ANNEXURE 31

Scheme Name: Installation of 33kV & 11kV Fault Passage Indicator

Background

At inception, 33kV & 11kV feeders had no automated tools to identify fault locations. This resulted in prolonged patrolling during outages. Since vesting, approx. 850 FPIs have been installed on HRF & critical feeders, which improved fault restoration time. However, most feeders are still without FPIs. The balance will be covered in phases under upcoming CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV FPI	Set	1316	340	976
2.	33kV FPI	Set	1282	172	1110

Proposal

Installation of **33kV & 11kV Fault Passage Indicators** at strategic locations along feeders to quickly pinpoint faulty sections, integrated with SCADA/ADMS for remote monitoring.

Requirement/ Need of the Proposal

- Current system requires manual patrolling, leading to long outage durations.
- FPIs will provide real-time fault indication, reducing restoration time.
- Ensures improvement in reliability indices and helps to achieve regulatory targets.

Scope of Work

Installation of 11kV & 33kV FPI:-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV FPI	Set	100
2.	33kV FPI	Set	120
	Total		

Refer Annexure 143 for 11 kV FPI locations and Annexure 144 for 33kV FPI locations.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11KV FPI	Set	100	0.0245	2.45	Refer Annexure – 95 for detailed costing sheet
2.	33KV FPI	Set	120	0.0245	2.94	Refer Annexure – 94 for detailed costing sheet
	Total				**5.39**	

Physical Target:
The proposed work will be completed by March 27.
Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Faster fault detection and isolation, reduced SAIDI/SAIFI, improved network reliability, lower O&M cost.
- **Consumers:** Shorter outages, quicker restoration, better quality and reliability of power supply.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV FPI	Set	1316	340	976	100	876		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33kV FPI	Set	1282	172	1110	120	990		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 32

Scheme Name: Installation of AB Switch Manual/Motorised.

Background

Initially, feeders had limited switching points, mostly manual and outdated. Since vesting, some AB switches have been added and pilot motorised switches installed in 11kV Gopal Pali Feeder in Sambalpur, but large portions of the network still lack proper sectionalizing. Balance requirement will be completed in phases under CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV AB Switch	Nos.	6250	3464	2786

Proposal

Installation of manual AB switches in rural/less critical feeders and motorised AB switches in urban/critical feeders, integrated with SCADA/ADMS for remote operation.

Requirement/ Need of the Proposal

- Present system has inadequate switching, causing delays in fault isolation and restoration.
- Manual AB switches will improve sectionalizing and load transfer.
- Motorised AB switches will ensure remote, faster, and safer operations, meeting reliability norms and smart grid objectives.

Scope of Work

Installation of 11kV AB Switch:-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV AB Switch	Nos.	300
	Total		**300**

Refer Annexure 145 for AB switch locations.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV AB Switch	Nos.	300	0.0038	1.15	Refer Annexure –98 for detailed costing sheet
	Total				**1.15**	

Physical Target:

The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Faster restoration, improved reliability (lower SAIFI/SAIDI), reduced O&M effort, better load management, regulatory compliance.
- **Consumers:** Shorter outages, safer and more reliable supply, improved service quality and satisfaction.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV AB Switch	Nos.	6250	3464	2786	300	2486		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

Scheme Name: Installation of 33kV Isolator

Background

33KV Isolators are installed on long length Feeders for ease and quick isolation of feeder sections for Maintenance work, keeping remaining feeder in service, improving reliability of power supply to the consumers. Isolators are proposed on the identified feeders which had limited switching points. The requirement will be completed in phases under CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	33kV Isolators	Nos.	333	82	251

Proposal

Installation of isolators for critical feeders for isolation of faulty section and improve reliability of power supply to customer.

Requirement/ Need of the Proposal

- Present system has inadequate isolation, causing delays in fault isolation and restoration.
- Isolators will improve reliability.

Scope of Work

Sl. No.	Activity	UOM	Proposed Qty
1.	33kV Isolators with DP	Nos.	50
2.	33 KV Isolator without DP	Nos.	50
	Total		**100**

Refer Annexure 150 for Isolator installation locations.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	33kV Isolators with DP	Nos.	50	0.0578	2.89	Refer Annexure – 96 for detailed costing sheet
2.	33 KV Isolator without DP	Nos.	50	0.0219	1.10	Refer Annexure – 97 for detailed costing sheet

	Total		**100**		**3.99**	

Physical Target:

The proposed work will be completed by March-27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Faster restoration, improved reliability (lower SAIFI/SAIDI), reduced O&M effort, better load management, regulatory compliance.
- **Consumers:** Shorter outages, safer and more reliable supply, improved service quality and satisfaction.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	**B**	**C=A-B**	**D**	**E=C-D**		
1.	33kV Isolators	Nos.	333	82	251	100	151		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

Scheme Name: Installation of 33kV & 11KV Ring Main Unit (3W & 4W)

Background

At inception, most urban 33kV & 11kV networks were built in radial configuration with limited switching flexibility. This resulted in large outages during faults or maintenance.

Since vesting, 62 nos. RMUs have been installed in a few critical urban feeders, improving reliability, but a major portion of the network still operates on conventional switchgear. The balance requirement will be taken up in phases under future CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV 3W RMU	Nos.	537	76	461
2.	11kV 4W RMU	Nos.	142	13	129
3.	33kV 3W RMU	Nos.	27	11	16
4.	33kV 4W RMU	Nos.	18	6	12

Proposal

Installation of **3-way and 4-way RMUs** in urban/critical feeders to enable ring configuration, sectionalizing, and remote operation through SCADA/ADMS integration.

Requirement/ Need of the Proposal

- Current radial network limits flexibility and causes prolonged interruptions during faults.
- RMUs allow quick isolation of faulty sections while maintaining supply to healthy sections.
- Ensures compliance with reliability indices and supports smart grid modernization.

