kV Bardol Feeder.

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**
33/11kv Khedapali	11kv Bardol	5.18	3.7	72%	OK with N-1

Proposed GIS SLD



Scope of Work:

- 0.5 Ckm of 11kV link line using 100 sq.mm Covered conductor & 11 Mtr WPB poles.

- 3.9 Ckm of 11kV link line using 100 sq.mm Covered conductor & 11 Mtr WPB poles.
- 0.2km 3C-300Sqmm Xlpe Cable for railway crossing.
- Installation of two 400-amp AB switch on DP of 11 Mtr WPB poles.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BED-BARGARH**	
Name of the Sub-Division:	Bargarh-II	
Name of Section: -	Barhaguda	
Name of the Work: -	11kV New line from 33/11kV Khedapali PSS to link with exsiting 11kV Bardol Feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11KV NEW LINK LINE OF 0.5CKM USING 11Mtr WPB POLES & AAAC 100 SQMM (Covered) (Refer Annexure-170)	1429307.00
	PART-B: 11KV NEW LINK LINE OF 3.9CKM USING 11Mtr WPB POLES & AAAC 100 SQMM (Bare) (Refer Annexure-112)	8213515.00
2	**PART-B:** ESTIMATE OF 11KV DP WITH ABS (1 NOS) (Refer Annexure-171)	308262.00
	Total Amount	**99,51,084.00**
	Total Amount (In Cr.)	
Total estimated cost is Rs.99.5 Crore. (On TPWODL Capex Scheme)		

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	**PSS**	**11kV Feeder**	**Peak Loading (kW)**	**Losses at peak loading (kW)**	**Avg.Loss reduction (kW) (LLF – 0.470)**	**Unit saved annually (kWH)**	**Annual saving (Rs Lacs) (Rs 4.105/Unit)**	**Remarks**
Before Proposal	**KHEDAPALI**	BARDOL	3226	186	**22**	**192726**	**7.9**	
After Proposal	**KHEDAPALI**	Existing 11kV BARDOL	1475	45				
	KHEDAPALI	New 11kV BARDOL	1704	94				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	99.51	Rs. Lac
B	Load due to load growth	-	223.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	195	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1160611	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	16.54	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	7.90	Rs. Lac
J	Net Revenue Collected	H+I	24.44	Rs. Lac
K	% revenue return	(J/A) *100	24.6	%
L	Pay Back Period	100/K	4.07	Years

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as for govt. offices like DHH, Polytechnic College, Kendiya Vidyalaya.
- With Proposed new 11KV Feeder Load can be redistributed between linked feeders to avoid overloading a single feeder. Helps maintain voltage levels and reduce technical losses.
- As providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers.

Mitigation of 11kV Feeder Under Voltage Issue

Proposal for reliability improvement and Mitigation of undervoltage for 11kV Lebdi Feeder.

PROPOSAL:

11kV link line within Lebidi feeder to to mitigate the under-voltage problem of 11kV lebdi feeder

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

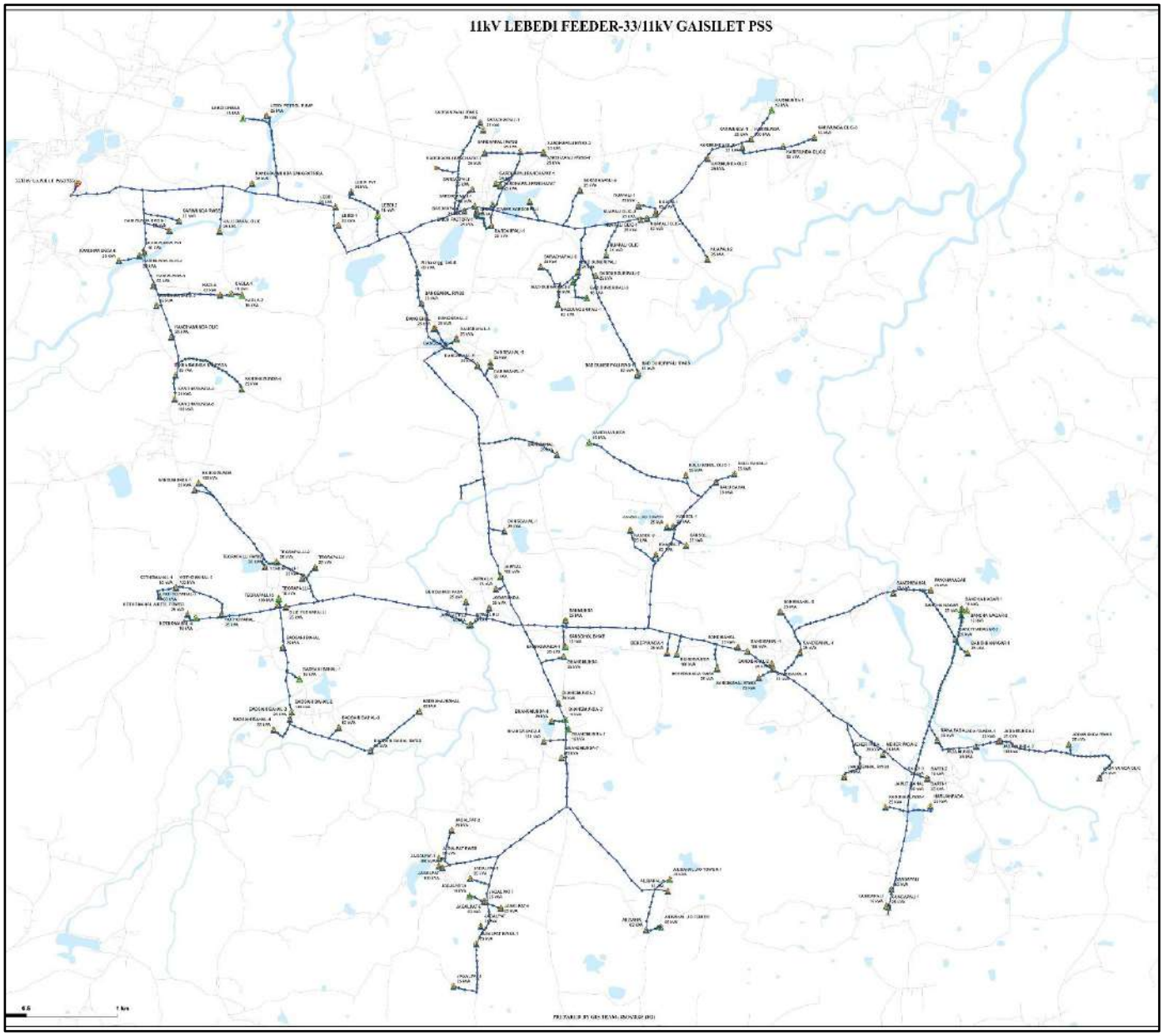
- 11kV link line-1(1.1Ckm) & link line-2(0.5Ckm) is proposed to mitigate the under-voltage problem of 11kV lebdi feeder.
- To improve voltage 11kV link line-1 from Kandhamunda DTR(63KVA) to Kandhamunda DTR(100KVA) and link line-2 from Dangbahal DTR(25kVA) to Kandhamunda 16KVA(DTR).

EXISTING SCENARIO: -

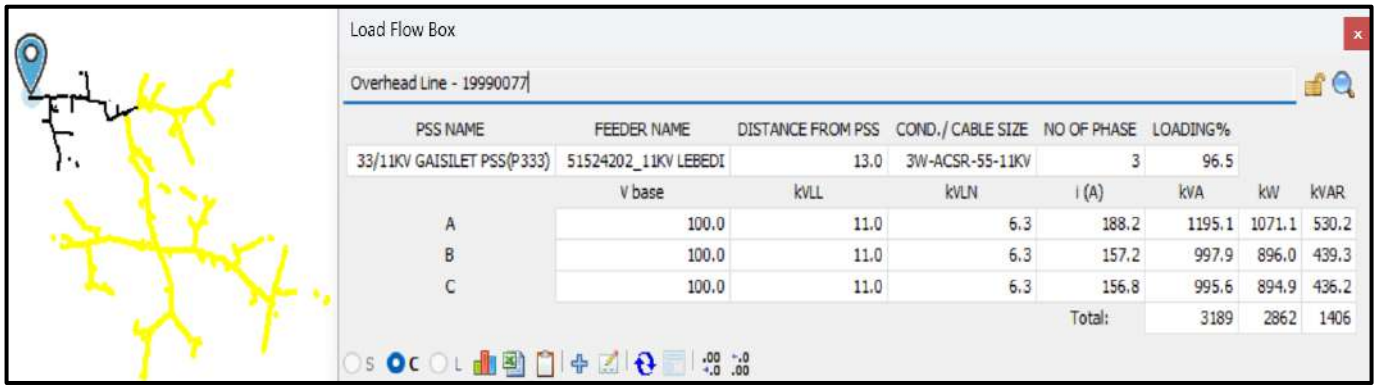
- The 11kV Lebdi feeder is emanating from Gaisilet PSS. The total length of the feeder is 70Ckm .
- At present peak load of the feeder is 171Amp and tail end voltage is 9.5kV.
- After 1 year load growth(for Fy-27) the peak load goes up to 188Amps & tail end voltage wil be 9.3KV.
- At present the feeder is experiencing under voltage problem. To mitigate the under voltage problem the link line 1 & 2 is proposed.

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**Minimum Voltage**	**Feeder Under voltage Status (AS IS)**	**Projected load FY-27 (MVA)**	**Minimum Voltage**	**Feeder Under voltage Status**
Gaisilet	Lebdi	3.72	3.24	9.5 KV	Under Voltage	3.58	9.3 KV	Under Voltage

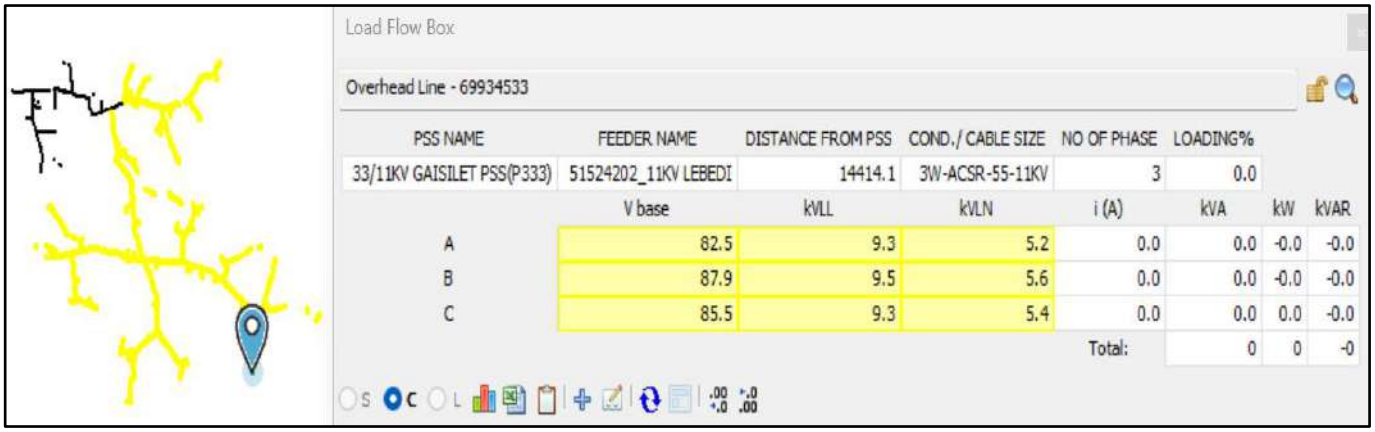
Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



PSS NAME	FEEDER NAME	DISTANCE FROM PSS	COND./ CABLE SIZE	NO OF PHASE	LOADING%		
33/11KV GAISILET PSS(P333)	51524202_11KV LEBEDI	13.0	3W-ACSR-55-11KV	3	96.5		
	V base	kVLL	kVLN	I (A)	kVA	kW	kVAR
A	100.0	11.0	6.3	188.2	1195.1	1071.1	530.2
B	100.0	11.0	6.3	157.2	997.9	896.0	439.3
C	100.0	11.0	6.3	156.8	995.6	894.9	436.2
				Total:	3189	2862	1406



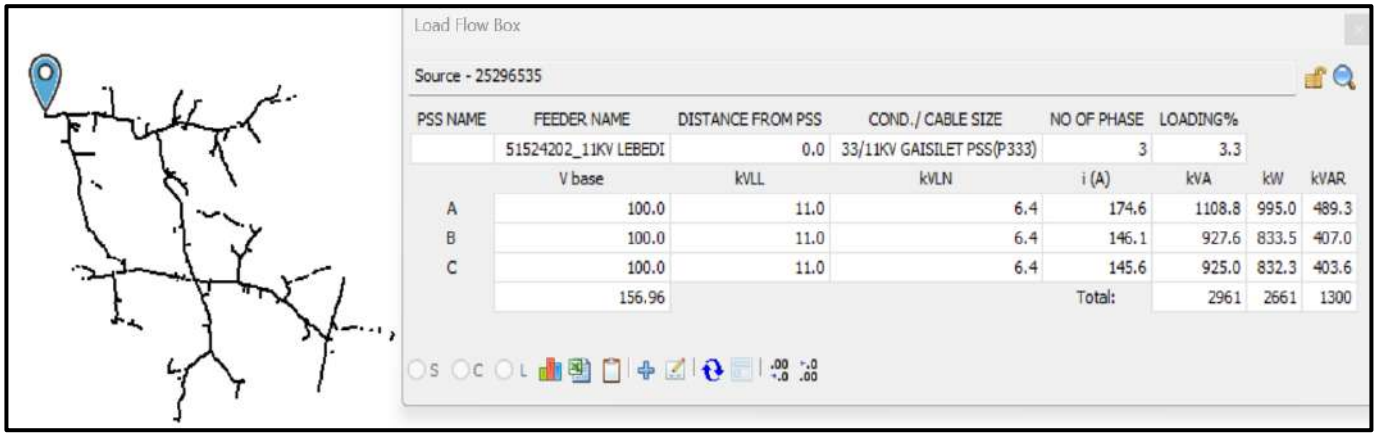
Proposed Scenario:

- To mitigate the under-voltage problem of the feeder it is proposed to construct link line-1 of 1.1Ckm from Kandhamunda DTR(63KVA) to Kandhamunda DTR(100KVA) & link line-2 of 0.5Ckm from Dangbahal DTR(25kVA) to Kandhamunda 16KVA(DTR).
- The link line 1&2 shall be construct by using 100sqmm AAA conductor with 11mtr RSJ poles.
- 2nos. DP with AB switch is proposed at both the link line.
- After construction of link line 1& 2 the tail end voltage will improve (from 9.3kV to 10.2kV).

Proposed FY-27 Loading and projected load at 11 kV lebdi Feeder.

Name of PSS	11kV Feeder Name	Feeder Capacity (MVA)	Projected load FY'27 (MVA)	% Loading	Minimum Voltage (kV)	Feeder Overloading Status
Gaisilet	Lebdi	5.48	3.46	63.2	10.2	OK

Proposed GIS SLD



Scope of Work:

- 1.1Ckm of 11kV link line using 100 sq.mm Bare conductor & 11mtr RSJ poles.
- 0.5Ckm of 11kV link line using 100 sq.mm Bare conductor & 11mtr RSJ poles.
- Installation of 2nos. 400-amp AB switch on DP of 11mtr RSJ poles.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BWED-BARGARH**	
Name of the Sub-Division:	Padampur	
Name of Section: -	ESO-I	
Name of the Work: -	11kV link line-1 from Kandhamunda DTR(63KVA) to Kandhamunda DTR(100KVA) and link line-2 from Dangbahal DTR(25kVA) to Kandhamunda 16KVA(DTR).	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11KV NEW LINK LINE USING 11Mtr RSJ & AAAC 100 SQMM (Bare) (Refer Annexure-112)	33,72,633.00
2	**PART-B:** ESTIMATE OF 11KV DP WITH ABS (2 NOS) (Refer Annexure-171)	6,16,339.00
	Total Amount	39,88,972.00
	Total Amount (In Cr.)	**0.40**
Total estimated cost is Rs.0.40 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.40Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

1.Technical loss sheet:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg. Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**GAISILET**	LEBDI	2862	359	**95**	**830233**	**34**
After Proposal	**GAISILET**	LEBDI	2661	157			

2.RR Sheet :

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	39.88	Rs. Lac
B	Load due to load growth	-	266.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	233	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1384406	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	19.73	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	34.00	Rs. Lac
J	Net Revenue Collected	H+I	53.73	Rs. Lac
K	% revenue return	(J/A) *100	134.7	%
L	Pay Back Period	100/K	0.74	Years

Benefit to the system and consumers:

- Improvement of feeder voltage profile from 9.3kV to 10.2kV.
- Reduction of technical losses due to balanced load and shorter path length.
- Improvement quality of supply that will enhance the customer satisfaction.

Mitigation of 11kV Feeder Overloading Issue

Proposal for reliability improvement and Mitigation of Overloading and Under voltage for 11kV Kuchipali Feeder.

PROPOSAL:

New 11kV feeder from Punjipathar PSS to bifurcate Kuchipali feeder To mitigate the under-voltage problem of Kuchipali feeder.