Scope of Work

Procurement and Installation of 33kV & 11kV RMU

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV 3W RMU	Nos.	10
2.	11kV 4W RMU	Nos.	10
3.	33kV 3W RMU	Nos.	4
4.	33kV 4W RMU	Nos.	6
	Total		**30**

Refer 146 for 11kV 3 Way RMU

Refer 147 for 11kV 4 Way RMU

Refer 148 for 33kV 3 Way RMU

Refer 149 for 33kV 4 Way RMU

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV 3W RMU	Nos.	10	0.1549	1.55	Refer Annexure – 102 for detailed costing sheet
2.	11kV 4W RMU	Nos.	10	0.1944	1.94	Refer Annexure – 101 for detailed costing sheet
3.	33kV 3W RMU	Nos.	4	0.4997	2.00	Refer Annexure – 100 for detailed costing sheet
4.	33kV 4W RMU	Nos.	6	0.5656	3.39	Refer Annexure – 99 for detailed costing sheet
	Total		**30**		**8.89**	

Physical Target:

The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Improved network flexibility, reduced SAIFI/SAIDI, lower O&M, enhanced safety and reliability.
- **Consumers:** Fewer outages, faster restoration, stable supply in urban and critical areas, better service quality.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV 3W RMU	Nos.	537	76	461	10	451		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	11kV 4W RMU	Nos.	142	13	129	10	119		
3.	33kV 3W RMU	Nos.	27	11	16	4	12		
4.	33kV 4W RMU	Nos.	18	6	12	6	6		

ANNEXURE 33

Scheme Name: 33kV & 11kV Polymer Insulator and LA

Installation of 33kV & 11kV Polymer Insulator

Background

At inception, most 33kV & 11kV and LT lines were equipped with porcelain insulators. Over time, these insulators developed cracks, punctures, and surface leakage issues, especially in polluted and coastal zones, leading to frequent outages.

Since vesting, some portions of the network have been upgraded to polymer insulators, but a large volume is still pending and will be taken up in phases under future CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV Polymer Pin Insulator	Nos.	221158	22422	198736
2.	11kV Polymer Disc Insulator	Nos.	72124	593	71531
3.	33kV Polymer Pin Insulator	Nos.	43258	16860	26398
4.	33kV Polymer Disc Insulator	Nos.	7173	2416	4757

Proposal

Replacement of **porcelain insulators with polymer insulators** in 33kV & 11kV and LT lines to enhance reliability and reduce maintenance.

Requirement/ Need of the Proposal

- Existing porcelain insulators are prone to breakage, flashover, and higher leakage currents.
- Polymer insulators offer better mechanical strength, hydrophobic properties, and resistance to pollution.
- Ensures improved performance and compliance with CEA reliability and safety standards.

Scope of Work

Procurement and Installation of 11kV & 33kV Polymer Pin and Disc Insulator:-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV Polymer Pin Insulator	Nos.	5000
2.	11kV Polymer Disc Insulator	Nos.	800
3.	33kV Polymer Pin Insulator	Nos.	6000
4.	33kV Polymer Disc Insulator	Nos.	100
	Total		**11900**

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV Polymer Pin Insulator	Nos.	5000	0.00004	0.22	Refer Annexure – 105 for detailed costing sheet
2.	11kV Polymer Disc Insulator	Nos.	800	0.0003	0.26	Refer Annexure – 106 for detailed costing sheet
3.	33kV Polymer Pin Insulator	Nos.	6000	0.0001	0.63	Refer Annexure – 103 for detailed costing sheet
4.	33kV Polymer Disc Insulator	Nos.	100	0.0007	0.07	Refer Annexure – 104 for detailed costing sheet
	Total		**11900**		**1.18**	

Refer following annexures for insulator locations

Item	Annexure
11kV Polymer Pin Insulator	151
11kV Polymer Disc Insulator	152
33kV Polymer Pin Insulator	153
33kV Polymer Disc Insulator	154

Physical Target:

The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Reduced line faults and tripping, lower O&M cost, improved reliability, longer asset life.
- **Consumers:** Fewer outages, better quality and continuity of power supply, safer network

Scheme Name: Installation of 33kV & 11kV Lightning Arrestor

Background

At inception, many Distribution Transformers (DTs) and 33kV & 11kV feeders were commissioned without adequate lightning protection. This has led to frequent failures of DTs and equipment during lightning and switching surges.

Since vesting, lightning arrestors have been installed at some selected locations, but a large portion of the network still remains unprotected. The balance requirement will be covered in phases under upcoming CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV LA	Nos.	34097	6063	28304
2.	33kV LA	Nos.	2361	429	1932

Proposal

Installation of **33kV & 11kV and LT lightning arrestors** at DTs and along feeders to safeguard equipment against lightning and surge-related failures.

Requirement/ Need of the Proposal

- Present system faces frequent DT burnouts and feeder trips due to absence of arrestors.
- Lightning arrestors will divert surge energy safely to earth, preventing damage.
- Ensures compliance with CEA safety regulations and industry best practices for surge protection.

Scope of Work

Installation of 33kV & 11kV LA: -

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV LA	Set	53
2.	33kV LA	Set	100
	Total	**Set**	**353**

Refer Annexure 155 for 11kV & 159 for 33kV LA installation.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV LA	Set	53	0.0033	0.18	Refer Annexure – 84 for detailed costing sheet
2.	33kV LA	Set	100	0.0081	0.81	Refer Annexure – 83 for detailed costing sheet
	Total				**0.99**	

Physical Target:
The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Reduced DT and feeder failures, lower repair/replacement costs, improved reliability and asset life.
- **Consumers:** Fewer interruptions, safer and more reliable supply, improved service quality.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV LA	Nos.	34097	6063	28304	159	27875		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33kV LA	Nos.	2361	429	1932	300	1632		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV Polymer Pin Insulator	Nos.	221158	22422	198736	5000	193736		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	11kV Polymer Disc Insulator	Nos.	72124	593	71531	800	70731		
3.	33kV Polymer Pin Insulator	Nos.	43258	16860	26398	6000	20398		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
4.	33kV Polymer Disc Insulator	Nos.	7173	2416	4757	100	4657		

ANNEXURE 34

Scheme Name: 33kV & 11kV Auto-recloser and Sectionalizer

Background

At inception, feeders were built with minimal automation and relied on manual switching, which caused prolonged outages. Frequent **transient faults** (like tree contacts, lightning, bird faults) resulted in unnecessary feeder trippings, as no automatic restoration was available. Since vesting, 196 installations of Auto-Reclosers and Sectionalisers have been done, showing positive impact in improving reliability. However, a large part of the network is still without automated fault management. The remaining requirement will be completed in phases under upcoming CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	11kV Auto-recloser and Sectionaliser	Nos.	1005	253	752
2.	33kV Auto-recloser and Sectionaliser	Nos.	217	96	121

Proposal

Installation of Auto-Reclosers and Sectionalizer at strategic points on 33kV & 11kV feeders to enable automatic fault isolation and restoration, integrated with SCADA/DMS for remote monitoring.

Requirement/ Need of the Proposal

- Present system faces prolonged outages due to manual fault isolation.
- Auto-Reclosers quickly clear transient faults, reducing feeder interruptions.
- Sectionalizer isolate faulty sections automatically, limiting outage to smaller areas.
- Ensures compliance with regulatory reliability indices.

Scope of Work

Installation of 11kV & 33kV Auto-recloser and Sectionalizer-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV Auto-recloser and Sectionalizer	Nos.	24
2.	33kV Auto-recloser and Sectionalizer	Nos.	12
	Total		

Refer Annexure 156 for 11kV AR-SR and 160 for 33kV AR-SR.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV Auto-recloser and Sectionaliser	Nos.	24	0.1446	3.47	Refer Annexure – 108 for detailed costing sheet
2.	33kV Auto-recloser and Sectionaliser	Nos.	12	0.2196	2.64	Refer Annexure – 107 for detailed costing sheet
	Total				**6.11**	

Physical Target:
The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Reduced feeder interruptions & SAIFI/SAIDI resulting in lower O&M cost, improved feeder automation and efficiency.
- **Consumers:** Fewer outages, faster restoration, enhanced safety, better quality of supply and service reliability.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	11kV Auto-recloser and Sectionaliser	Nos.	1003	253	750	24	726		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33kV Auto-recloser and Sectionaliser	Nos.	217	96	121	12	109		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 35

Scheme Name: Mobile DT

Background

At inception, no provision existed for quick restoration in case of DT failure. Consumers had to face long outages until the damaged DT was repaired or replaced.

Since vesting, a few mobile DTRs have been deployed on pilot basis, which proved effective in minimizing downtime. However, the current fleet is insufficient, and more units are required. The balance requirement will be covered in phases under future CAPEX.

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement
			A	B	C=A-B
1.	Mobile DT	Nos.	17	10	7

Proposal

Procurement and deployment of **trolley-mounted mobile DTRs** at strategic locations for quick replacement/restoration in case of DT failure or planned maintenance.

Requirement/ Need of the Proposal

- Present system results in prolonged outages during DT failures.
- Mobile DTRs enable immediate restoration, reducing outage duration.
- Ensures compliance with regulatory standards on reliability indices (SAIDI/SAIFI).

Scope of Work

Procurement of 11kV Mobile DT:-

Sl. No.	Activity	UOM	Proposed Qty
1.	Mobile DT	Nos.	5
	Total		

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	Mobile DT	Nos.	5	0.2825	1.41	Refer Annexure – 109 for detailed costing sheet
	Total				**1.41**	

Physical Target:

The proposed work will be completed by March 27.

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Improved reliability, reduced DT downtime, better asset utilization, compliance with performance standards.
- **Consumers:** Quick restoration during DT failure, fewer interruptions, enhanced service satisfaction.

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Remarks	Priority Criteria
			A	B	C=A-B	D	E=C-D		
1.	Mobile DT	Nos.	17	10	7	5	2		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle. 3. Other Town and Semi-Urban area of Balangir, Bargarh & Rourkela

ANNEXURE 36

Scheme Name: Model Village -Installation of Service Distribution Box & Service Wire

Background

At the time of inception, majority of rural villages, including those with high AT&C losses, were served through basic distribution infrastructure—primarily comprising un-armoured LT service cables with multiple joints and direct connections from poles without any intermediate protection or isolation devices like LT Distribution Boxes (LTDBs).

Post vesting, infrastructure strengthening has been undertaken under various schemes. However, villages with high loss levels still suffer from inadequate infrastructure, including:

- Unprotected LT cables prone to faults and pilferage.
- Absence of LTDBs limiting system control and fault management.
- Loose connections and clustering of Service cables on poles leading to No Current Complaints.
- Un-balanced load distribution

These deficiencies have contributed to high technical losses, increased outages, and unsafe operating conditions. To address this, such villages are now identified and designated as **Model Villages** for better managed infrastructure under phased CAPEX plans.

The proposed work under FY 2026–27 is the next phase of this multi-year initiative.

Proposal

This proposal seeks CAPEX approval of **₹20.17 Crore** for:

- Replacement of existing **un-armoured LT service cables** with **armoured cables** in high-loss villages.
- Installation of **pole-mounted LT Distribution Boxes (LTDBs)** to enhance network control, and operational flexibility.

The proposal focuses on improving **reliability, safety**, and **loss reduction** in these identified Model Villages.

Requirement / Need of the Proposal

Existing Deficiencies:

- Un-armoured cables are vulnerable to theft, damage, and weather exposure, leading to high outages and losses.
- Lack of LTDBs results in poor fault isolation, increased restoration time, and safety risks for field staff.
- The existing infrastructure lacks sufficient provisions of the **CEA Safety Regulations**, especially with respect to load segregation, and public safety.

Benefits of the Proposal:

- Replacement with **armoured cables** will ensure better mechanical strength, improved life span, and reduced theft-related losses.
- New armoured cables maintain integrity and conductivity over time
- Improved voltage regulation and supply quality at consumer end.
- Armoured cables significantly reduce **recurring maintenance costs** and **service restoration efforts**.
- **LTDBs** will allow safe load handling, quicker fault isolation, and ease of maintenance.
- Ensures full compliance with **CEA Regulations** and strengthens the distribution system.

This proposal aligns with the organization's strategic goals of reducing distribution losses and improving consumer service reliability.

Scope of Work

The scope of work under this CAPEX initiative includes:

Sl. No.	Description	Quantity	Location
1	Replacement of un-armoured LT service cable with armoured XLPE cable (2C x 6 mm²)	~1400000 meters (70000 Consumers)	Across 1600 identified high-loss villages (designated as Model Villages) under different Divisions of TPWODL
2	Supply and installation of LT Distribution Boxes (8 Way)	20000 Nos	Same villages

Please refer to **Appendix I** for Division wise scope of work.