REQUIREMENT/NEED OF THE PROPOSAL:

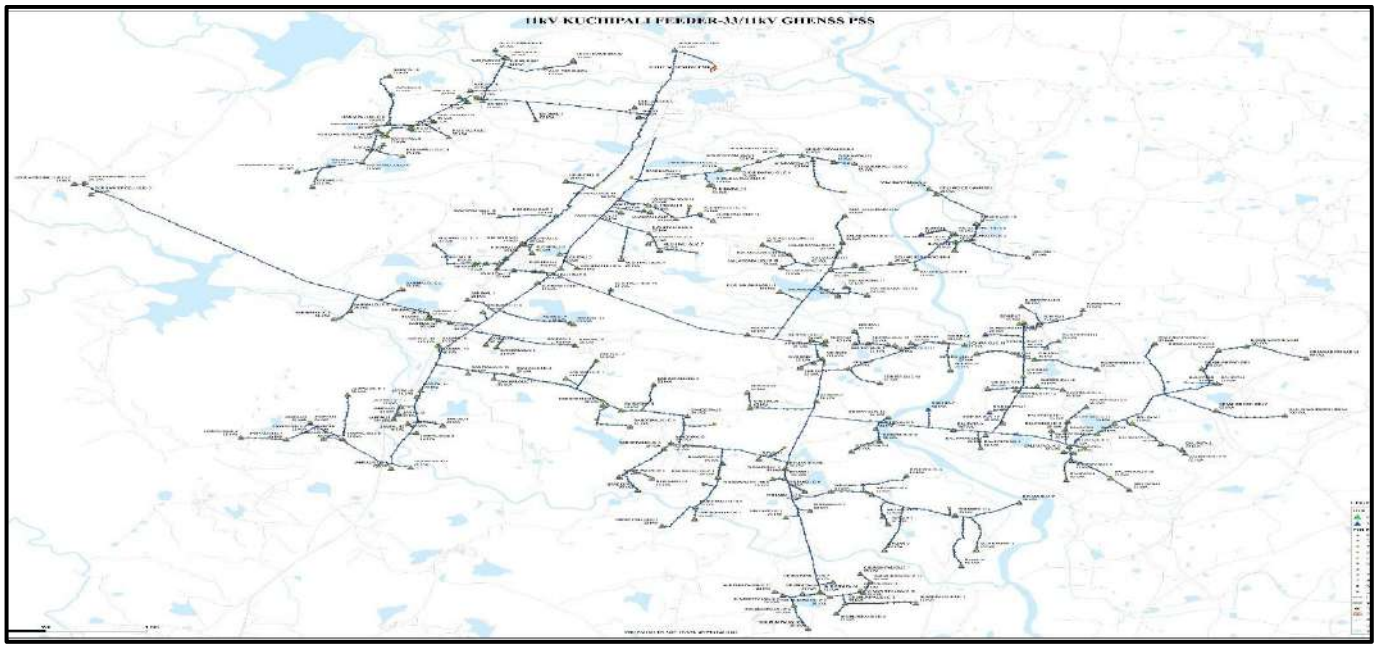
Objective: To mitigate the under-voltage problem of Existing kuchipali feeder a new feeder is proposed from 33/11kV Punjipathar PSS. This proposal will bifurcate the feeder load, mitigate under voltage problem and enhance reliability of the feeder.

EXISTING SCENARIO: -

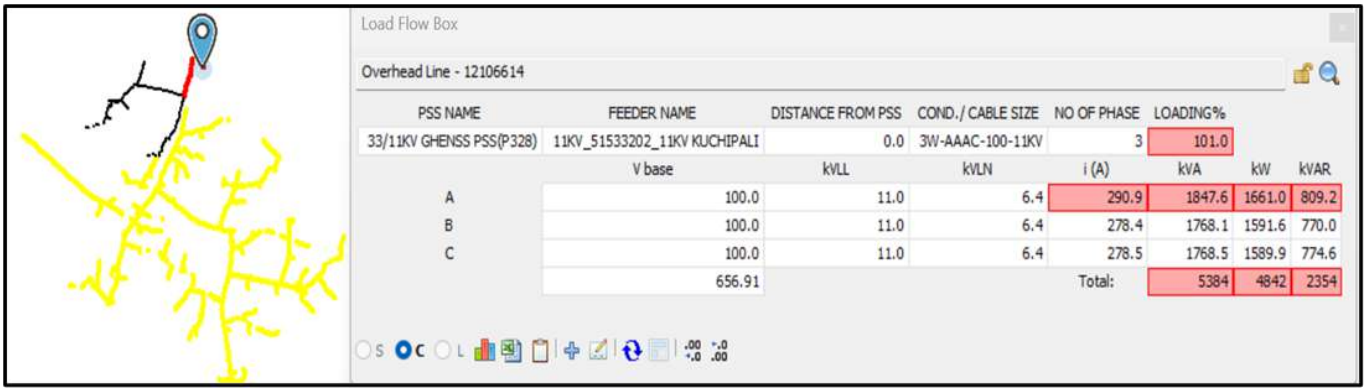
- The 11kV Kuchipali feeder is emananting from Ghenss PSS. It has a length of 87CKm with peak load of 266Amps and tail end voltage is 9.2kV. After 1 year load growth the peak load goes up to 290 Amps with feeder end voltage of 9.1kV.
- To avoid above problem a new feeder is proposed from 33/11kV Punjipathar PSS .

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Ghenss	Kuchipali	5.48	5.06	92.3%	Overload	5.54	101.1%	Over-loaded

Existing SLD:



Load Flow Study of existing scenario in Cyme Software with 2 Yr Load Growth:



<u>Proposed Scenario:</u>

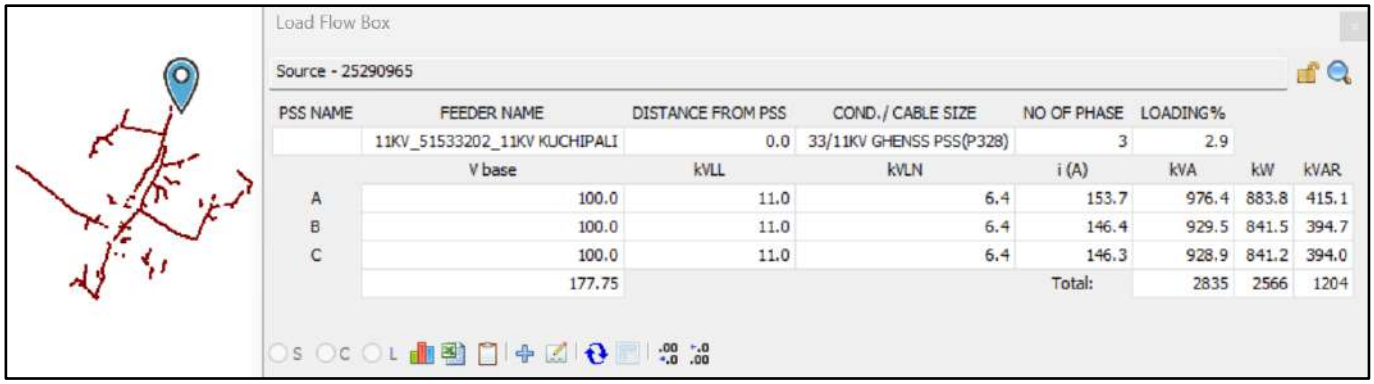
- 1 no. of 11kV new feeder is proposed of length 5Ckm from 33/11kV Punjipathar PSS to near Balipata OLIC (25KVA) and will tapping to the existing Kuchipali feeder to bifurcate the load.

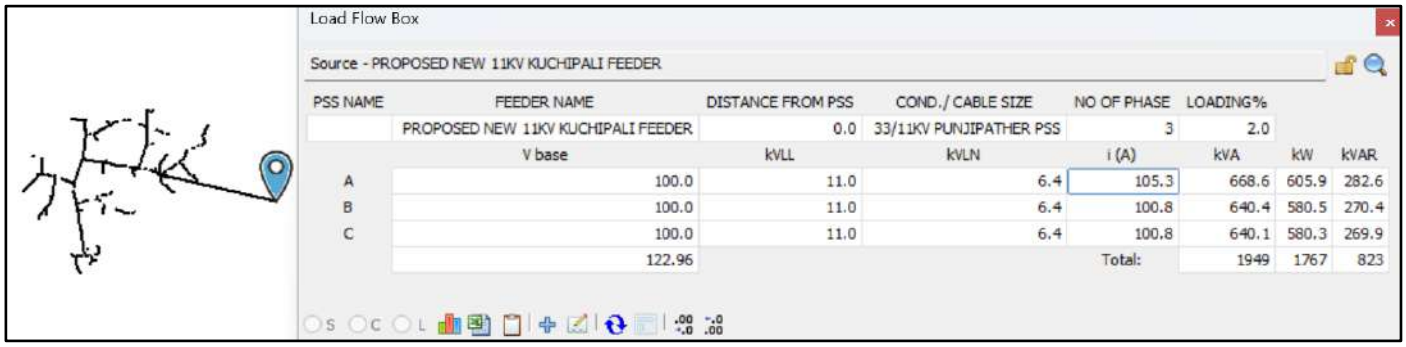
Proposed Summer'27 Loading and projected load at 11 kV Kuchipali Feeder.

Loading after Proposal (FY-27)					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected load FY'27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Ghenss	Kuchipali	5.48	2.99	54.6	OK
Tenteltikra	Proposed Kuchipali	5.48	2.09	38.7	OK

- After bifurcation the existing 11KV Kuchipali feeder will be divided into two parts, the existing 11KV Kuchipali feeder will be loaded up to 54.6% of its capacity and the new 11KV Kuchipali feeder will be loaded up to 38.7% of its capacity.

- **Proposed GIS SLD (Existing Kuchipali & Proposed Kuchipali)**





Scope of Work:

- 1 no. 11 KV Bay with VCB (O/D), CT, PT, CRP (I/D) for feeder protection.
- 5Ckm of 11kV new line by using 100sqmm AAAC bare conductor and 11mtr RSJ poles.
- 1nos. 11kV 400Amp AB switch with 11mtr RSJ DP.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BWED-II, BARGARH**	
Name of the Sub-Division: -	Bijepur	
Name of Section: -	ESO-II	
Name of the Work: -	11kV proposed Kuchipali feeder from 33/11kV Punjipathar PSS.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 11 KV Bay with VCB (O/D), CT, PT, CRP (I/D) for feeder protection (Refer Annexure-163)	1990193.00

2	**PART-B:** 11KV NEW LINE USING 11Mtr RSJ & AAAC 100 SQMM (Bare) (Refer Annexure-112)	10531527.00
3	**PART-C:** ESTIMATE OF 11KV DP WITH ABS (1 NOS) (Refer Annexure-171)	3,08,262.00
	Total Amount	12829982.00
	Total Amount (In Cr.)	**1.28**
Total estimated cost is Rs.1.28Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.28Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

1.Technical loss sheet:

Stage	PSS	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg. Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**GHENSS**	KUCHIPALI	4842	657	**167**	**1466547**	**60.2**
After Proposal	**PUNJIPATHAR**	PROPOSED KUCHIPALI	1767	123			
	GHENSS	KUCHIPALI	2566	178			

2.RR Sheet:

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	128.29	Rs. Lac
B	Load due to load growth	-	110.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	96	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	572499	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.

H	Revenue owing to serving load growth	G/(D*10^5)	8.16	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	60.20	Rs. Lac
J	Net Revenue Collected	H+I	68.36	Rs. Lac
K	% revenue return	(J/A) *100	53.3	%
L	Pay Back Period	100/K	1.88	Years

Benefit to the system and consumers:

- Overloading mitigation of existing 11KV Existing kuchipali feeder.
- Improve voltage profile, reduced technical losses and enhance feeder reliability.
- Reliability will be improved for domestic as well as commercial consumers by strengthening the line of 11kV Kuchipali feeder.

Mitigation of 11kV Feeder Low Voltage Problem

Proposal for Low Voltage improvement of 11kV Sargada Feeder:

Proposal:

11kV New Link line for load shifting Saragada feeder to Jharmunda & Kusang feeder for mitigation of low voltage problem of Sargada feeder.

Requirement/ Need of the proposal:

Objective:

Low voltage mitigation of Sargada feeder.

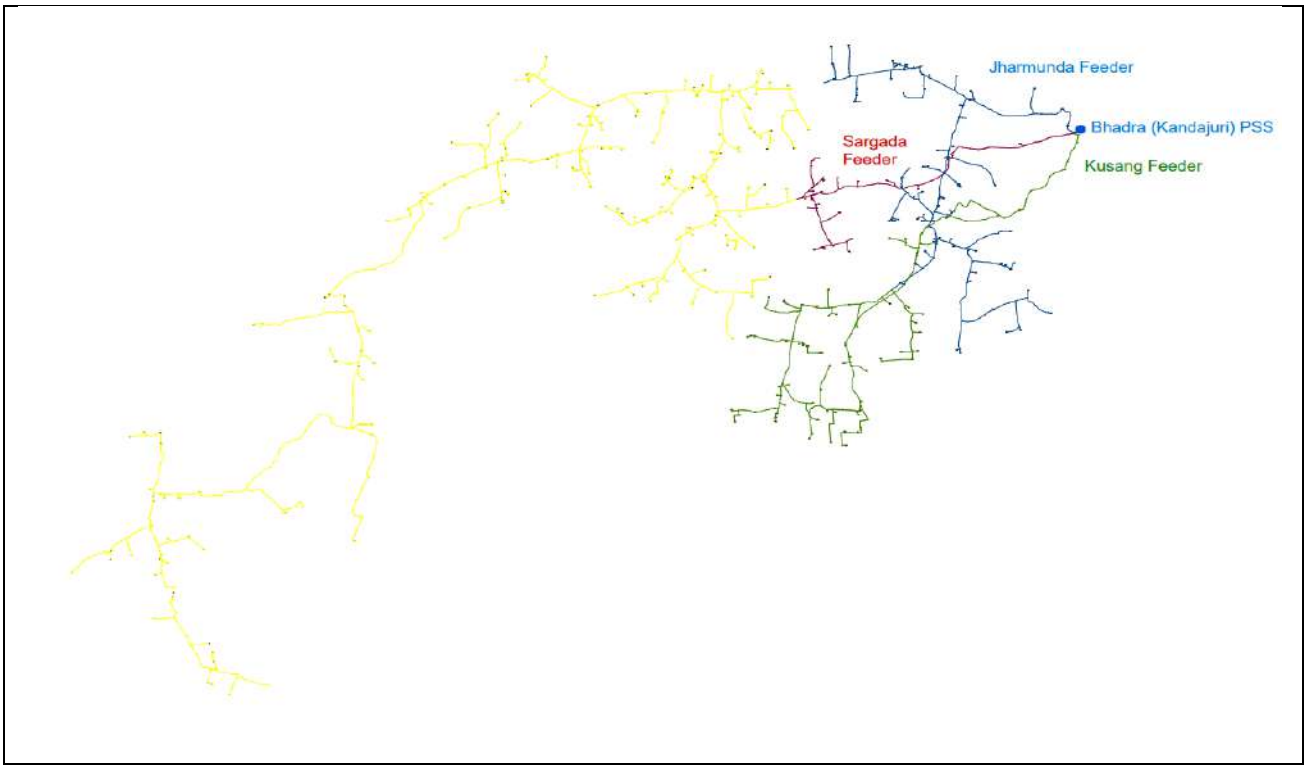
Existing Scenario:

- The 11kV Sargada feeder is emanating from Bhadra(Kandajuri) PSS.The total length of this feeder is 102.72 Ckm and the conductor size of trunk line is 100sqmm.
- The peak demand of 11kV Sargada feeder is 3.13MVA. The lowest voltage is 8.9kV. After considering 6.81% load growth for 1yr, the peak demand of 11kV Sargada feeder shall be 3.2MVA and the lowest voltage shall be 8.83kV.
- The feeder is experiencing low voltage problem which affects the power quality and undermine the load growth aspect in the feeder.
- Two feeders are present near to this feeder. The first feeder is 11kV Bhadra Jharmunda feeder, it is emanating from Bhadra (Kandajuri) PSS. The total length of this feeder is32.37 Ckm and the conductor size of trunk line is55sqmm.The peak demand of 11kV Bhadra Jharmunda feeder is 0.27MVA. The lowest voltage is 10.93kV.
- The Second feeder is 11kV Kusang feeder, it is emanating from Bhadra(Kandajuri) PSS. The total length of this feeder is 33.27 Ckm and the conductor size of trunk line is100sqmm.The peak demand of 11kV Kusang feeder is 2.05MVA. The lowest voltage is 10.47kV.
- To mitigate low voltage problem, link lines are proposed for load shifting.
- In addition to it, 3CKm augmentation of branch line of Sargada feeder is required as after restructuring of feeder to shift load the branch line with 34sqmm conductor will become trunk line and may get overloaded, thus its augmentation is also essential. Justification of the augmentation is given in the 11kV augmentation justification documents.