Proposed Cost with Estimate Break-up

Proposal Description	Major work under proposals	MATERIAL/SUPPLY COST				ERECTION/INSTALLATION COST				Total Cost (In Lakhs) (C=A+B)	REMARK	Priority Criteria
		UOM	Qty	Unit Price (In Rs.)	Total Cost (In Lakhs) (A)	UOM	Qty	Unit Price (In Rs.)	Total Cost (In Lakhs) (B)			
Reliability	Unarmoured to armoured service cable replacement	Mtrs.	1400000	76.71	1074.01	EA	70000	618.66	433.06	1507.07	Refer **Appendix II** for detail costing	High Loss Villages in Different Divisions of TPWODL
Reliability	LTDB installation in Model villages	EA	20000	2177.15	435.43	EA	20000	371.70	74.34	509.77	Refer **Appendix III** for detail costing	High Loss Villages in Different Divisions of TPWODL
	TOTAL				**1509.44**				**507.40**	**2016.84**		

Total Proposed Budget: 20.17 Cr

Physical Target

- **Implementation Period**: April'26 to Mar'27 (FY 2026–27)
- **Villages Covered**: 1600 high-loss rural villages identified as Model Villages
- **Cable Replacement**: 100% of targeted locations (~70000 meters)
- **LTDB Installations**: 20000 Nos across selected poles

Cost Benefit Analysis

Parameter	Without Proposal	With Proposal
Technical Losses	High due to long unprotected LT runs	Reduction by ~15-20% in targeted areas
Theft and Damage	Frequent incidents	Reduction in possibility of theft
O&M Expenses	High recurring cost due to cable failures	Lowered due to durable infrastructure
Regulatory Compliance	Partially compliant	Compliance with CEA Safety Regulations

Benefit to the System and Consumers

Consumer Benefits:

- Reliable and uninterrupted power supply.
- Reduced outage duration and quicker service restoration.
- Improved consumer satisfaction in high-loss rural areas.

System Benefits:

- Strengthened LT infrastructure enabling **loss reduction** and **reliability improvement**.
- Improved operational control and fault management through **LTDBs**.
- Enhanced system safety for both personnel and equipment.

This proposal forms a critical component of the organization's ongoing effort to modernize rural distribution systems and bring high-loss areas under control through targeted infrastructure upgrades. We seek approval for the CAPEX of **₹20.17 Crore** under the **FY 2026–27** plan for execution under the scheme "Loss Reduction and Reliability Enhancement in Model Villages."

Overview of Total Scope Vs. Achieved till date and Planning for Balance

Sl. No.	Activity	UOM	Total Scope across System	Work Covered so far (up to FY'26 DPR)	Balance Requirement	Covered under FY'27 DPR	Planned for Balance Years DPR	Priority Criteria
			A	B	C=A-B	D	E=C-D	
1	Unarmoured to armoured service cable replacement	mtr.	800000	120000	680000	70000	610000	High Loss Villages in Different Divisions of TPWODL
2	Installation of LTDB in Model villages	Nos.	138000	14000	124000	20000	104000	High Loss Villages in Different Divisions of TPWODL

Appendix I

Division wise Scope of Work

Circle	Division	No. Of Villages	LT Distribution Boxes (Nos)	UN-Armoured to Armoured Service Cable
Sambalpur	SED Sambalpur	80	960	2840
	SEED Sambalpur	90	1080	3700
	DED Deogarh	60	720	3850
	BNED Brajrajnagar	70	840	4855
	JED Jharsuguda	90	1120	3440
Rourkela	RED Rourkela	55	660	3600
	RSED Rourkela	85	1020	3670
	RED Rajgangpur	100	1250	4160
	SED Sundargarh	85	1150	3650
Bargarh	BED Bargarh	115	1380	3580
	BWED Bargarh	130	1560	3665
Balangir	BED Balangir	120	1560	8640
	TED Titlagarh	120	1680	4130
	SED Sonepur	90	1240	3800
Kalahandi	KEED Kalahandi	100	1250	3980
	KWED Kalahandi	95	1150	4080
	NED Nuapada	115	1380	4360
	Total	**1600**	**20000**	**70000**

Appendix II

Costing Sheet for Unarmoured to Armoured Service Cable Replacement

MATERIAL COST

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)	Reference
				FY27	Current	FY27	FY27	
Reliability	Unarmoured to armoured service cable replacement	Armoured Cable (2Cx6 Sqmm)	Mtrs	1400000	75.91	75.91	1062.73	RO No 5000060203 Dated 28.07.2025
		Polycarbonate Meter Seals	EA	210000	5.37	5.37	11.27	RO No 5000054961 Dated 05.05.2025
		Total			**81.28**	**81.28**	**1074.01**	

Cost of 1400000 mtrs Cable with other items - Rs 107400650
Per Unit Cost = Rs. 76.71

SERVICES COST

Proposal Description	Major work under proposals	Services	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST) + 5% Escalation	Cost (in Lakh)	Reference
				FY27	Current	FY27	FY27	
Reliability	Unarmoured to armoured service cable replacement	Installation Armoured Cable (2Cx6 Sqmm)	EA	70000	519.20	545.16	381.61	RC No 6200007115- Item Sr No 1.035
		Transportation	Kms	1400	3500.00	3675.00	51.45	RC No 6200007115 - Item Sr No 1.035
		Total			**4019.20**	**4220.16**	**433.06**	

Cost of replacing 70000 Nos Cable along with associated items - Rs 43306200
Per case Cost = Rs. 618.66

Note

1. 3 Nos. Polycarbonate seals are required during cable replacement to seal the Meter (1 Seal at Meter Terminal and 2 Seal at Meter Boxes)
2. 20 Mtrs/Case of 2Cx6 Sqmm cable is considered.

Appendix III

Costing Sheet Installation of LTDB in Model Villages

MATERIAL COST

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)	Reference
				FY27	Current	FY27	FY27	
Reliability	Installation of LTDB in Model villages	LT Distribution Boxes	EA	20000	1085.99	1085.99	217.20	RO No 5000062932 Dated 06.09.2025
		Armoured Cable (4Cx25 Sqmm)	Mtrs	40000	193.94	193.94	77.58	
		Pole Clamp	EA	40000	210.04	210.04	84.02	
		IPC Connectors	EA	80000	70.80	70.80	56.64	RO No 5000058952 Dated 08.07.2025
		Total			**1560.77**	**1560.77**	**435.43**	

Total Cost of Installing 20000 Nos LTDB - Rs. 43542988
Installation Cost per LTDB - Rs 2177.15

SERVICES COST

Proposal Description	Major work under proposals	Services	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST) + 5% Escalation	Cost (in Lakh)	Reference
				FY27	Current	FY27	FY27	
Reliability	Installation of LTDB in Model villages	Installation of LTDB	EA	20000	354.00	371.70	74.34	RC No 6200007115 - Item Sr No 1.032
		Total			**354.00**	**371.70**	**74.34**	

Note:

1. 2 Mtrs/ LTDB of 4Cx25 Sqmm is required to energize the LTDB.
2. 2 Clamps/ LTDB are required for installation
3. 4 Nos. IPC Connectors/LTD is required to energize.

APPENDIX 37

SCHEME NAME: INSTALLATION OF AGRICULTURE LI CONNCTIONS

BACKGROUND

- Currently, the billing efficiency in the Bargarh circle stands at a low as 48% (Billing Efficiency-48% & Collection Efficiency is 84%). During field inspections in Bijepur, Bhatli, and Barpali sub-divisional areas, it has been observed that several LT transformers lack proper LT circuit extensions. As a result, unauthorized LT connections have emerged from these transformers, leading to unaccounted energy consumption and revenue loss.
- To address this issue and bring such consumers into the metered network, it is essential to install LT AB cables to provide reliable, legal and safe LT connections.

PROPOSAL

To provide connections to the agriculture LI consumers & to improve billing efficiency, hereby proposed 248.93 km new LT circuit using LT AB Cable of 35 sqmm size by using 8 Mtr PSC poles are proposed.

REQUIREMENT/ NEED OF THE PROPOSAL

- This measure will significantly help in regularizing the agriculture LI consumers and improving the overall billing efficiency of Bargarh Circle.
- To achieve the reliable & safe LT connections.
- To enhance customer satisfaction and overall billing efficiency.

SCOPE OF WORK

Sr. No.	Equipment Details	Unit	Quantity
1	Installation of new LT Cable (345Sq.mm)	Km	248.93
2	Installation of 8 Mtr. PSC Poles.	Nos	7468

DETAILS WITH LOCATION:

ZONE/DIV/SUB_DIV./SECTION	Sum of Unauthorized LI Consumer	Sum of Cable in Mtr.
BED-DIV.	**1188**	**76890**
SDO BHATLI	**1132**	**66750**
ESO BHATLI-I	724	42630
ESO BHATLI-II	408	24120

ZONE/DIV/SUB_DIV./SECTION	Sum of Unauthorized LI Consumer	Sum of Cable in Mtr.
SDO BHUKTA	**56**	**10140**
ESO BHUKTA-I	36	6810
ESO BHUKTA-II	20	3330
BWED DIV.	**273**	**34940**
SDO BARPALI	**64**	**11700**
ESO BARPALI-III	64	11700
SDO JHARBANDH	**104**	**10310**
ESO JHARBANDH-I	60	6950
ESO JHARBANDH-II	44	3360
SDO PADAMPUR	**71**	**8430**
ESO GAISILET-I	4	105
ESO GAISILET-II	18	425
ESO MELCHHAMUNDA	49	7900
SDO PAIKMAL	**34**	**4500**
ESO PAIKMAL-I	29	3900
ESO PAIKMAL-II	5	600
BWED-II DIV.	**2527**	**137095.8**
SDO BIJEPUR	**559**	**60240**
ESO BIJEPUR-I	61	6060
ESO BIJEPUR-II	262	17160
ESO BIJEPUR-III	165	17640
ESO BIJEPUR-IV	71	19380
SDO GHENSS	**1156**	**34057.8**
ESO GHENSS-I	672	19832.4
ESO GHENSS-II	484	14225.4
SDO SOHELA	**812**	**42798**
ESO SOHELA-I	143	18732
ESO SOHELA-II	379	11718
ESO SOHELA-III	290	12348
BARGARH ZONE	**3988**	**248925.8**

PROPOSED COST WITH ESTIMATE BREAK-UP

Description of work			Rate (Rs in Cr)	Amount	Remarks
	Unit	Quantity	per Km	(Rs. In Cr)	
INSTALLATION NEW LT NETWORK (35 Sq.mm)	Km	248.93	0.0606	15.09	Refer Annexture 110 For Detail costing
TOTAL				**15.09**	

PHYSICAL TARGET

The Work will be completed by March 2027.

COST BENEFIT ANALYSIS

Feature	Impact on CE	Impact on BE
Minimum Amount / Unit	₹500 per consumer, monthly	1,000 units per consumer, daily (considering 18 hours/day)
Number of Consumers/Units	4,000 consumers	4,000 consumers
Calculation (Monthly)	4,000 x ₹500 = ₹20,00,000 (Twenty Lakh)	4,000 x 1,000 units = 4,000,000 units (4 MU)
Calculation (Yearly)	₹2,40,00,000 (Two Crore Forty Lakh)	48 MU (4,000,000 units x 12 months)
Billed Amount (Yearly)	Not specified as a billed amount, as it's a minimum expected amount.	48,000,000 units x ₹1.60 = ₹7.68 Crore
Return on Investment (ROI)	15 Cr. / 2.4 Cr. = 6.25 Years	15 Cr. / 7.68 Cr. = 1.95 Years (approx. 2 years)

BENEFIT TO THE SYSTEM AND CONSUMERS

System Benefit-

1. Improved Load Forecasting and Network Planning:

Regularisation enables accurate identification and quantification of agricultural loads. This facilitates better load forecasting, demand-side management, and infrastructure planning, thereby enhancing the reliability and efficiency of the distribution network.

2. Reduction in Technical Losses:

Unauthorised connections often bypass metering and are connected haphazardly, leading to overloading and increased technical losses. Regularisation ensures proper metering, phase balancing, and adherence to load norms.

3. **Revenue Assurance and Financial Health of DISCOMs:**
   Regularisation converts non-revenue-generating loads into billable connections. This improves the financial viability of the distribution company (DISCOM), enabling reinvestment in infrastructure and service quality improvements.

CONSUMER-LEVEL BENEFITS:

1. **Access to Subsidies and Government Schemes:**
   Regularised consumers become eligible for agricultural tariff subsidies, solarisation schemes (e.g., PM-KUSUM), and other welfare initiatives aimed at promoting sustainable irrigation practices.
2. **Improved Power Quality and Reliability:**
   With proper infrastructure support and load management, consumers experience better voltage levels and reduced equipment damage, leading to enhanced productivity and reduced operational costs.
3. **Empowerment Through Inclusion:**
   Bringing unauthorised users into the formal system fosters a sense of inclusion and empowerment. It promotes responsible usage, community participation, and trust in the utility's governance.