Existing Fy25-26 Loading and projected loading details:

Existing Scenario and Projected Scenario after 1yr Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY25-26 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status (AS IT IS)**	**Projected Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Bhadra (Kandajuri)	Sargada	5.18	3.13	8.90	Low Voltage	3.2	8.83	Low Voltage
Bhadra (Kandajuri)	Bhadra (Jharmunda)	3.54	0.27	10.93	No	0.29	10.93	No
Bhadra (Kandajuri)	Kusang	5.18	2.05	10.47	No	2.16	10.44	No

Existing SLD



Load Flow Study of Existing Scenario in Cyme Software:

Overhead Line - 43106813

PSS NAME	FEEDER NAME							
33/11KV BHADRA(KANDAJURI) PSS(	91124204_11KV SARGADA							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	80.03	8.89	5.08	0.08	0.38	0.22	53.55	0.31
B	81.79		5.19	0.02	0.12	0.04		0.11
C								
Connected Capacity				Total:	0.50	0.27		0.42

Load Flow Box

Overhead Line - 39972959

PSS NAME	FEEDER NAME							
33/11KV BHADRA(KANDAJURI) PSS(	91124201_11KV BHADRA JHARMUNDA							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	99.33	10.93	6.31	0.50	3.14	2.69	85.66	1.62
B	99.42	10.93	6.31	0.50	3.14	2.69		1.62
C	99.38	10.93	6.31	0.50	3.14	2.69		1.62
Connected Capacity				Total:	9.42	8.07		4.86

Load Flow Box

Overhead Line - 39973959

PSS NAME	FEEDER NAME							
33/11KV BHADRA(KANDAJURI) PSS(	91124203_11KV KUSUNGA							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	95.08	10.47	6.04	1.28	7.76	6.60	85.12	4.07
B	95.28	10.47	6.05	1.28	7.77	6.62		4.08
C	95.20	10.47	6.05	1.28	7.77	6.61		4.08
Connected Capacity				Total:	23.29	19.83		12.23

Proposed Scenario:

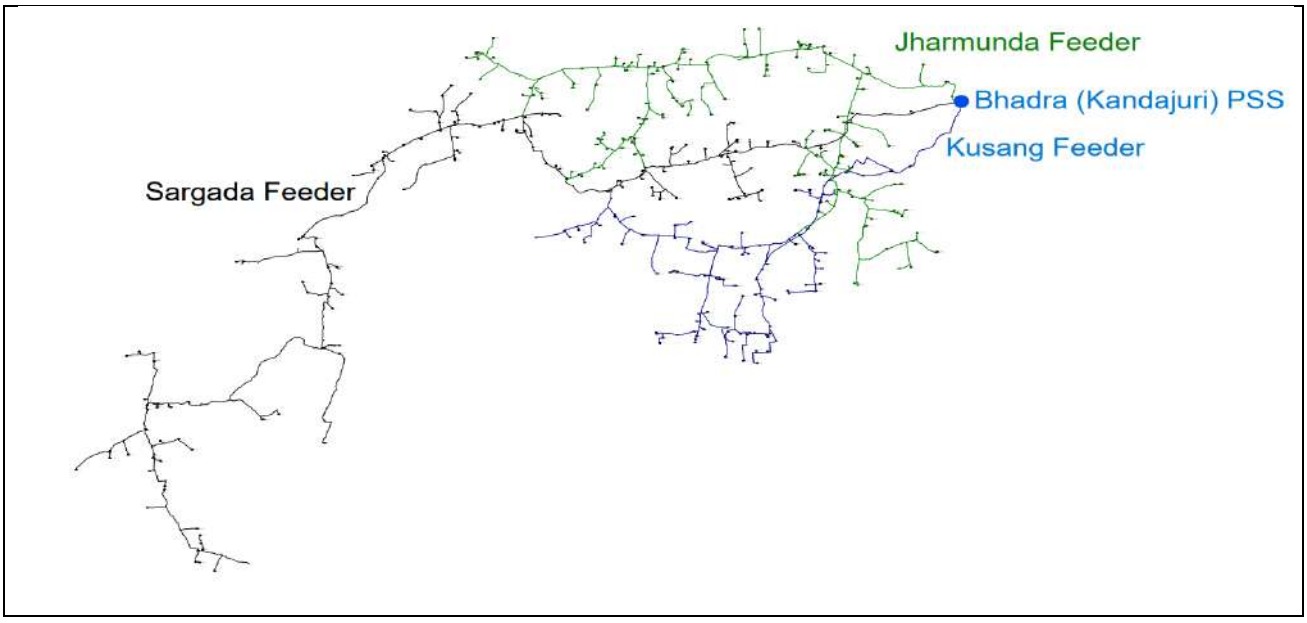
- 1.2CKm linkline with Jharmunda feeder from Pardhiapali-9 25Kva Dtr{20.8769925,83.3955394} to Panchayat High School Kuturapali{20.8751623,83.3870831} along with two linklines of total 2.3CKm from Hakrupali Stone Crusher to Kutrapali-3 25kVA DTR for load shifting to Jharmunda feeder.
- 0.5CKm linkline with Kusang feeder from Buromunda-4 25kVA Dtr{20.8337822,83.3831623} to Harishpatel-5 25kVA Dtr Near Uparbhalli Water Tank {20.8341351,83.3799614} for load shifting to Kusang feeder.
- For N-1 operation 4nos of DP with AB switch shall be erected.

Note- 3CKm augmentation of branch line of Sargada feeder is required as after restructuring of feeder to shift load the branch line will become trunk line thus its augmentation is also essential. Justification of the augmentation is given in the 11kV augmentation justification documents.

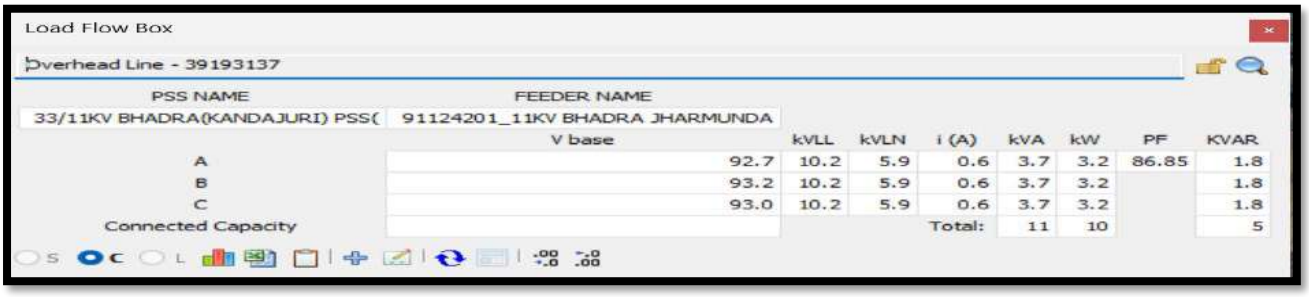
Proposed Loading details after proposal implementation:

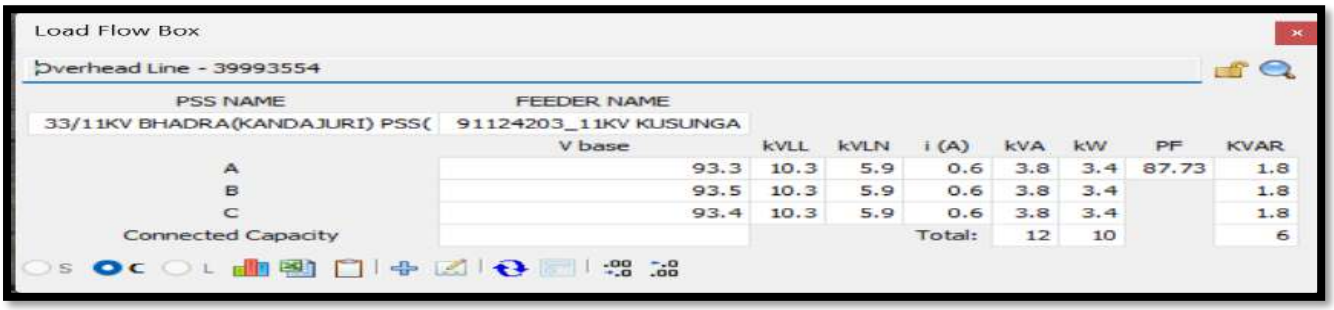
Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Bhadra (Kandajuri)	Sargada	5.18	1.68	10.0	No
Bhadra (Kandajuri)	Bhadra (Jharmunda)	3.54	1.53	10.22	No
Bhadra(Kandajuri)	Kusang	5.18	2.45	10.27	No

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software after proposal mapping:





Scope of Work:s

- Construction of 3CKm 11kV overhead line with 100sqmm AAA bare conductor.
- Construction of 1CKm 11kV overhead line with 100sqmm covered conductor.
- Installation of 4nos of 11kV AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	BED of Bolangir Circle	
Name of the Sub-Division : -	SDO-II Bolangir	
Name of Section:-	Chhatamakhna	
Name of the Work :-	11kV Link lines to shift load from Saragada feeder to Jharmunda feeder & Kusang feeder for improving mitigation of low voltage problem of Sargada feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	Construction of 3CKm 11kV overhead line with 100sqmm AAA bare conductor. (Refer Annexure-112)	63,26,187.00
2	Construction of 1CKm 11kV overhead line with 100sqmm AAA covered conductor. (Refer Annexure-170)	28,58,636.00
3	Installation of 4nos of 11kV DP with AB switch. (Refer Annexure-171)	12,33,048.00
	Total Amount	**1,04,17,871.00**
	Total Amount (In Cr.)	**1.04**
Total estimated cost is Rs.1.04 Crore. (On TPWODL Capex Scheme)		
Estimated Cost of 3CKm 11kV line augmentation for which justification in provided in the 11kV Augmentation Justification sheet.		**47,76,972.00**
Grand total of estimated cost for mitigation of 11kV Sargada feeder low voltage problem		**1,51,94,843.00**

Grand Total Amount (In Cr.)	1.52

Cost Estimate for 11kV link lines: ₹ 1.04.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Demand (kVA)	Losses at peak Demand (kW)	Avg.Loss reduction (kW) (LLF =0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal (FY25+LG)	**Bhadra(Kandajuri)**	Sargada	3199.92	402.82	**81**	**709121**	**29.1**	
	Bhadra(Kandajuri)	Bhadra(Jharmunda)	290.63	10.10				
	Bhadra(Kandajuri)	Kusang	2163.43	289.09				
After Proposal (PLAN)	Bhadra(Kandajuri)	Sargada	1678.29	117				
	Bhadra(Kandajuri)	Bhadra(Jharmunda)	1526.70	97				
	Bhadra(Kandajuri)	Kusang	2451.02	316				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	151.95	Rs. Lac
B	Load due to load growth	-	203.16	kVA
C	Total kW due to load growth	B*pf	183	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1087543	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	15.50	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	29.11	Rs. Lac
J	Net Revenue Collected	H+I	44.61	Rs. Lac
K	% revenue return	(J/A) *100	29.4	%
L	**Pay Back Period**	**100/K**	**3.41**	**Years**

Benefit to the system and consumers:

- Mitigation of low voltage problem.
- Reduction in Technical loss
- Better quality power supply to consumers.
- Enable to cater future load growth.
- Interlinking of three nos of feeders leading to better reliability in the power supply.

Mitigation of 11kV Feeder Low Voltage Problem

Proposal for Low Voltage improvement of 11kV Jogisurda(Menda) Feeder:

Proposal:

11kV New Feeder from Deulpadar PSS to bifurcate Jogisurda (Menda) feeder to mitigate low voltage problem of 11kV Jogisurda (Menda) feeder.

Requirement/ Need of the proposal:

Objective

Low voltage mitigation of Jogisurda(Menda) feeder

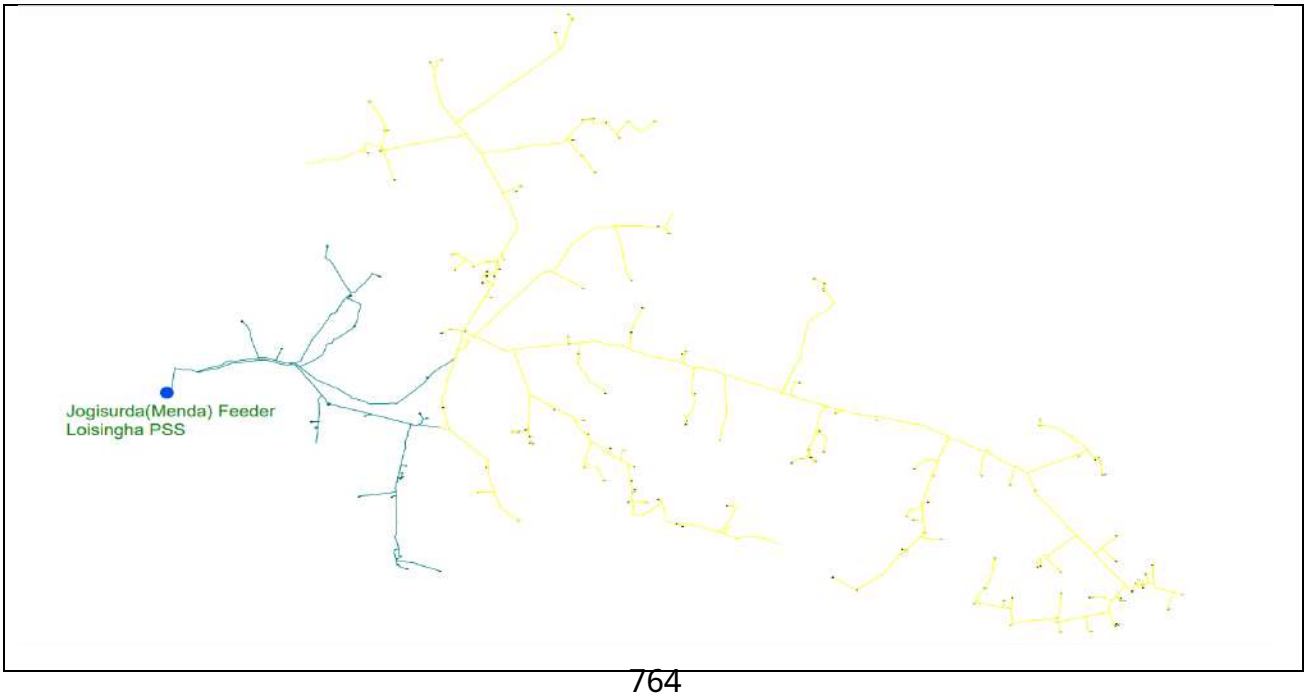
Existing Scenario:

- The 11kV Jogisurda(Menda) feeder is emanating from Loisingha PSS. The total length of this feeder is 87.08 Ckm and the conductor size of trunk line is 55sqmm.The peak demand of 11kV Jogisurda(Menda) feeder is 2.77MVA. The lowest voltage is 9.19kV.
- After considering 6.81% load growth for 1yr, the peak demand of 11kV Jogisurda(Menda) feeder shall be 2.88MVA and the lowest voltage shall be 9.14kV.
- The feeder is experiencing low voltage problem which affects the power quality and undermine the load growth aspect in the feeder.
- To mitigate the low voltage & improve the voltage regulation, a new 11kV feeder is proposed from the PSS.

Existing Fy25-26 Loading and projected loading details:

Existing Scenario and Projected Scenario after 1yr Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY25-26 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status (AS IT IS)**	**Projected Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Loisingha	Jogisurda (Menda)	3.54	2.77	9.19	Low Voltage	2.88	9.14	Low Voltage

Existing SLD



Load Flow Study of Existing Scenario in Cyme Software:

Load Flow Box

Overhead Line - 41040729

PSS NAME	FEEDER NAME							
33/11KV LOISINGHA PSS(P417)	91131201_11KV JOGISURDA(MENDA)							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	81.35	9.16	5.17	0.73	3.79	3.25	84.12	1.95
B	85.67		5.44	0.02	0.13	0.05		0.12
C								
Connected Capacity				Total:	3.89	3.29		2.07

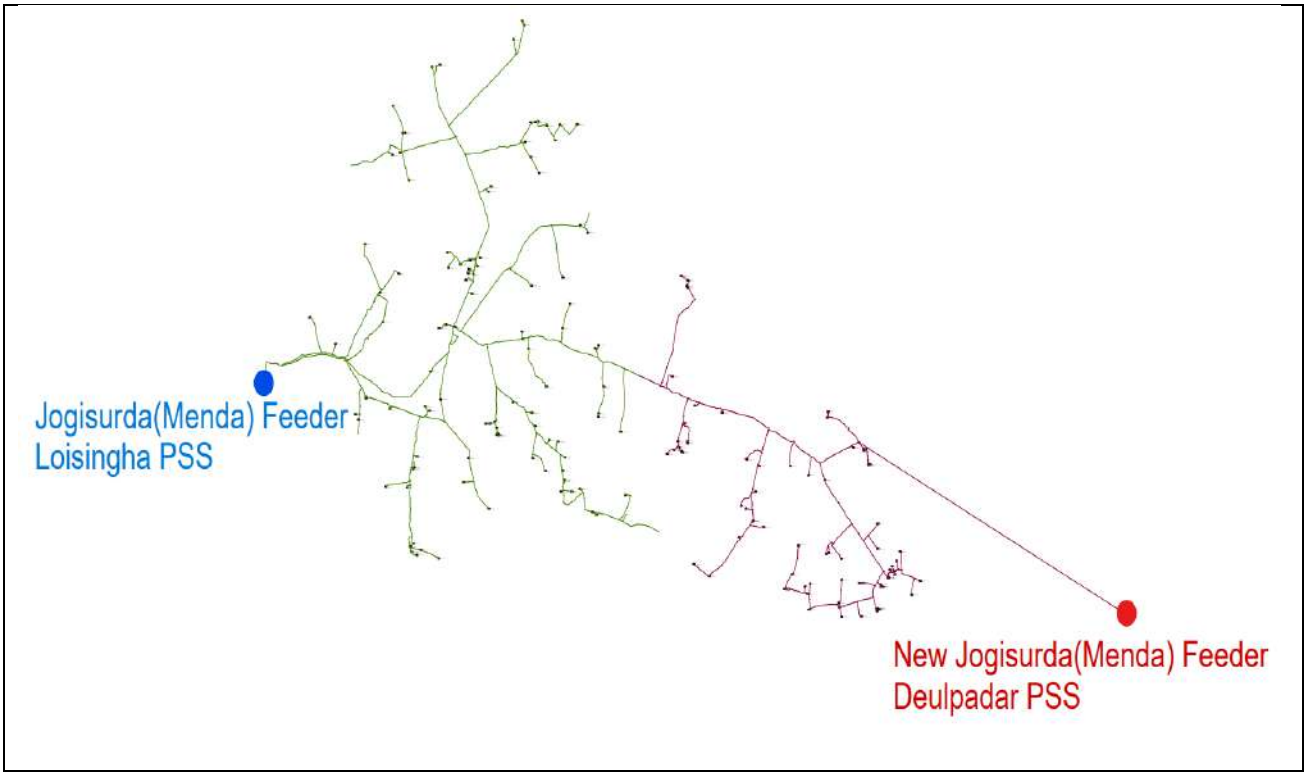
Proposed Scenario:

- Construction of 8.5CKm long overhead New 11kV feeder from Deulpadar PSS {20.8323848,83.6815988} to Khagaskana Village (Jogisurda(Menda) Feeder){20.8556847,83.6290324} for bifurcating the Jogisurda(Menda) feeder to mitigate low voltage problem.
- Installation of 2nos of DP with AB switch.