Sl. No.	Circle	District	Division	Proposal Name	Proposed Length (Ckm)	Total Cost (in Cr.)
38.1	Bargarh	Bargarh	BWED	Construction of new 33kV line from Agalpur GSS to Gaisilet PSS	17	8.08
38.2	Bargarh	Bargarh	BWED	Construction of new 33kV line from Sarasmal GSS to near Balitikra PSS	2.09	1.85
38.3	Bargarh	Bargarh	BED	Construction of new 33kV line from Patrapali to Patrapali PSS	1.00	0.82
38.4	Bargarh	Bargarh	BWED	Construction of new 33kV line from Sarandapali PSS to Sarandapali Chowk	0.40	0.59
38.5	Bargarh	Bargarh	BWED	Construction of new 33kV line from Punjipathar PSS to Arda PSS.	8.00	3.07
38.6	Bolangir	Bolangir	TED	Construction of new 33kV line from Thakpada tapping to Thakpada PSS with LILO arrangement.	0.80	0.55
38.7	Bolangir	Bolangir	Sonepur	Construction of new 33kV line from Birmaharajpur to Hikudi/Raxa Chowk PSS	20.00	7.29
38.8	Bolangir	Bolangir	BED	Construction of new 33kV line from Power House PSS to Indutrial Estate PSS	4.00	4.56
38.9	Bolangir	Sonepur	Sonepur	Construction of new 33kV line from proposed Sarasmal GSS to Pandkital PSS	6.00	2.43
38.10	Bolangir	Sonepur	Sonepur	Construction of new 33kV line from proposed Sarasmal GSS to Bisalpali PSS	16.00	5.38
38.11	Kalahandi	Kalahandi	KEED	Construction of new 33kV line from proposed M Rampur GSS to Balipada Tapping	12.00	4.51
38.12	Kalahandi	Kalahandi	KEED	Construction of new 33kV line from proposed M Rampur GSS to Juradubra PSS	14.50	5.47
38.13	Kalahandi	Kalahandi	NED	Construction of new 33kV line from Khariar GSS to Badi tapping	1.50	0.59
38.14	Kalahandi	Kalahandi	KEED	Construction of new 33kV LILO line at Utkela PSS	0.50	0.57
38.15	Kalahandi	Kalahandi	KEED	Construction of new 33kV LILO line at Mahichala PSS	0.50	0.57
38.16	Rourkela	Sundergarh	RED-Rajgangpur	Construction of 33kV UG line for Kuarmunda Industrial feeder.	0.70	0.58
38.17	Rourkela	Sundergarh	Rajgangpur	33kV LILO arrangement from Gobira(ODSSP-IV) PSS to Gobira Padha Ghar	0.76	0.92
38.18	Rourkela	Sundargarh	RSED	33kV New link line between 33kV Pilot project feeder and 33kV Lathikata feeder	0.75	1.80
38.19	Rourkela	Sundargarh	RSED	33kV New link line to Panposh PSS from District agricultural office	0.30	0.83
38.20	Rourkela	Sundargarh	Rajgangpur	33kV New link line 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder	0.50	0.16
38.21	Rourkela	Sundargarh	Rajgangpur	33kV New link line 33kV IDC Industrial feeder and 33kV Kalunga feeder	4.00	1.52
38.22	Rourkela	Sundargarh	RSED	33kV New Link Line from Lindra PSS to Jareikela Megalift	10.45	4.05
38.23	Rourkela	Sundargarh	RSED	33kV New link between 33kV IDC (Balughat) feeder and Balanda feeder near Dandiapali PSS through JP Hospital T-off O/G line	5.00	4.03
38.24	Sambalpur	Sambalpur	SED	33kV New Line from Hirakud GSS to Badbazar PSS	16.50	16.78
38.25	Rourkela	Sundargarh	RSED	33kV New feeder from Chhend GSS to Civil Township PSS	5.00	5.73
38.26	Rourkela	Sundargarh	RED	33kV New feeder from Chhend GSS to Power House PSS	6.50	7.64
38.27	Sambalpur	Sambalpur	SEED	33kV New link from 33/11kV Goshala PSS and IIM Sambalpur	0.10	1.07
38.28	Sambalpur	Jharsuguda	JED	33kV New Line from Kolabira PSS to Patrapali 4 Pole	4.00	1.85
Total					**158.85**	**93.31**

Proposal for reliability improvement and Mitigation of undervoltage for 33kV Gaisilet Feeder:

***Proposal*:**

Construction of new 33kV line from Agalpur GSS to Gaisilet PSS to improve reliability and mitigate undervoltage.

Requirement/ Need of the proposal:

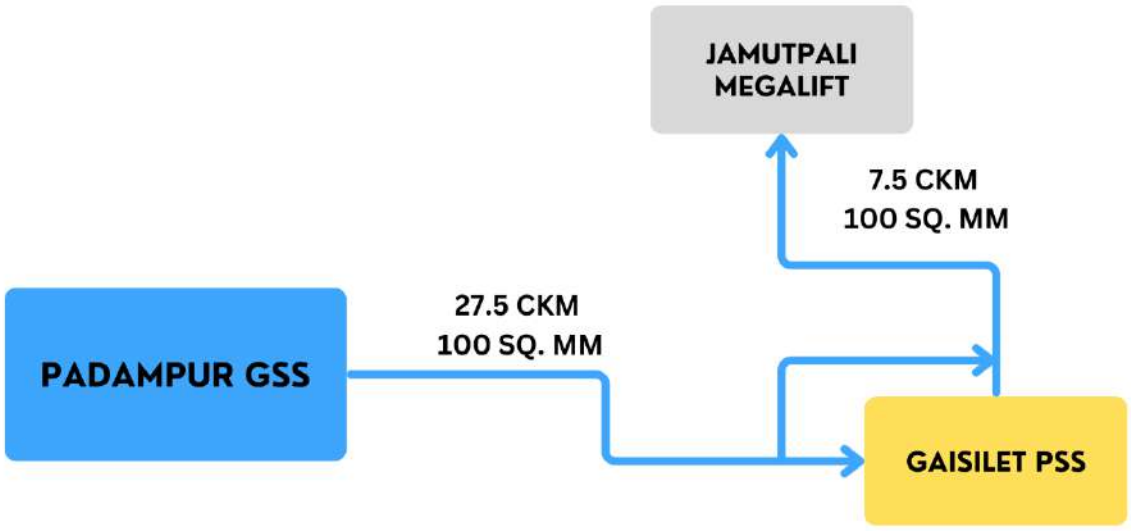
Objective: To ensure reliable power supply, mitigation of undervoltage and strengthening of the existing network and providing N-1 connectivity to Gaisilet Area.