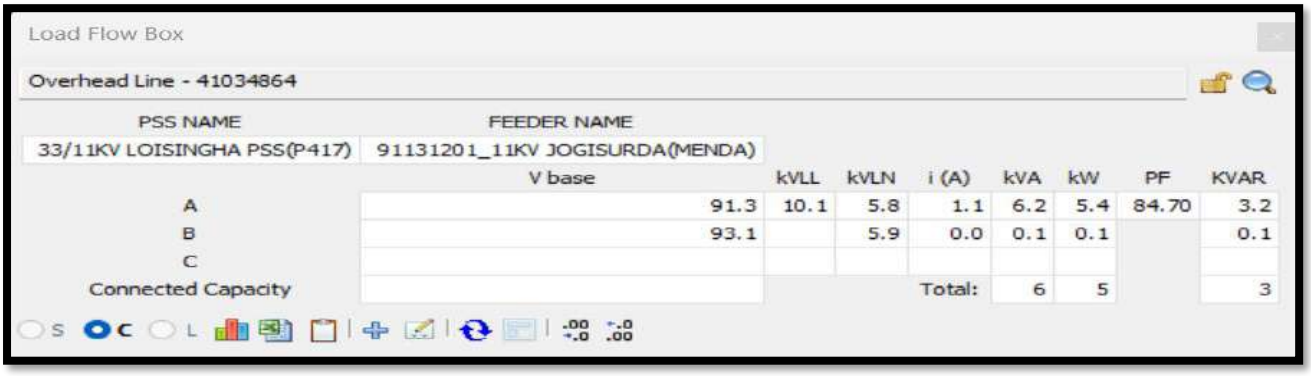
Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Loisingha	Jogisurda(Menda)	3.54	1.87	10.14	No
Deulpadar	New Jogisurda(Menda)	5.18	1.1	10.39	No

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software after proposal mapping:

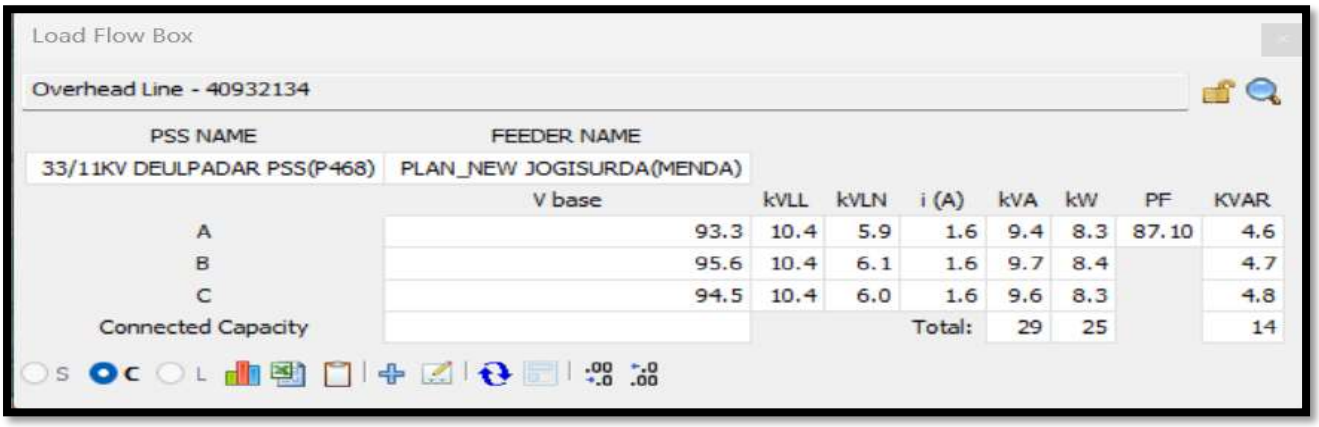


Load Flow Box

Overhead Line - 41034864

PSS NAME	FEEDER NAME
33/11KV LOISINGHA PSS(P417)	91131201_11KV JOGISURDA(MENDA)

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	91.3	10.1	5.8	1.1	6.2	5.4	84.70	3.2
B	93.1		5.9	0.0	0.1	0.1		0.1
C								
Connected Capacity				Total:	6	5		3



Load Flow Box

Overhead Line - 40932134

PSS NAME	FEEDER NAME
33/11KV DEULPADAR PSS(P468)	PLAN_NEW JOGISURDA(MENDA)

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	93.3	10.4	5.9	1.6	9.4	8.3	87.10	4.6
B	95.6	10.4	6.1	1.6	9.7	8.4		4.7
C	94.5	10.4	6.0	1.6	9.6	8.3		4.8
Connected Capacity				Total:	29	25		14

Scope of Work:

- Installation of 1nos 11kV Indoor Feeder breaker.
- Construction of 8.5CKm 11kV overhead line with bare conductor.
- Installation of 2nos of 11kV AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**BED of Balangir Circle**	
Name of the Sub-Division : -	Loisingha	
Name of the Section:-	Loisingha	
Name of the Work :-	New Feeder from 33/11KV Deulpadar PSS to mitigate low voltage problem of 11kV Jogisurda (Menda) feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	Installation of 1nos 11kV Indoor Feeder Breaker (Refer Annexure-164)	2205374.00
2	Construction of 8.5CKm 11kV overhead line with bare conductor . (Refer Annexure-112)	1,79,24,196 .50
3	Installation of 2nos of 11kV AB switch. (Refer Annexure-171)	6,16,524.00
	Total Amount	**1,85,40,720 .50**
	Total Amount (In Cr.)	**1.85**

Total estimated cost is Rs.1.85 Crore. (On TPWODL Capex Scheme)

Cost Estimate for 11kV link lines: ₹ 1.85 Cr (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Demand (kVA)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF =0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	Loisingha	Jogisurda(Menda)	2881.39	352.83	**74**	**646237**	**26.5**	
After Proposal	Loisingha	Jogisurda(Menda)	1873.28	135				
	Deulpadar	New Jogisurda(Menda)	1102.83	61				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	185.41	Rs. Lac
B	Load due to load growth	-	107.85	kVA
C	Total kW due to load growth	B*pf	97	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	577338	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	8.23	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	26.53	Rs. Lac
J	Net Revenue Collected	H+I	34.76	Rs. Lac
K	% revenue return	(J/A)*100	18.7	%
L	**Pay Back Period**	**100/K**	**5.33**	**Years**

Benefit to the system and consumers:

- Mitigation of low voltage problem.
- Enable “N-1” connectivity and improves reliability.
- Reduction in Technical loss
- Better quality power supply to consumers.
- Enable to cater future load growth.

Reliability Improvement & Mitigation of 11kV Feeder Low Voltage Problem

Proposal for Reliability Improvement & Low Voltage improvement of 11kV Sibtala Feeder:

Proposal:

11kV New Link line between Chikalbahali feeder and Sibtala feeder to improve its reliability and to mitigate low voltage problem.

Requirement/ Need of the proposal:

Objective:

Reliability improvement & Low voltage mitigation of Sibtala feeder.

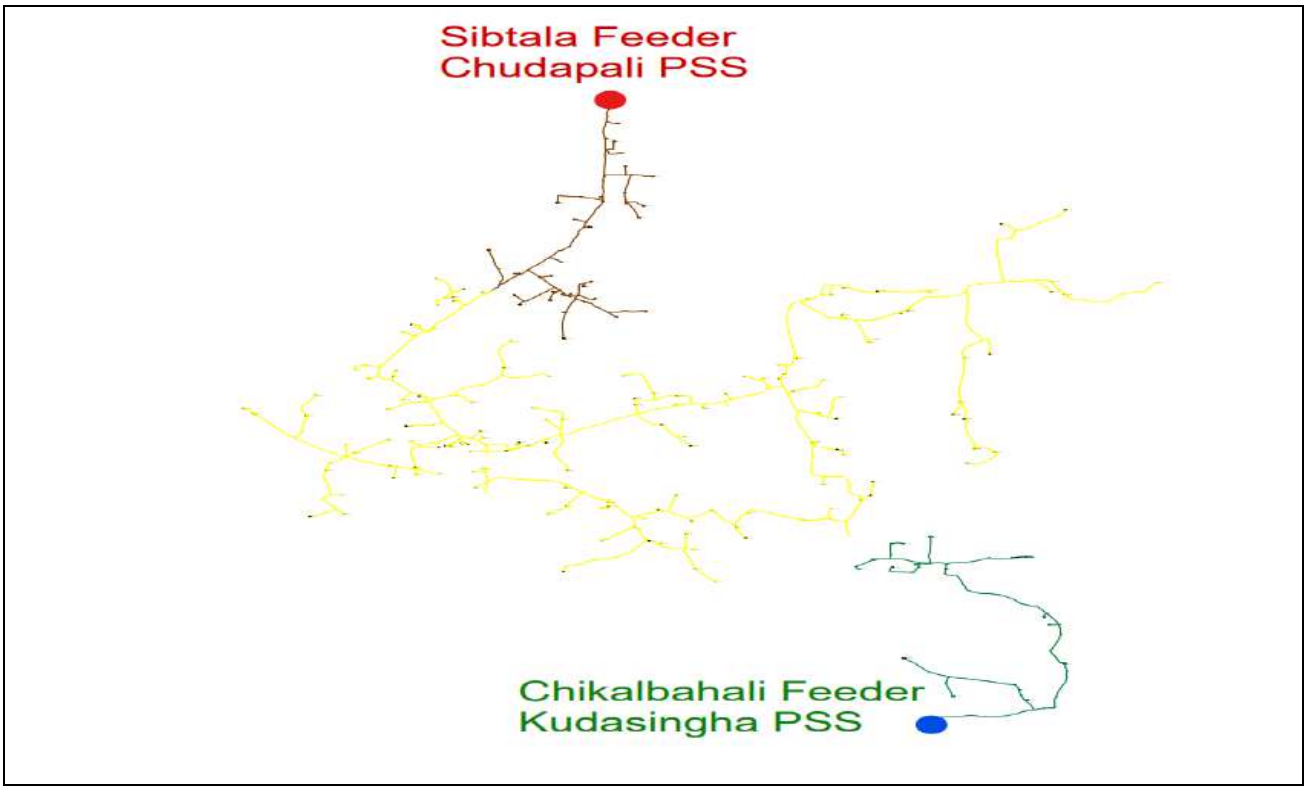
Existing Scenario:

- The 11kV Sibtala feeder is emanating from Chudapali PSS. The total length of this feeder is 80.39 Ckm and the conductor size of trunk line is 34sqmm. The peak demand of 11kV Sibtala feeder is 2.18MVA and the lowest voltage is 9.2kV.
- After load growth the peak demand of 11kV Sibtala feeder shall be 2.26MVA and the lowest voltage shall be 9.06kV. The feeder is experiencing low voltage problem which affects the power quality and undermine the load growth aspect in the feeder.
- In addition to it, the operations team had intimated about large no of tripping in the feeder as the trunk line is present in forest area. Accessing the feeder at night and during rainy season is very tough which is leading to long hours in fault rectification time resulting in consumer dissatisfaction.
- The 11kV Chikalbahali feeder is located near to this feeder, and it is emanating from Kudasingha PSS. The total length of this feeder is12.28 Ckm and the conductor size of trunk line is55sqmm.The peak demand of 11kV Chikalbahali feeder is 0.36MVA. The lowest voltage is 10.92kV.
- To mitigate low voltage, link line between these feeders is proposed for load shifting and for improving the reliability trunk line is proposed to be shifted towards the village roadside.

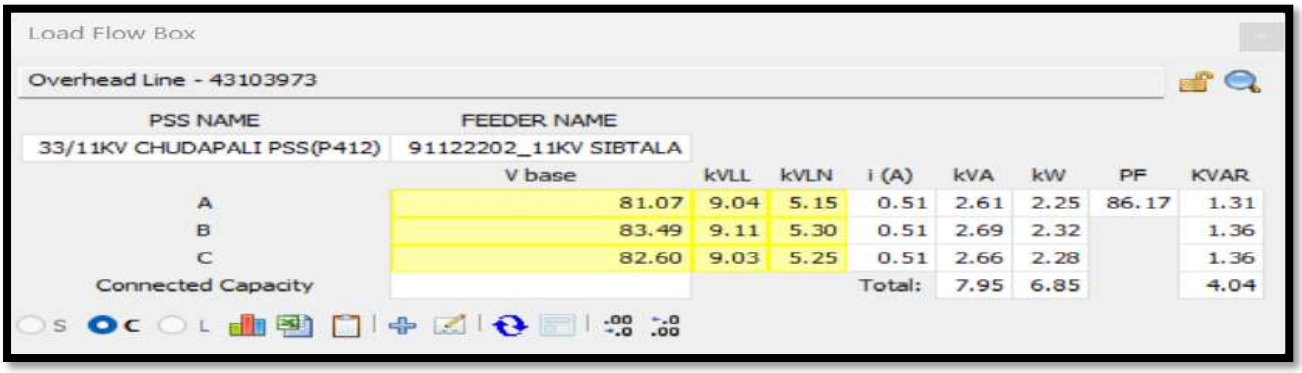
Existing Fy25-26 Loading and projected loading details:

Existing Scenario and Projected Scenario after 1yr Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY25-26 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status (AS IT IS)**	**Projected Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Chudapali	Sibtala	2.63	2.18	9.20	Low Voltage	2.26	9.06	Low Voltage
Kudsingha	Chikalbahali	3.54	0.36	10.92	No	0.38	10.92	No

Existing SLD



Load Flow Study of Existing Scenario in Cyme Software:

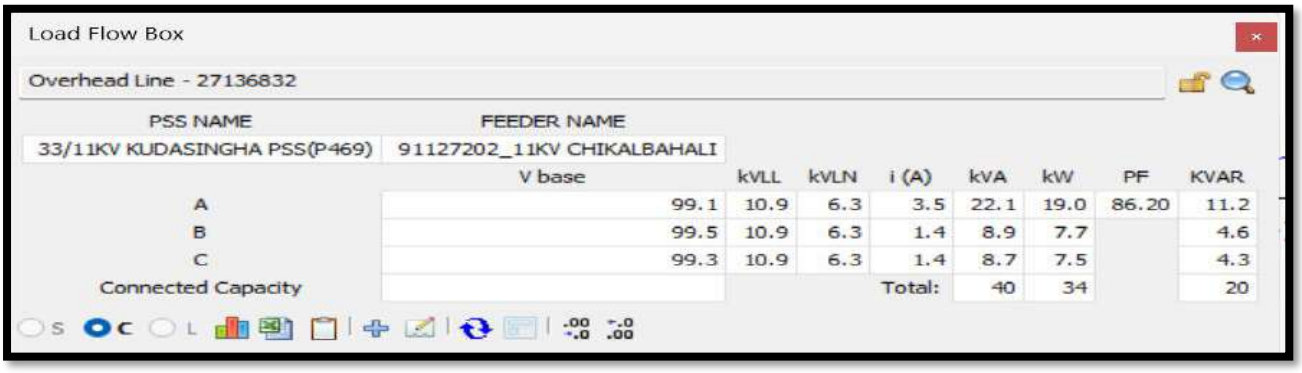


Load Flow Box

Overhead Line - 43103973

PSS NAME	FEEDER NAME
33/11KV CHUDAPALI PSS(P412)	91122202_11KV SIBTALA

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	81.07	9.04	5.15	0.51	2.61	2.25	86.17	1.31
B	83.49	9.11	5.30	0.51	2.69	2.32		1.36
C	82.60	9.03	5.25	0.51	2.66	2.28		1.36
Connected Capacity				Total:	7.95	6.85		4.04



Load Flow Box

Overhead Line - 27136832

PSS NAME	FEEDER NAME
33/11KV KUDASINGHA PSS(P469)	91127202_11KV CHIKALBAHALI

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	99.1	10.9	6.3	3.5	22.1	19.0	86.20	11.2
B	99.5	10.9	6.3	1.4	8.9	7.7		4.6
C	99.3	10.9	6.3	1.4	8.7	7.5		4.3
Connected Capacity				Total:	40	34		20

Proposed Scenario:

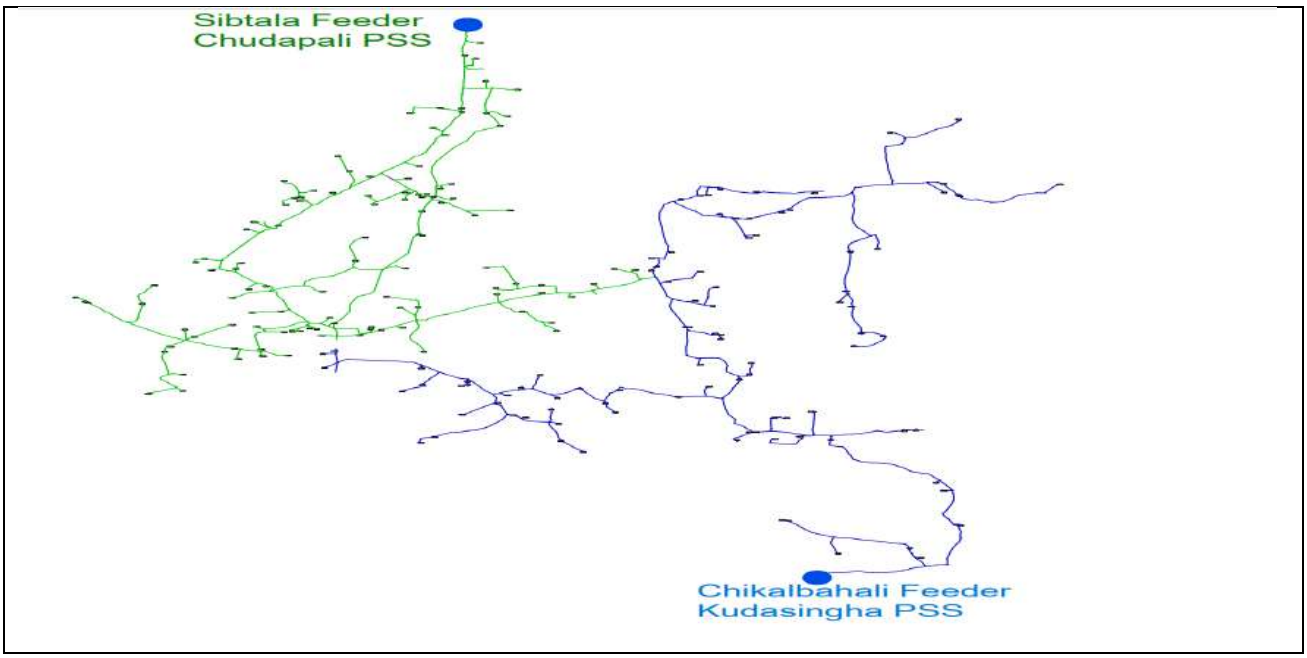
- Construction of 1CKm long overhead link line from Chikalbahal 63kVA DTR {20.6474183,83.3681089} to Fatkara-4 25KVA DTR {20.6542559,83.3647605}
  for load shifting of Sibtala feeder(ChudapaliPSS) to Chikalbahali feeder(KudasinghaPSS).
- For reducing tripping and to improve reliability construction of 4.2CKm long overhead link line from Kerameli to Sibatala

- For N-1 operation 2nos of DP with AB switch shall be erected.

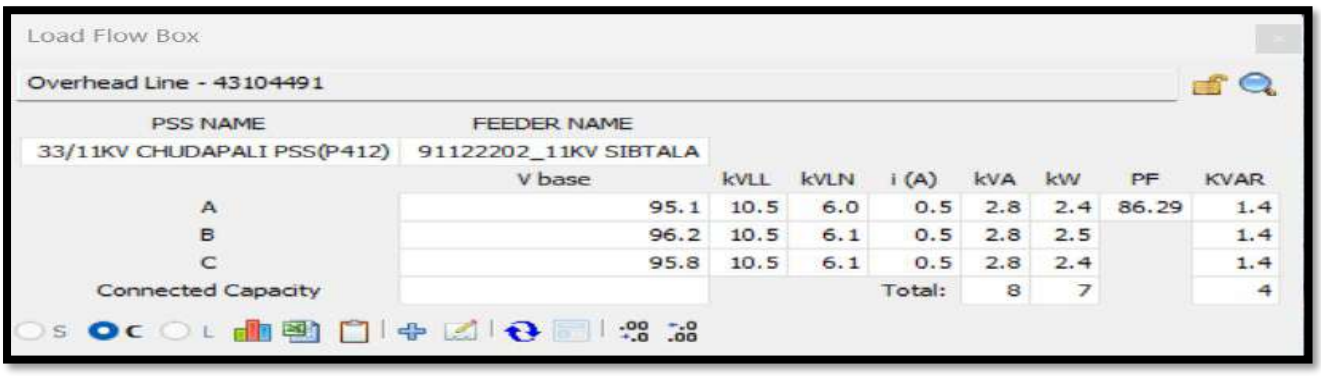
Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Chudapali	Sibtala	2.63	1.16	10.52	No
Kudasingha	Chakalibahali	3.54	1.39	10.30	No

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software after proposal mapping:



Load Flow Box

Overhead Line - 43104491

PSS NAME	FEEDER NAME
33/11KV CHUDAPALI PSS(P412)	91122202_11KV SIBTALA

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	95.1	10.5	6.0	0.5	2.8	2.4	86.29	1.4
B	96.2	10.5	6.1	0.5	2.8	2.5		1.4
C	95.8	10.5	6.1	0.5	2.8	2.4		1.4
Connected Capacity				Total:	8	7		4

Load Flow Box

Overhead Line - 43104056

PSS NAME	FEEDER NAME
33/11KV KUDASINGHA PSS(P469)	91127202_11KV CHIKALBAHALI

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	93.1	10.3	5.9	1.2	7.1	6.1	86.29	3.6
B	94.2	10.3	6.0	1.2	7.2	6.2		3.6
C	93.7	10.3	6.0	1.2	7.1	6.1		3.6
Connected Capacity				Total:	21	18		11

Scope of Work:s

- Construction of 5.2CKm 11kV overhead line with 100sqmm AAA bare conductor.
- Installation of 2nos of 11kV AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**BED of Bolangir Circle**	
Name of the Sub-Division : -	SDO-II, Bolangir	
Name of the Section:-	Chudapali	
Name of the Work :-	11kV Link line with Chikalbahali feeder for load shifting from Sibtala feeder and link line within Sibtala feeder to improve its reliability and to mitigate low voltage problem	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	Construction of 5.2CKm 11kV overhead line with bare conductor. (Refer Annexure-112)	1,09,65,390.80
2	Installation of 2nos of 11kV AB switch. (Refer Annexure-171)	6,16,524.00
	Total Amount	**1,15,81,914.80**
	Total Amount (In Cr.)	**1.16**
Total estimated cost is Rs.1.16 Crore. (On TPWODL Capex Scheme)		

Cost Estimate for 11kV link lines: ₹ 1.16. (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	**PSS**	**11kV Feeder**	**Peak Demand (kVA)**	**Losses at peak loading (kW)**	**Avg.Loss reduction (kW) (LLF =0.470)**	**Unit saved annually (kWH)**	**Annual saving (Rs Lacs) (Rs 4.105/Unit)**
Before Proposal	**Chudapali**	Sibtala	2258.17	283.22	**80**	**701102**	**28.8**
	Kudsingha	Chikalbahali	383.50	7.49			
After Proposal	Chudapali	Sibtala	1162.91	52			
	Kudasingha	Chakalibahali	1391.89	69			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	115.82	Rs. Lac
B	Load due to load growth	-	101.66	kVA
C	Total kW due to load growth	B*pf	91	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	544197	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
H	Revenue owing to serving load growth	G/(D*10^5)	7.75	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	28.78	Rs. Lac
J	Net Revenue Collected	H+I	36.54	Rs. Lac
K	% revenue return	(J/A)*100	31.5	%
L	Pay Back Period	100/K	3.17	Years

Benefit to the system and consumers:

- Reduction in tripping & improvement in fault rectification time.
- Mitigation of low voltage problem.
- Reduction in Technical loss
- Better quality power supply to consumers.
- Enable to cater future load growth.
- Interlinking of three nos of feeders leading to better reliability in the power supply.

Mitigation of 11kV Feeder Low Voltage Problem

Proposal for Low Voltage improvement of 11kV Mahalai Feeder:

Proposal:

11kV New Feeder from Arjunpur PSS to bifurcate Mahalai feeder to mitigate low voltage problem.

Requirement/ Need of the proposal:

Objective

Mitigation of low voltage problem of Mahalai feeder.

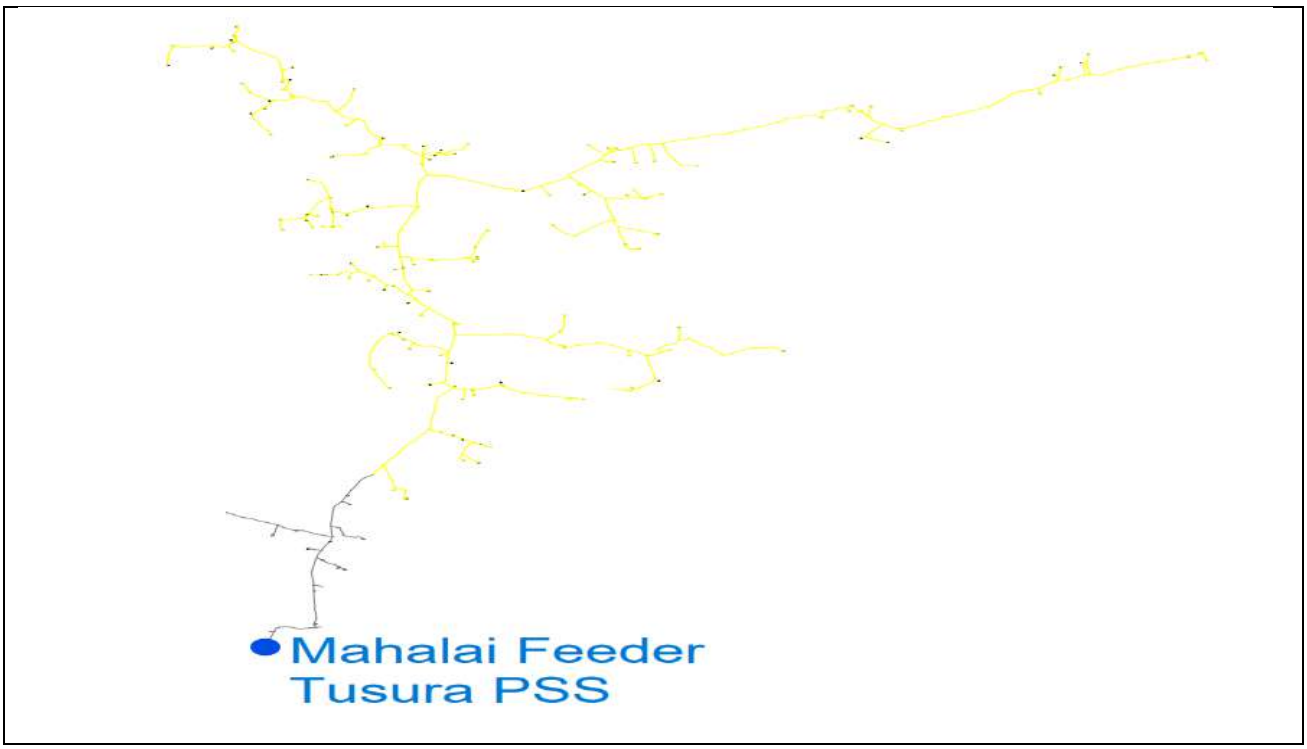
Existing Scenario:

- The 11kV Mahalai feeder is emanating from Tusura PSS.The total length of this feeder is71.12 Ckm and the conductor size of trunk line is 34sqmm. The peak demand of 11kV Mahalai feeder is 1.93MVA. The lowest voltage is 8.87kV.
- After considering 6.81% load growth for 1yr, the peak demand of 11kV Mahalai feeder shall be 2.02MVA and the lowest voltage shall be 8.77kV.
- The feeder is experiencing low voltage problem which affects the power quality and undermine the load growth aspect in the feeder.
- To mitigate the low voltage & improve the voltage regulation, a new 11kV feeder is proposed from the Arjunpur PSS.

Existing Fy25-26 Loading and projected loading details:

Existing Scenario and Projected Scenario after 1yr Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY25-26 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status (AS IT IS)**	**Projected Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Tusura	Mahalai	2.63	1.93	8.87	Low Voltage	2.02	8.77	Low Voltage

Existing SLD



Load Flow Study of Existing Scenario in Cyme Software:

Load Flow Box

Overhead Line - 42356910

PSS NAME	FEEDER NAME							
33/11KV TUSURA PSS(P416)	91153205_11KV MAHALAI							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	78.72	8.88	5.00	0.64	3.22	2.71	82.58	1.73
B	82.62		5.25	0.02	0.12	0.04		0.11
C								
Connected Capacity				Total:	3.31	2.75		1.84

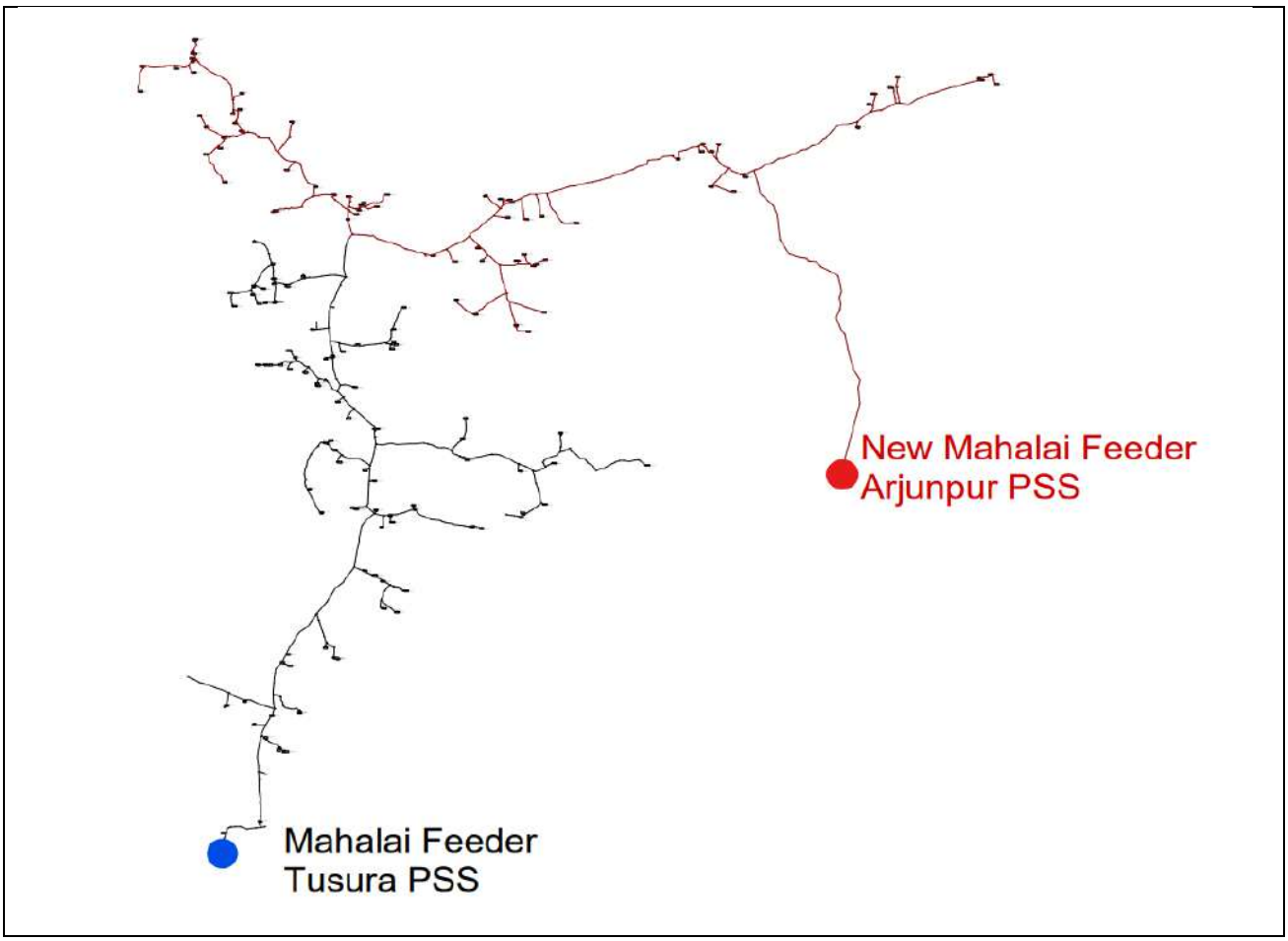
Proposed Scenario:

- Construction of 7CKm long overhead New 11kV feeder from Arjunpur PSS {20.5474822,83.5678807} to HIRLIMAL-5 DSS_42356654 63KVA DTR (Mahalai Feeder) {20.5917791,83.5552777}.
- Installation of 2nos of DP with AB switch shall be erected.

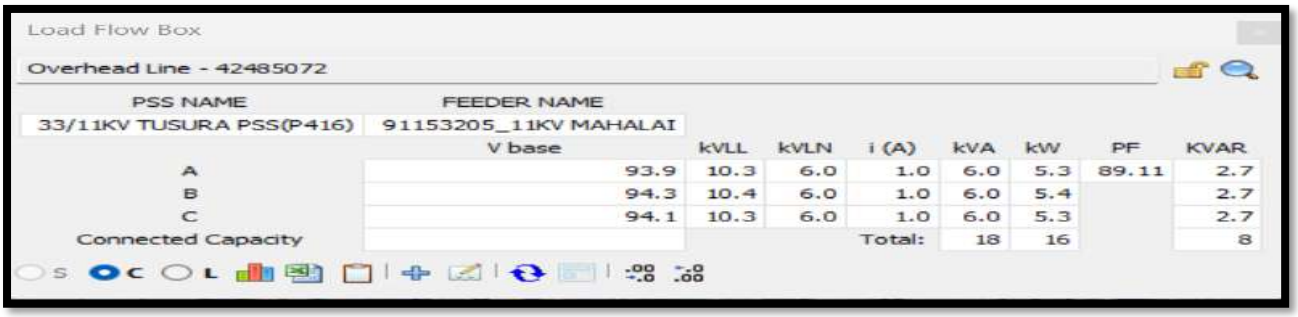
Proposed Loading details after proposal implementation:

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Tusura	Mahalai	2.63	1.17	10.35	No
Arjunpur	New Mahalai	5.18	0.81	10.18	No

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software after proposal mapping:



Load Flow Box

Overhead Line - 42485072

PSS NAME	FEEDER NAME
33/11KV TUSURA PSS(P416)	91153205_11KV MAHALAI

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	93.9	10.3	6.0	1.0	6.0	5.3	89.11	2.7
B	94.3	10.4	6.0	1.0	6.0	5.4		2.7
C	94.1	10.3	6.0	1.0	6.0	5.3		2.7
Connected Capacity				Total:	18	16		8

Load Flow Box

Overhead Line - 42313993

PSS NAME	FEEDER NAME
33/11KV ARJUNPUR PSS	PLAN_11KV NEW MAHALAI

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	91.2	10.2	5.8	0.7	4.3	3.8	86.48	2.0
B	93.9	10.2	6.0	0.0	0.2	0.1		0.1
C	92.8	10.2	5.9	0.0	0.0	0.0		-0.0
Connected Capacity				Total:	4	4		2

Scope of Work:

- Installation of 1nos 11kV Indoor Feeder breaker.
- Construction of 4CKm 11kV overhead line with 100sqmm AAA bare conductor.
- Construction of 3CKm 11kV overhead line with 100sqmm AAA covered conductor.
- Installation of 2nos of 11kV AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**BED of Bolangir Circle**	
Name of the Sub-Division : -	Tusura	
Name of the Section:-	Tusura	
Name of the Work :-	New Feeder from 33/11KV Arjunpur PSS to mitigate low voltage of 11kV Mahalai feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	Installation of 1nos 11kV Indoor Feeder Breaker (Refer Annexure-164)	22,05,374.00
2	Construction of 4CKm 11kV overhead line with 100sqmm AAA bare conductor. (Refer Annexure-112)	84,34,916.00
3	Construction of 3CKm 11kV overhead line with 100sqmm AAA covered conductor. (Refer Annexure-170)	85,75,908.00
4	Installation of 2nos of 11kV AB switch. (Refer (Annexure-171)	6,16,524.00
	Total Amount	**1,76,27,348.00**
	Total Amount (In Cr.)	**1.76**
Total estimated cost is Rs.1.76 Crore. (On TPWODL Capex Scheme)		

Cost Estimate for 11kV link lines: ₹ 1.76 Cr (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	PSS	11kV Feeder	Peak Demand (kVA)	Losses at peak Demand (kW)	Avg. Loss reduction (kW) (LLF =0.470)	Unit saved annually (kWH)	Annual saving (in Lacs) (Rs 4.105/Unit)	Remarks
Before Proposal	**Tusura**	Mahalai	2018.08	317.43	**97**	**850419**	**34.9**	
After Proposal	Tusura	Mahalai	1168.70	58				
	Arjunpur	New Mahalai	814.78	53				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	176.27	Rs. Lac
B	Load due to load growth	-	91.61	kVA
C	Total kW due to load growth	B*pf	82	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	490413	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	6.99	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	34.91	Rs. Lac
J	Net Revenue Collected	H+I	41.90	Rs. Lac
K	% revenue return	(J/A) *100	23.8	%
L	**Pay Back Period**	**100/K**	**4.21**	**Years**

Benefit to the system and consumers:

- Mitigation of low voltage problem.
- Enable “N-1” connectivity and improves reliability.
- Reduction in Technical loss
- Better quality power supply to consumers.
- Enable to cater future load growth.