Existing Scenario:

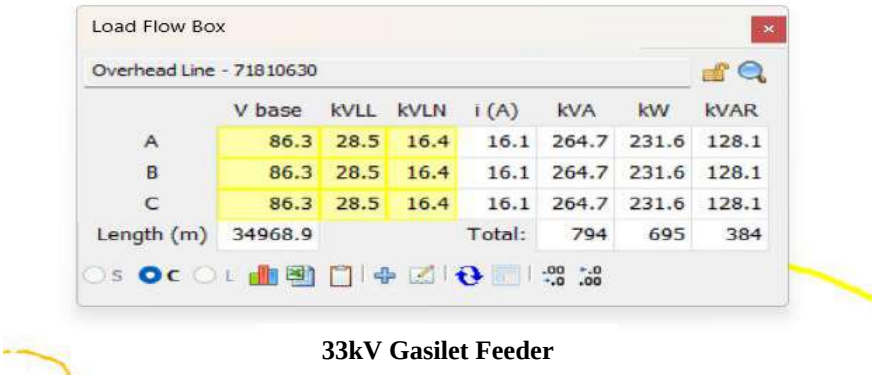
- At present, 33kV Gaisilet feeder has a total feeder length of 35 Ckm. Therefore, 33kV Gaisilet feeder emanating from Padampur GSS is feeding power to Gaisilet PSS and Jamutpali Megalift.
- 33kV Gaisilet Feeder has conductor size of 100 sq.mm AAAC and peak load at summer'25 is 9.7MVA. Therefore, undervoltage of 28.5kV is observed at its tail end.
- Considering load growth for 1 year @8.6% per year, 33kV Gaisilet feeder will experience low voltage issues.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Padampur	Gaisilet	8505	35	1040	Undervoltage (28.5kV)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



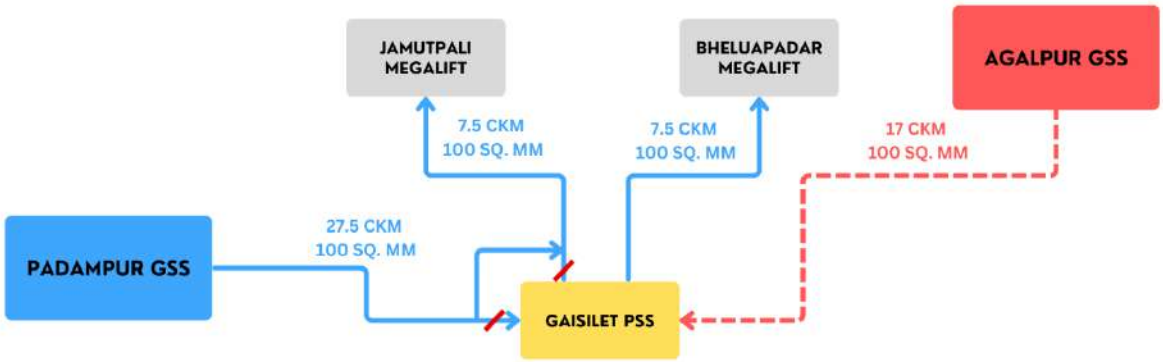
33kV Gasilet Feeder

Proposed Scenario:

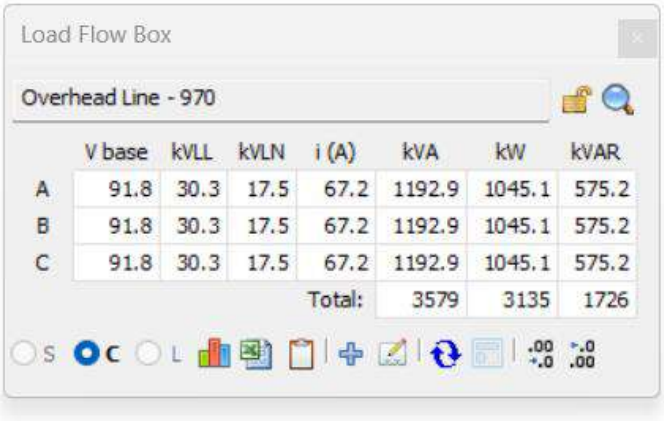
- New 33kV Line of 232 sq.mm is proposed from upcoming Agalpur GSS to Gaisilet PSS to mitigate undervoltage issue.
- 17 Ckm of AAAC Bare conductor is used including PC+6 tower for about 350m of river crossing.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Padampur	Gaisilet	724	27	8	Undervoltage Mitigated (32.6kV)
Agalpur	Gaisilet New	11504	25	592	30.3 kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Gasilet New Feeder

Detailed Scope of Work:

1. Proposal for construction & laying of 17Ckm 33kV 1R, 232 Sq.mm. AAAC Bare conductor
2. River crossing of about 350m over Ong River.
3. Installation of One 33kV Bay at 33/11kV Gaisilet PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BWED (Bargarh)**	
Name of the Work :-		***Reliability improvement of Gaisilet Area and Mitigation of Undervoltage:*** Construction of 33kV New Line to mitigate low voltage issues, improve reliability of network and provide quality power supply to Gaisilet Area.	
Scope of work:-		1. Proposal for construction & laying of 17Ckm 33kV 1R, 232 Sq.mm. AAAC Bare conductor 2. River crossing of about 350m over Ong River. 3. Installation of One 33kV Bay at 33/11kV Gaisilet PSS.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Construction & laying of 17Ckm 33kV 232 Sq.mm. AAAC conductor. (Refer Annexure-111)	5.4
2	B	River crossing of about 350m over Ong River. (Refer Annexure-165)	2.38
3	C	Installation of One 33kV Bay at 33/11kV Gaisilet PSS. (Refer Annexure-162)	0.3
		Total Amount (In Cr)	**8.08**
Total estimated cost is Rs. 8.08 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 8.08 Cr.