Mitigation of 11kV Feeder Low Voltage Problem

Proposal for Low Voltage improvement of 11kV Rengali (Agalpur) Feeder:

Proposal:

11kV New Link line between Rengali feeder & Agalpur feeder to mitigate Low Voltage of Rengali feeder.

Requirement/ Need of the proposal:

Objective:

Low Voltage mitigation of Rengali (Agalpur) feeder.

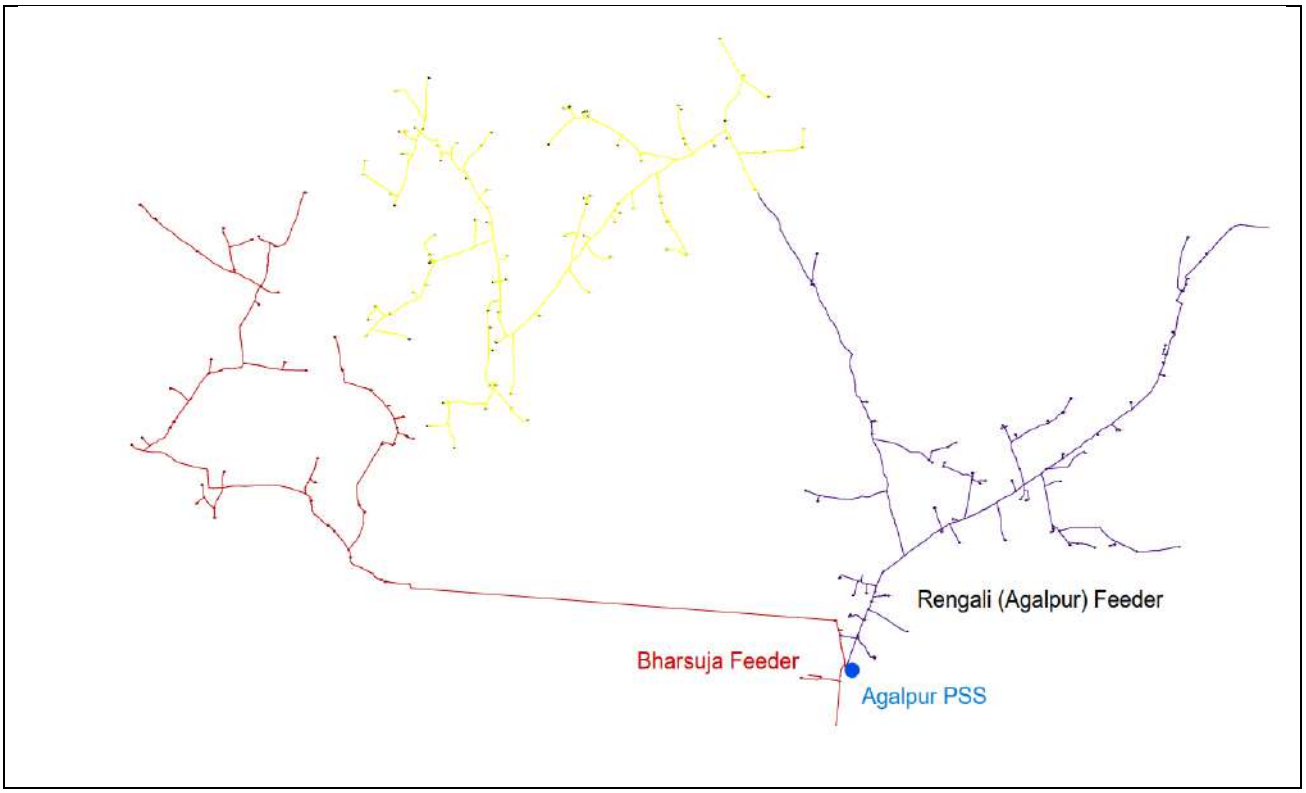
Existing Scenario:

- The 11kV Rengali(Agalpur) feeder is emanating from Agalpur PSS. The total length of this feeder is 56.27 Ckm and the conductor size of trunk line is 34sqmm. The peak demand of 11kV Rengali(Agalpur) feeder is 2.21MVA. The lowest voltage is 9.49kV.
- After considering 6.81% load growth for 1yr, the peak demand of 11kV Rengali(Agalpur) feeder shall be 2.38MVA and the lowest voltage shall be 9.37kV.
- The feeder is experiencing low voltage problem which affects the power quality and undermine the load growth aspect in the feeder.
- The 11kV Bharsuja feeder is located near to this feeder, and it is emanating from Agalpur PSS.The total length of this feeder is 25.95 Ckm and the conductor size of trunk line is 100sqmm.The peak demand of 11kV Bharsuja feeder is 0. 37MVA.The lowest voltage is 10.80kV.
- To mitigate low voltage problem, link line between these feeders is proposed for load shifting.

Existing Fy25-26 Loading and projected loading details:

Existing Scenario and Projected Scenario after 1yr Load Growth								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY25-26 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status (AS IT IS)**	**Projected Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Agalpur	Rengali(Agalpur)	2.63	2.21	9.49	Low Voltage	2.38	9.37	Low Voltage
Agalpur	Bharsuja	5.18	0.37	10.80	No	0.39	10.79	No

Existing SLD



Load Flow Study of Existing Scenario in Cyme Software:

Load Flow Box

Overhead Line - 41633881

PSS NAME	FEEDER NAME								
33/11KV AGALPUR PSS(P419)	91133201_11KV RENGALI/AGALPUR								
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	86.20	9.49	5.47	0.48	2.64	2.28	86.24	1.34
B	86.39	9.50	5.49	0.48	2.65	2.28		1.34
C	86.33	9.49	5.48	0.48	2.64	2.28		1.34
Connected Capacity				Total:	7.93	6.84		4.01

Load Flow Box

Overhead Line - 43387864

PSS NAME	FEEDER NAME							
33/11KV AGALPUR PSS(P419)	91133203_11KV BHARSUJA							
	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	97.5	10.8	6.2	0.9	5.5	4.8	87.30	2.6
B	98.8	10.8	6.3	0.9	5.5	4.8		2.7
C	98.3	10.8	6.2	0.9	5.5	4.8		2.7
Connected Capacity				Total:	17	14		8

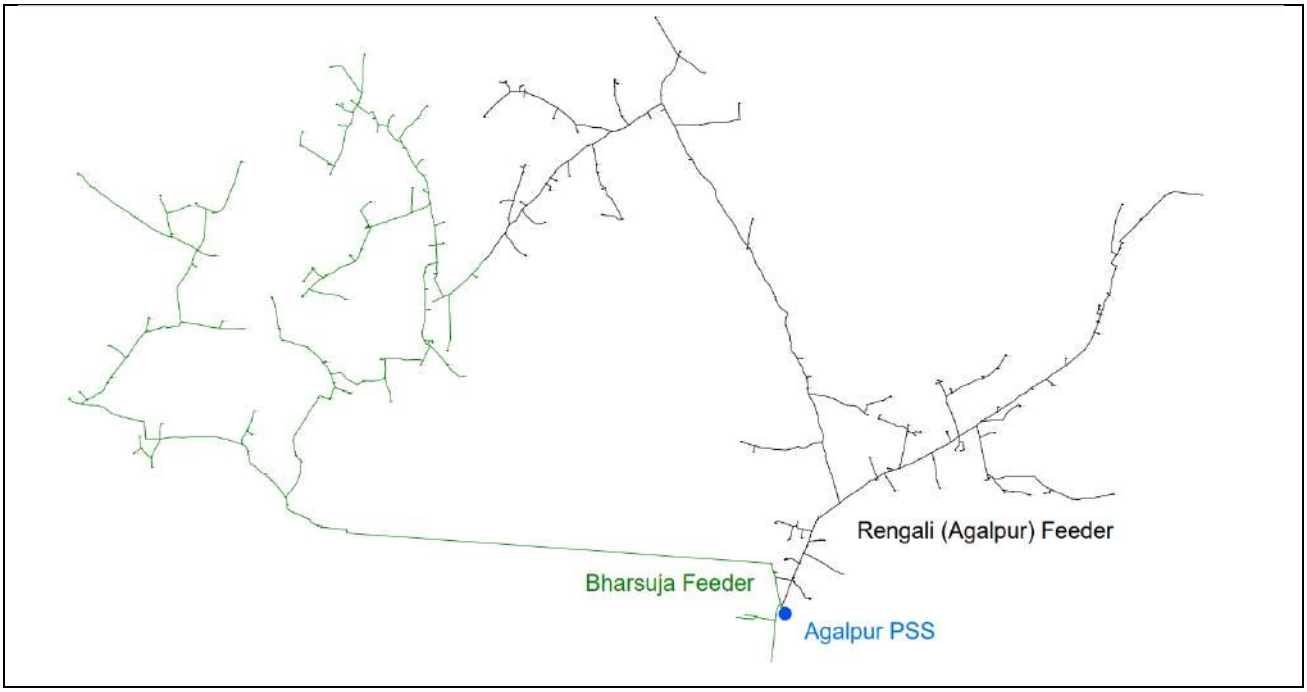
Proposed Scenario:

- Construction of 1CKm long overhead link line from Maa Bindhya Basini PP Babupal 25kVA Dtr {21.0312085,83.3539805} to Karamsani Mandir-7 25kVA DTR {21.0303295,83.3568258} for load shifting of Rengali(Agalpur) feeder (AgalpurPSS) to Bharsuja feeder(Agalpur PSS).
- Construction of two M+6 towers for 100meters River Crossing.
- For N-1 operation 2nos of DP with AB switch shall be erected.

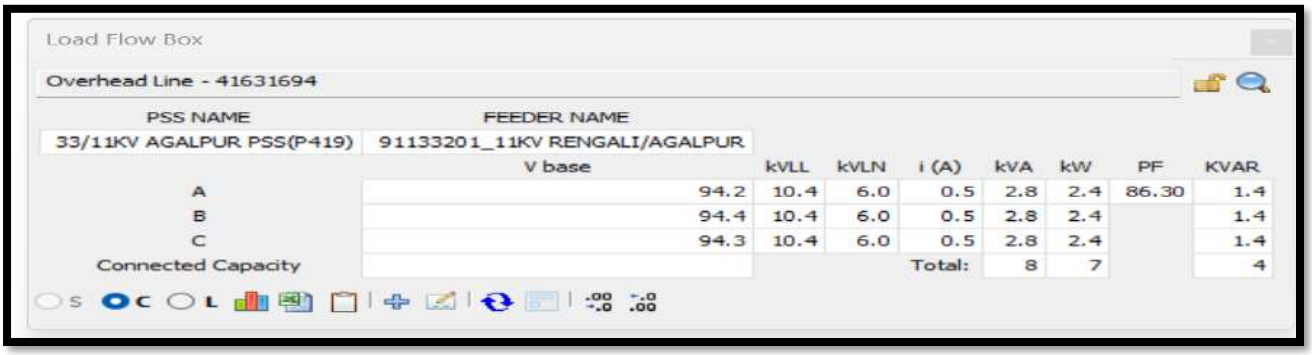
Proposed Loading details after proposal implementation:

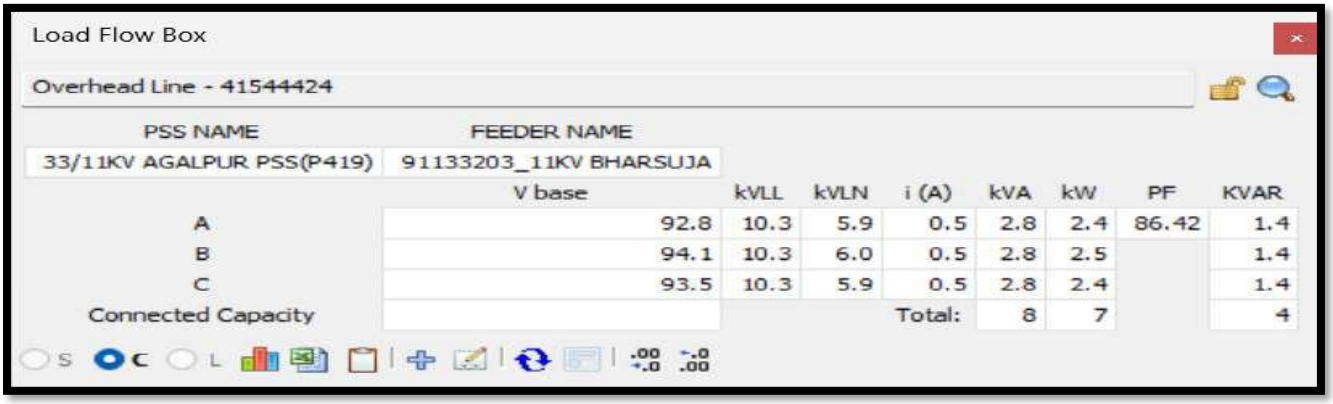
Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Proposed Demand FY26-27 (MVA)**	**Feeder Lowest Voltage (kV)**	**Low Voltage Problem Status**
Agalpur	Rengali (Agalpur)	2.63	1.6	10.37	No
Agalpur	Bharsuja	5.18	1.06	10.28	No

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software after proposal mapping:





Scope of Work:

- Construction of 1CKm 11kV overhead line with bare conductor.
- Construction of two M+6 towers for 100meters River Crossing.
- Installation of 2nos of 11kV AB switch.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**BED of Bolangir Circle**	
Name of the Sub-Division : -	Loisingha	
Name of the Section:-	Agalpur	
Name of the Work :-	11kV Link line to shift load from Rengali (Agalpur) feeder to Bharsuja feeder to mitigate low voltage problem of Rengali (Agalpur) feeder.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	Construction of 1CKm 11kV overhead line with bare conductor. (Refer Annexure-112)	21,08,729.00
2	Installation of 2nos of 11kV AB switch. (Refer Annexure-171)	6,16,524.00
3	Construction of two M+6 towers for 100meters River Crossing. (Refer Annexure-172)	22,46,572.00
	Total Amount	**49,71,825.00**
	Total Amount (In Cr.)	**0.5**
Total estimated cost is Rs.0.5 Crore. (On TPWODL Capex Scheme)		

Cost Estimate for 11kV link lines: ₹ 0.5 Cr (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	**PSS**	**11kV Feeder**	**Peak Demand (kVA)**	**Losses at peak loading (kW)**	**Avg.Loss reduction (kW) (LLF =0.470)**	**Unit saved annually (kWH)**	**Annual saving (Rs Lacs) (Rs 4.105/Unit)**	**Remarks**
Before Proposal (FY25+LG)	**Agalpur**	Rengali(Agalpur)	2376.44	229.60	**51**	**443022**	**18.2**	
	Agalpur	Bharsuja	365.22	13.56				
After Proposal (PLAN)	Agalpur	Rengali (Agalpur)	1600.41	73				
	Agalpur	Bharsuja	1060.53	63				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	49.72	Rs. Lac
B	Load due to load growth	-	144.23	kVA
C	Total kW due to load growth	B*pf	130	kW

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	772109	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	11.00	Rs. Lac
I	Revenue owing to tech. loss reductions	Refer Technical Loss Calculation	18.19	Rs. Lac
J	Net Revenue Collected	H+I	29.19	Rs. Lac
K	% revenue return	(J/A)*100	58.7	%
L	Pay Back Period	100/K	1.70	Years

Benefit to the system and consumers:

- Mitigation of low voltage problem.
- Reduction in Technical loss
- Better quality power supply to consumers.
- Enable to cater future load growth.
- Interlinking of two feeders leading to better reliability in the power supply.

Mitigation of 11kV Feeder Undervoltage Issue

Proposal for Mitigation of Undervoltage for 11kV Sargul Feeder.

Proposal:

11kV New feeder from Cherupali PSS to bifurcate Sargul feeder to mitigate undervoltage issue.

Requirement/ Need of the proposal :

Objective :

Mitigation of Undervoltage for 11kV Sargul Feeder

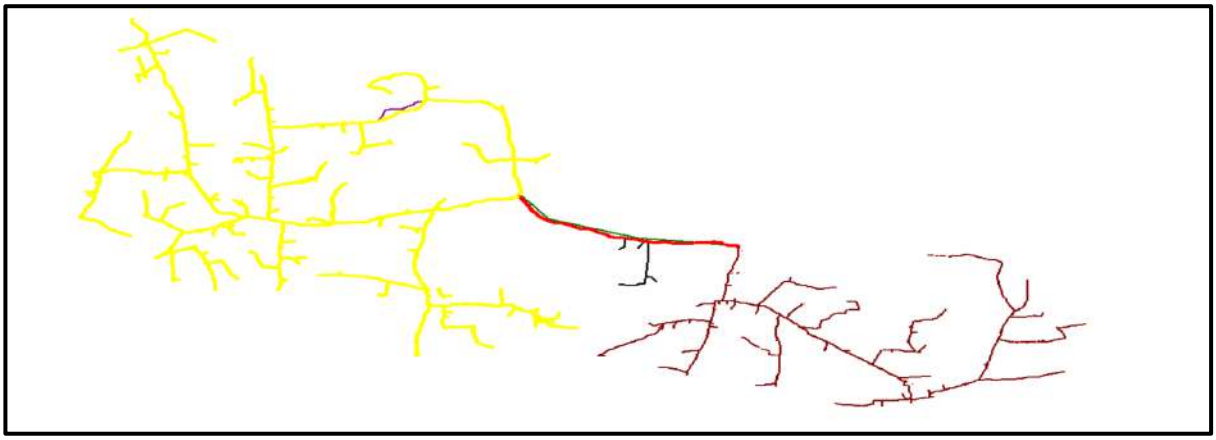
Existing Scenario :

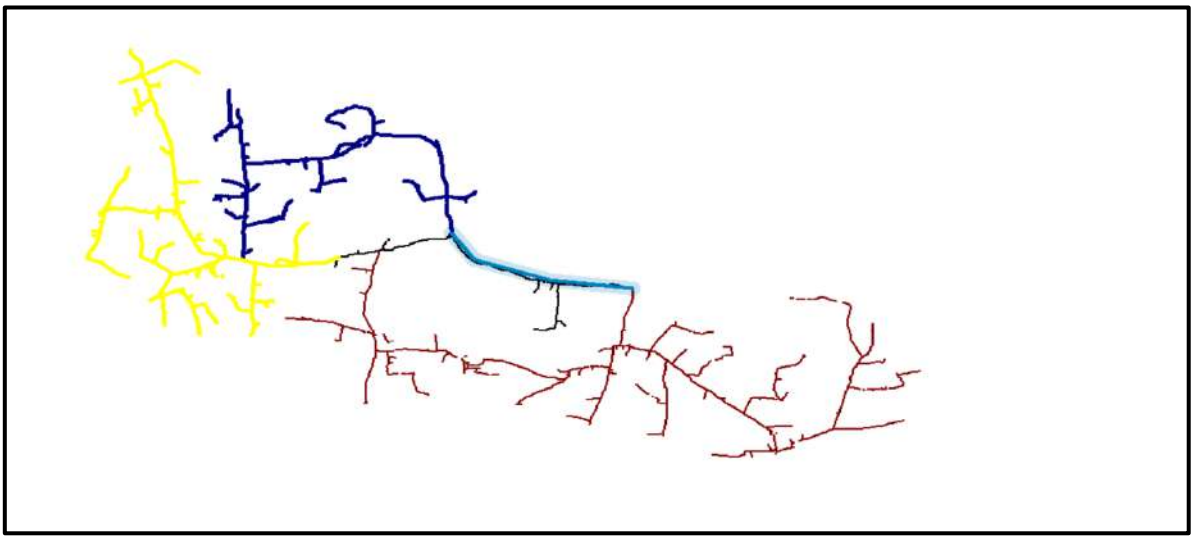
- 11kV sargul feeder is emanating from 33/11kV Cherupali PSS.
- Length of the 11kV sargul feeder is 79 Ckm with conductor size 55 sq.mm & minimum voltage towards the tail end is 9.1kV.
- The peak load of 11kV Sargul feeder is 3.06 MVA.
- At present the feeder is loaded up to 86% & will go up to 92.31 % with a 1 Year Load growth @ 6.79 %.
- This may result in frequent conductor snapping of 11kV feeder which hampers the reliability of power supply and considering future load growth of the upcoming consumers, 11kV new line from Cherupali PSS is proposed for bifurcation of Sargul feeder.

Existing Loading and projected load at 11kV Sargul Feeder:

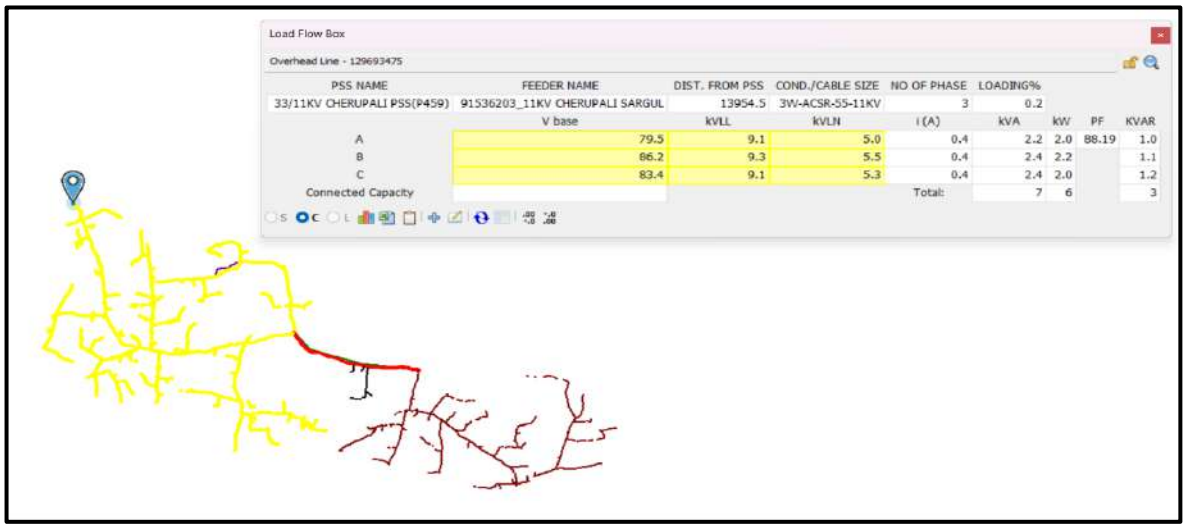
33/11kV PSS NAME	Feeder Name	Feeder Capacity (MVA)	Peak Loading FY 25 (MVA)	% Loading	Feeder Status	Projected Load FY27 (MVA)	% Loading	Tail end Voltage
Cherupali	Sargul Feeder	3.54	3.06	86 %	Overloaded	3.27	92.31%	9.3kV

Existing SLD:





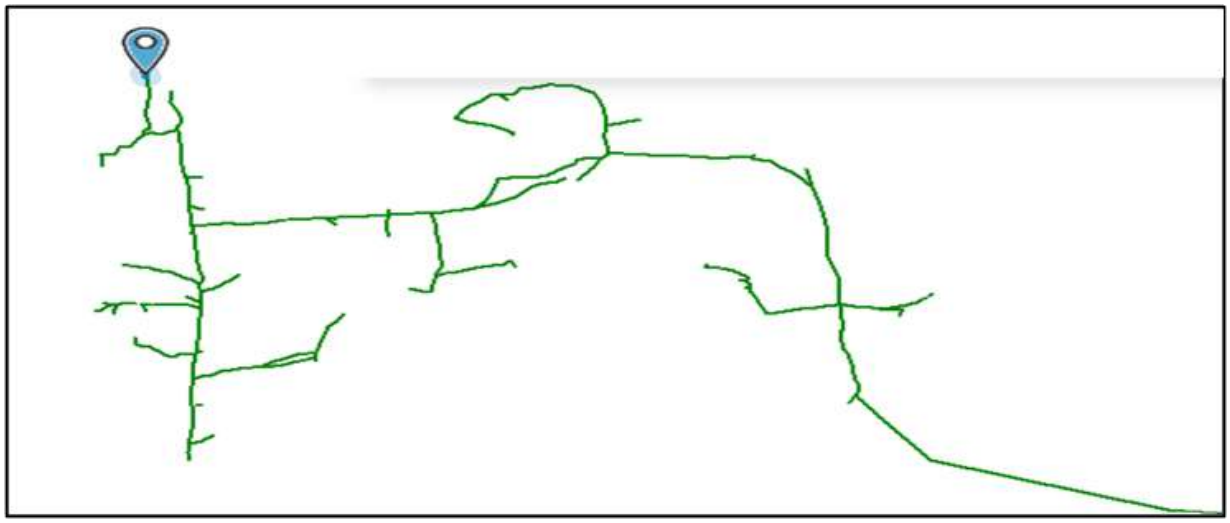
Existing Scenario of load flow study :



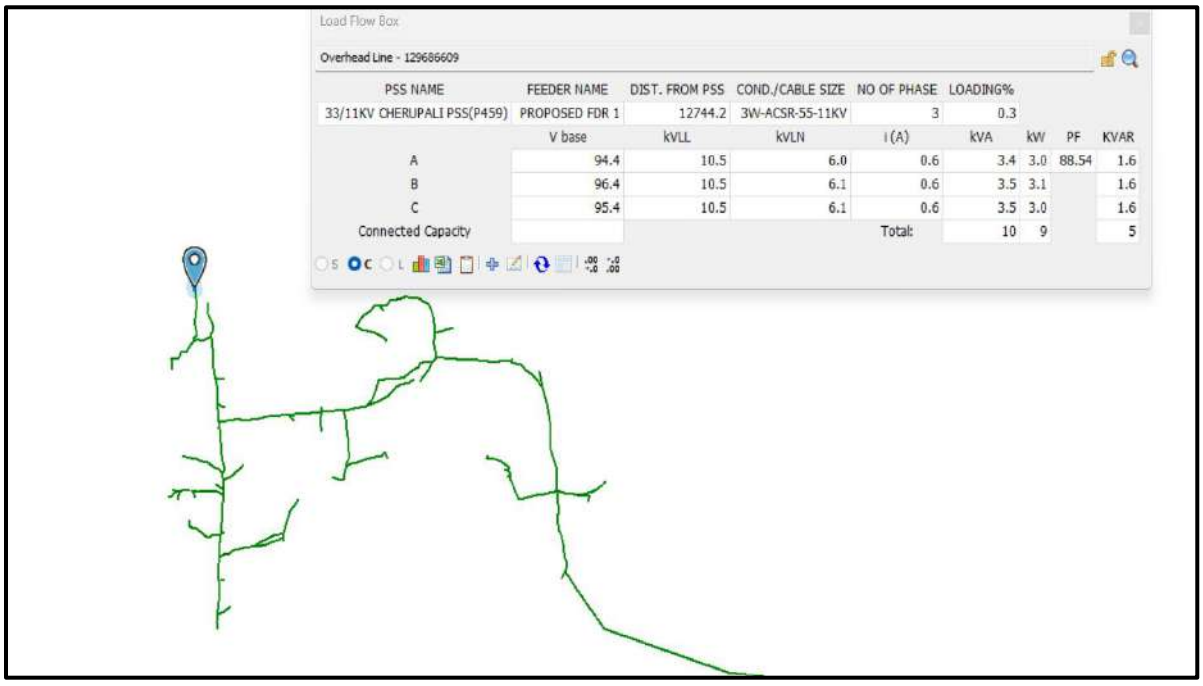
- A New feeder from 33/11kV Cherupali PSS will be proposed of 5 Ckm till Mahulpali Village to Bifurcate the existing 11kV Sargul FDR.
- Proposed Feeder Length will be 28 Ckm from the PSS (including New Line).

Loading of New Feeder Proposal (Summer 26')					
11 kV Feeder Name	**Feeder Capacity (MVA)**	**Loading After bifurcation MVA**	**% Loading**	**Proposed Feeder Length**	**Feeder Tail-end Voltage**
11Kv New line	5.18	1.06	20.46 %	5 Ckm (New line) + 23 Ckm (Existing Line) = 28 Ckm.	10.5

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



Load Flow Box

Overhead Line - 129686609

PSS NAME	FEEDER NAME	DIST. FROM PSS	COND./CABLE SIZE	NO OF PHASE	LOADING%			
33/11KV CHERUPALI PSS(P459)	PROPOSED FDR 1	12744.2	3W-ACSR-55-11KV	3	0.3			
	V base	kVLL	kVLN	I (A)	kVA	kW	PF	KVAR
A	94.4	10.5	6.0	0.6	3.4	3.0	88.54	1.6
B	96.4	10.5	6.1	0.6	3.5	3.1		1.6
C	95.4	10.5	6.1	0.6	3.5	3.0		1.6
Connected Capacity				Total:	10	9		5

Detailed Scope of Work:

1. 5Ckm of New Line Using 11Mtr RSJ Pole with 100Sqmm AAAC will be proposed till Mahulpali Village from 33/11KV Cherupali PSS.
2. 1 Nos of 11KV Outdoor Breaker with CR Panel will be proposed inside the PSS, Additional Bay Present in the PSS.

Proposed Cost with Estimate Break-up:

Name of the Division: - SED		
Name of the Work: -	**11 kV NEW LINE to Bifurcate the existing Sargul feeder**	**-**
Scope of work: -	5Ckm of New Line Using 11Mtr RSJ Pole with 100Sqmm AAAC will be proposed till Mahulpali Village from 33/11KV Cherupali PSS. 1 Nos of 11KV Outdoor Breaker with CR Panel will be proposed inside the PSS, Additional Bay Present in the PSS.	
Sl. No.	Description	**Amount**
1	**PART A:**	**₹ 1,05,07,625.00**
	1. 5Ckm of New Line Using 11Mtr RSJ Pole with 100Sqmm AAAC (Refer Annexure-112)	
2	**PART B:**	**₹ 19,90,193.00**
	1 Nos of 11kV Outdoor Breaker with indoor CR Panel will be proposed inside the PSS, Additional Bay Present in the PSS. (Refer Annexure-163)	
	Total Amount	**₹ 1,24,97,818.00**
	Total Amount (In Cr)	**1.24 Cr**

Cost Estimate: ₹ 1.24 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

STAGE	PSS	11kV FEEDER	PEAK LOADING (kW)	LOSSES AT PEAK LOADING (kW)	AVG.LOSS REDUCTION (KW) (LLF –0.470)	UNIT SAVED ANNUALLY (KWH)	ANNUAL SAVING (RS LACS) (RS 4.105/UNIT)
Before	Cherupali	Sargul	2696.37	369.28	41	359808	14.8
After	Cherupali PSS	Sargul	2003.30	225.74			
		Proposed Feeder	946.38	56.16			

REVENUE RETURN SHEET				
SR. NO.	**DESCRIPTION**	**FORMULA**	**VALUE**	**UOM**
A	Total cost of scheme	-	124.00	Rs. Lac
B	Load due to load growth	-	2665.85	kVA

REVENUE RETURN SHEET				
SR. NO.	**DESCRIPTION**	**FORMULA**	**VALUE**	**UOM**
C	Total kW due to load growth	1.732*33*B*Pf	2333	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	13874513	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	197.71	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	14.80	Rs. Lac
J	Net Revenue Collected	H+I	212.51	Rs. Lac
K	% revenue return	(J/A)*100	171.4	%
L	Pay Back Period	100/K	0.58	Years

Benefits:

1. Mitigation of Low Voltage Issue of 11kV Sargul FDR.
2. Improve the reliability of the 11kV Sargul FDR, by reducing the length of the feeder.

Mitigation of 11kV Feeder Undervoltage Issue of 11kV Feeder

Proposal for Mitigation of Undervoltage for 11kV Sargul Feeder.

Proposal:

11kV New Link Line between Sargul Feeder and Cherupali Feeder for mitigation of Undervoltage Problem.

Requirement/ Need of the proposal :

Objective :

Mitigation of Undervoltage Problem

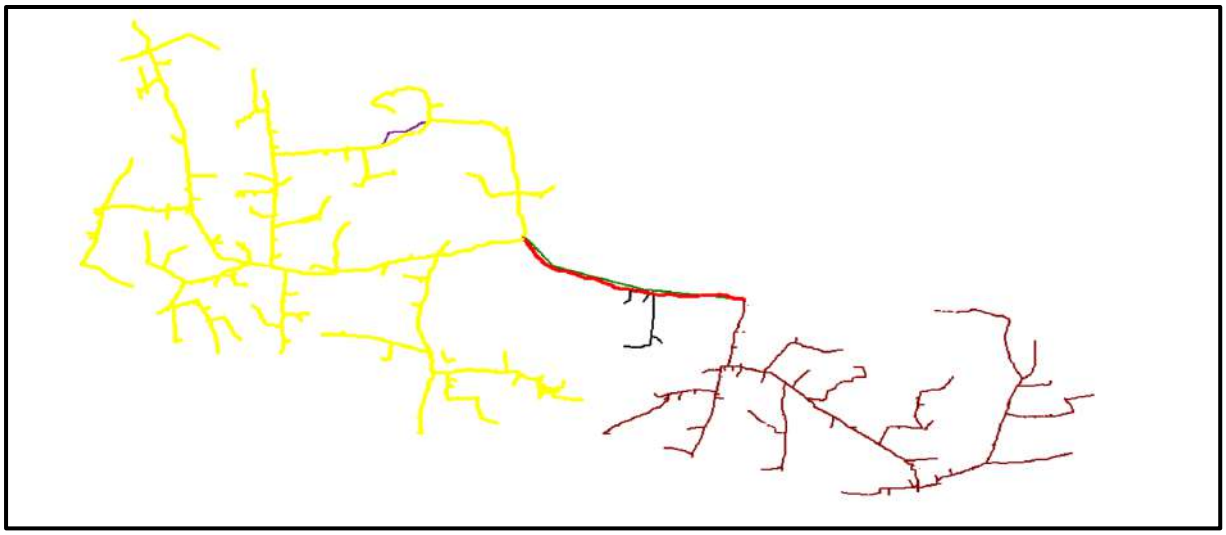
Existing Scenario :

- 11kV sargul feeder is emanating from 33/11kV cherupali pss.
- Length of the 11kV sargul feeder is 79 Ckm with conductor size 55 sq.mm & minimum voltage towards the tail end is 9.1kV.
- The peak load of 11kV Sargul feeder is 3.06 MVA.
- At present the feeder is loaded up to 86% & will go up to 92.31 % with a 1 Year Load growth @ 6.79 %.
- This may result in frequent conductor snapping of 11kV feeder which hampers the reliability of power supply and considering future load growth of the upcoming consumers, 11kV link line from cherupali feeder to sargul feeder is proposed for bifurcation of Sargul feeder.

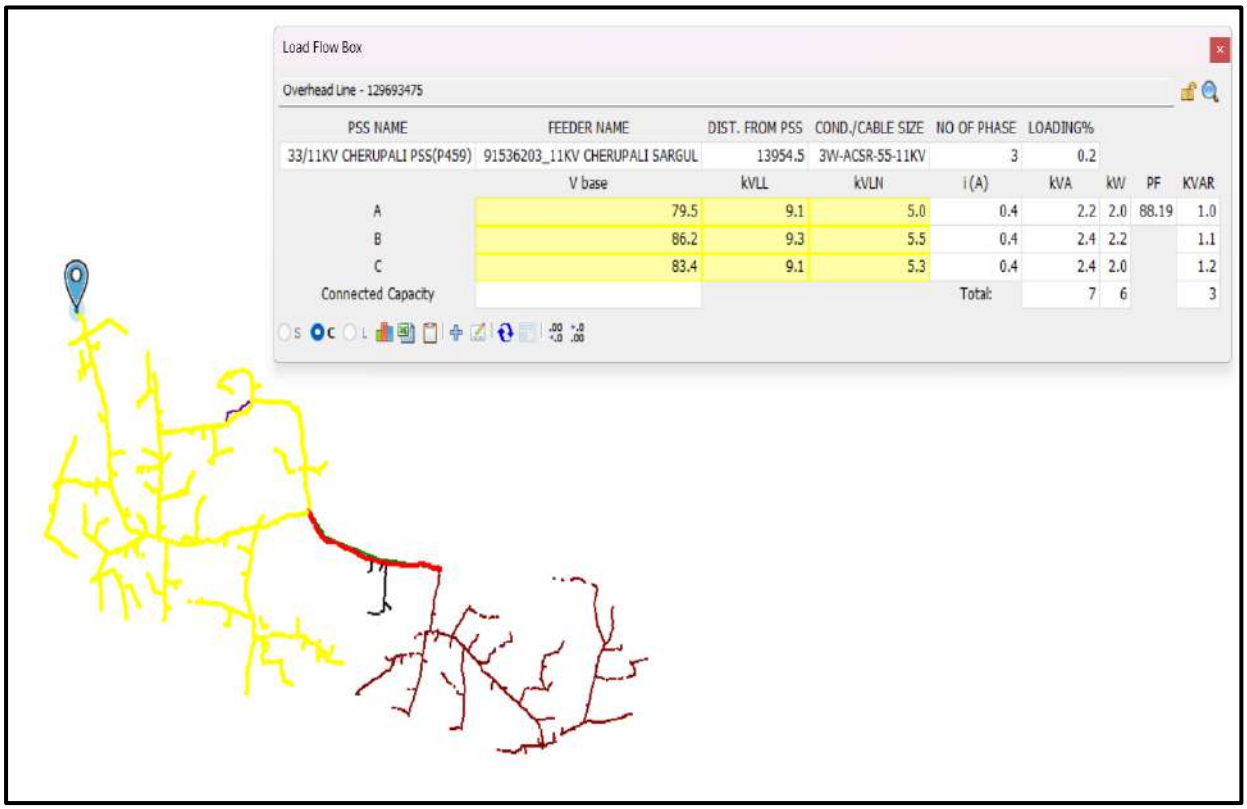
- **Existing Loading and projected load at 11KV Sargul Feeder:**

33/11kV PSS NAME	Feeder Name	Feeder Capacity (MVA)	Peak Loading Summer' (MVA)	% Loading	Feeder Status	Projected Load FY27 (MVA)	% Loading	Tail end Voltage
Cherupali	Sargul Feeder	3.54	3.06	86 %	Overloaded	3.27	92.31%	9.3kV

Existing SLD:



Exsisting Scenario of load flow study :

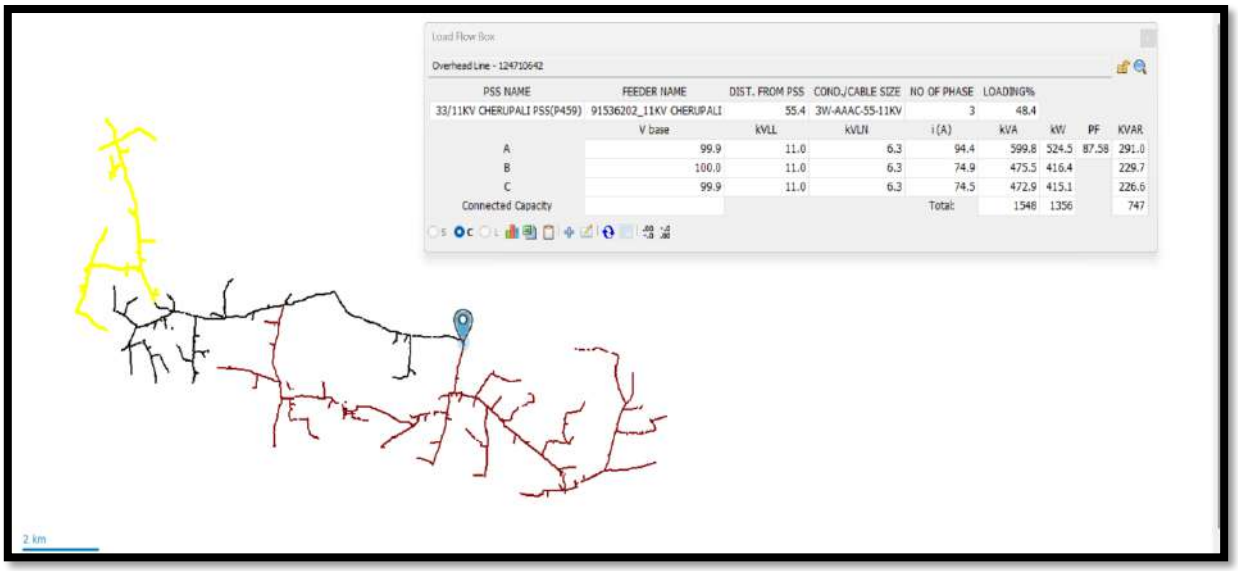


Proposed Scenario :

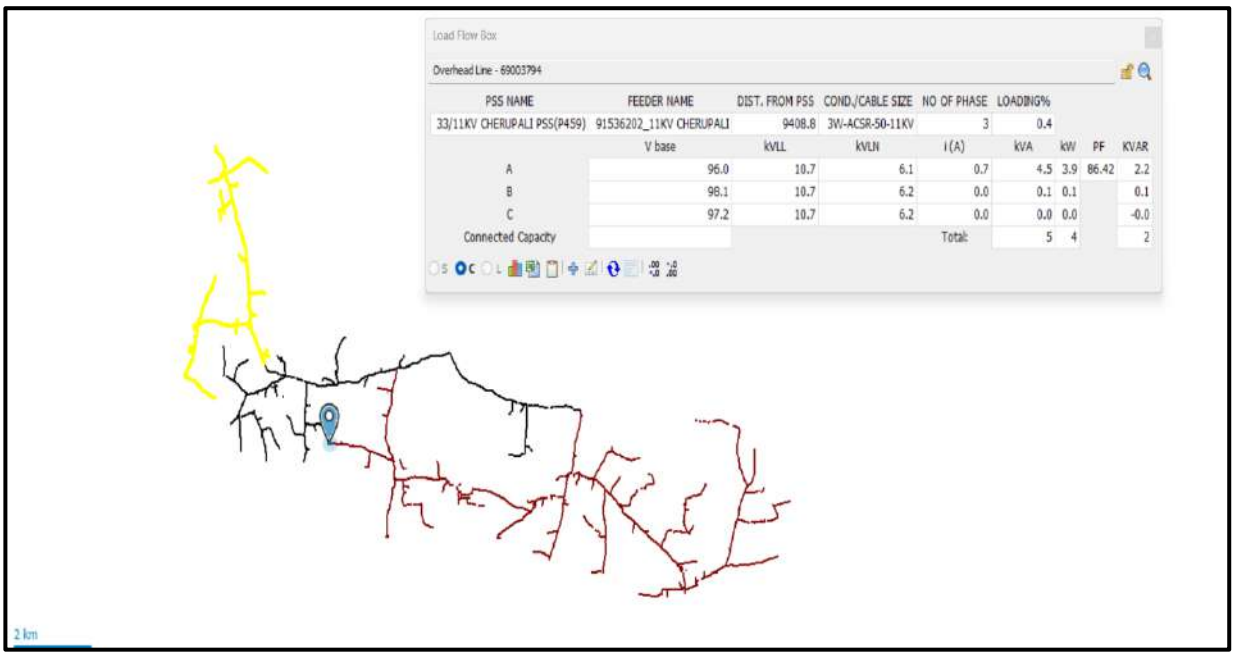
- 11kV New Link line from 11kV Cherupali FDR to Haldi Village (11KV Sargul FDR).
- Proposed Link Line of 2CKm from 11KV Cherupali FDR (Haldi Village) to 11KV Sargul FDR (Haldi Village).

Loading of New Feeder Proposal (Summer 26')					
11KV Feeder Name	**Feeder Capacity (MVA)**	**Loading After bifurcation MVA**	**Proposed Feeder Length**	**% Loading**	**Feeder Tail-end Voltage**
11kV New Link line	5.18	1.5	2 CKM	28.96%	10.7

Load Flow Study of proposed SLD with scenario in Cyme Software:



Minimum Voltage at Tail End.



Proposed Scope of Work:

- 2 Ckm of New Line Using 11Mtr RSJ Pole with 100Sqmm AAAC.
- 2Nos of 11KV AB Switch Set for Switching Operations.

Proposed Cost with Estimate Break-up:

Name of the Division: - SED		
Scope of work: -	2Ckm of New Line Using 11Mtr RSJ Pole with 100Sqmm AAAC	
	2Nos of ABSwitch Set for Line Maintenance.	
Sl. No.	**Description**	**Amount**
1	**PART A:**	
	2CKm of new Linkline using 11Mtr RSJ Pole using 100Sqmm AAAC. (Refer Annexure-112)	**42,02,067.00**
2	**PART B:**	
	2Nos of ABSwitch Set for Line Maintenance. (Refer Annexure-171)	**1,04,122.00**
	Total Amount	**43,06,189.00**
	Total Amount (In Cr).	**0.43**

Cost Estimate: ₹ 0.43 Cr.

Physical Target: March 2027

Cost Benefit Analysis:

STAGE	PSS	11KV FEEDER	PEAK LOADING (KW)	LOSSES AT PEAK LOADING (KW)	AVG.LOSS REDUCTION (KW) (LLF – 0.470)	UNIT SAVED ANNUALLY (KWH)	ANNUAL SAVING (RS LACS) (RS 4.105/UNIT)
Before	Cherupali	Sargul	2003.30	225.74	23	199864	8.2
		Cherupali	892	31			
After	Cherupali	Sargul	1578.81	157.12			
		Cherupali	1267.83	50.77			

REVENUE RETURN SHEET				
SR. NO.	DESCRIPTION	FORMULA	VALUE	UOM
A	Total cost of scheme	-	43.00	Rs. Lac
B	Load due to load growth	-	2665.85	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2333	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	13874513	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	197.71	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	8.20	Rs. Lac
J	Net Revenue Collected	H+I	205.91	Rs. Lac
K	% revenue return	(J/A)*100	478.9	%
L	Pay Back Period	100/K	0.21	Years

Benefits:

1. Mitigation of Low Voltage Issue of 11KV Sargul FDR.
2. Improve the reliability of the 11KV Sargul FDR, by reducing the length of the feeder.
3. Shifting Load from the Long 11KV Sargul FDR with the Short Nearby 11KV Cherupali PSS will additionally reduce the length and overall load of the FDR.

Reliability improvement of 11kV Feeder.

Proposal for Reliability Improvement by of 11kV Chadeipank & Sulia feeder.

Proposal:

11kV New Link Line between Sulia Feeder and 11kV Chadheipunk feeder for N-1 Supply arrangement.

Requirement/ Need of the proposal:

Objective :

N-1 Supply arrangement for 11kV chadeipank & sulia feeder.

Existing Scenario :

- Presently, 11kV Sulia Feeder emanates from 33/11kV Ainlachat (ODSSP) PSS. The total length of the circuit is 36Ckm with 35 & 55 Sqmm ACSR and the peak load of the feeder is 0.19 MVA.
- Similarly, 11kV Chadheipunk Feeder emanates from 33/11kV Ainlachat (ODSSP) PSS. The total length of the circuit is 71 Ckm with 35 & 55 Sqmm ACSR and the peak load of the feeder is 1.7MVA. this Feeder has Two No's of HT Consumers
- None of these feeders having N-1 Source, as the circuit runs through dense forest, results in multiple tripping in this circuit.

Existing Loading and Proposed load(FY-27) of 11kV Chadeipunk Feeder:

PSS Name	11KV Feeder Name	Feeder Capacity (MVA)	Peak Loading FY25-26 (MVA)	% Loading	Projected Load FY27 (MVA)	% Loading
Ainlachat	Chadeipunk	3.54	1.71	48.31	1.83	51.59
Ainlachat	Sulia	3.54	0.19	5.37	0.20	5.73

Existing SLD:

Load Flow Study of 11KV Chadeipunk FDR existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 70515661

PSS NAME	FEEDER NAME	DIST. FROM PSS	COND./CABLE SIZE	NO OF PHASE	LOADING%
33/11KV AINLACHAT PSS(P466)	91537202_11KV CHADHEIPANK	9159.8	3W-AAAC-100-11KV	3	0.0

	V base	kVLL	kVLN	i (A)	kVA	kW	PF	KVAR
A	94.5	10.5	6.0	0.0	0.0	-0.0	0.00	-0.0
B	97.6	10.6	6.2	0.0	0.0	-0.0		-0.0
C	96.1	10.6	6.1	0.0	0.0	0.0		-0.0
Connected Capacity				Total:	0	-0		-0

Proposed Scenario :

- 11kV Chadeipunk Feeder emanates from 33/11KV Ainlachat PSS will be connected to 11kV sulia feeder emanates from 33/11kV ainlachat PSS with a new link line of 3 Ckm. From hatipali RWSS Tapping 11kV Chadeipunk Feeder to Braman Pali Village tapping 11KV Sulia Feeder.
- A new link line of 3Ckm from 11kV chadeipunk Feeder to 11kV Sulia Feeder will cover dense forest area, therefore Insulated Conductor of 55 Sqmm with 11Mtr RSJ pole will be proposed.
- "Due to the Deep Forest", the feeder conductor will be insulated to mitigate the transient fault and reliable power supply.

Loading of New Feeder Proposal (Summer 26')					
11 kV Feeder Name	**Feeder Capacity (MVA)**	**Loading After bifurcation MVA**	**% Loading**	**Proposed Feeder Length**	**Feeder Tail-end Voltage**
11KV New Link line	5.18	0.72	13.90 %	3 CKM (Covered Conductor)	10.2

Proposed SLD:

Load Flow Study of proposed scenario in Cyme Software:

Detailed Scope of Work:

1. 3Ckm of Insulated 100 Sqmm AAAC using 11Mtr RSJ Pole.
2. 1No of tapping DP with AB switch 400A using 11Mtr RSJ Pole.

Proposed Cost with Estimate Break-up:

Name of the Division: - SED		
Name of the Work: -	**11KV New Link Line between 11KV Chadeipunk Feeder and 11KV Sulia Feeder.**	
Sl. No.	**DESCRIPTION**	**Amount**
1	**PART A:**	
	3Ckm of Insulated 100 Sqmm AAAC using 11Mtr RSJ Pole. (Refer Annexure-170)	**41,00,289.00**
2	**PART B:**	
	2 No of tapping DP with AB switch Set (Refer Annexure-171)	**1,04,122.00**
	Total Amount	**42,04,411.00**
	Total Amount (In Cr)	**0.42**

Cost Estimate: ₹ 0.42 Cr.

Physical Target: March 2027

Cost Benefit Analysis:

STAGE	GRID	11KV FEEDER	PEAK LOADING (KW)	LOSSES AT PEAK LOADING (KW)	AVG.LOSS REDUCTION (KW) (LLF – 0.470)	UNIT SAVED ANNUALLY (KWH)	ANNUAL SAVING (RS LACS) (RS 4.105/UNIT)
Before	Ainlachat	Chadeipunk	1502.81	71.91	1	4471	0.2
		Sulia	167	9			
After	Ainlachat	Chadeipunk	1159.96	47.55			
		Sulia	513.28	32.00			

REVENUE RETURN SHEET				
SR. NO.	DESCRIPTION	FORMULA	VALUE	UOM
A	Total cost of scheme	-	42.00	Rs. Lac
B	Load due to load growth	-	106.16	kVA
C	Total kW due to load growth	1.732*33*B*Pf	93	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	552531	kWH
E	Power Purchase cost per unit	-	4.105	Rs.
F	Avg. Power Sale cost per unit	-	5.53	Rs.
G	Diff. (Sale-purchase)	F-E	1.425	Rs.
H	Revenue owing to serving load growth	G/(D*10^5)	7.87	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.18	Rs. Lac
J	Net Revenue Collected	H+I	8.06	Rs. Lac
K	% revenue return	(J/A)*100	19.2	%
L	Pay Back Period	100/K	5.21	Years

Benefits:

1. Tripping and Snapping of the Conductors due to deep dense forest area will reduce due to load shifting of that part to 11KV Sulia FDR.
2. As the Length of 11KV Chadeipunk FDR is reduced the Feeder reliability will improve and Voltage Improvement as there is 2 Large Industries in that FDR.