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	**Padampur**	Gaislet	9417	1267	**314**	**2749137**	**112.9**	28.5kV at Bheluapdar Megalift (tail end)
After Proposal	**Padampur**	Gaislet	724	8				Undervoltage Mitigated 30.3kV at tail end
	Agalpur	Gaislet New	11504	592				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	807.70	Rs. Lac
B	Load due to load growth	-	3212.57	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2811	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	16719940	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)	238.26	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	112.90	Rs. Lac
J	Net Revenue Collected	H+I	351.16	Rs. Lac
K	% revenue return	(J/A)*100	43.5	%
L	Pay Back Period	100/K	2.30	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Gaisilet feeder.
- Improved N-1 connectivity to improve reliability of the network.

- Ensuring reliable power supply of the Gaisilet Area.
- The above arrangement will help to release power supply to upcoming potential consumers.

Proposal for reliability improvement and Mitigation of undervoltage for 33kV Pandkital Feeder:

Proposal:

Construction of new 33kV line from Sarasmal GSS to near Balitikra PSS.

Requirement/ Need of the proposal:

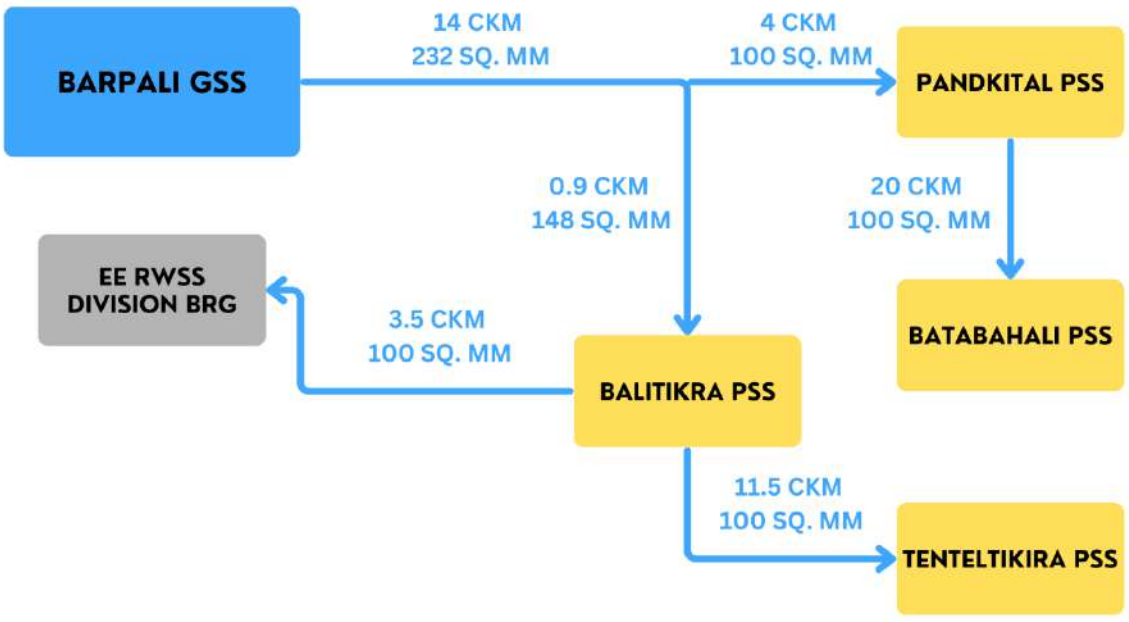
Objective: To ensure reliable power supply, mitigation of undervoltage and by strengthening of the existing network and providing N-1 connectivity to Balitikra Area.

Existing Scenario:

- At present, 33kV Pandkital feeder has a total feeder length of 52 Ckm. Therefore, 33kV Pandkital feeder emanating from Barpali GSS is feeding power to Balitikra, Pandkital and Batabahali PSS alongwith HT consumer.
- 33kV Pandkital Feeder has conductor size of 100/148/232 sq.mm AAAC with peak load at summer'25 is 17MVA. Therefore, undervoltage is observed at its tail end due to its length.
- Considering load growth for 1 year @8.6% per year, 33kV Pandkital feeder will experience low voltage issues.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Pandkital	16667	52	1323	Undervoltage (28.0kV)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	84.7	28.0	16.1	12.9	208.7	185.1	96.4
B	84.7	28.0	16.1	12.9	208.7	185.1	96.4
C	84.7	28.0	16.1	12.9	208.7	185.1	96.4
Length (m)	38057.9			Total:	626	555	289

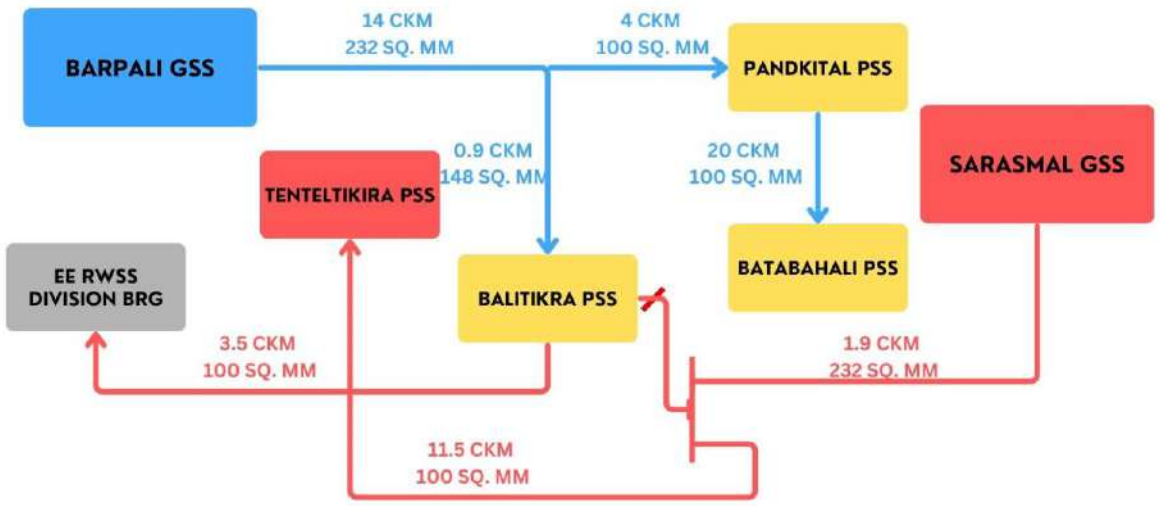
33kV Pandkital Feeder

Proposed Scenario:

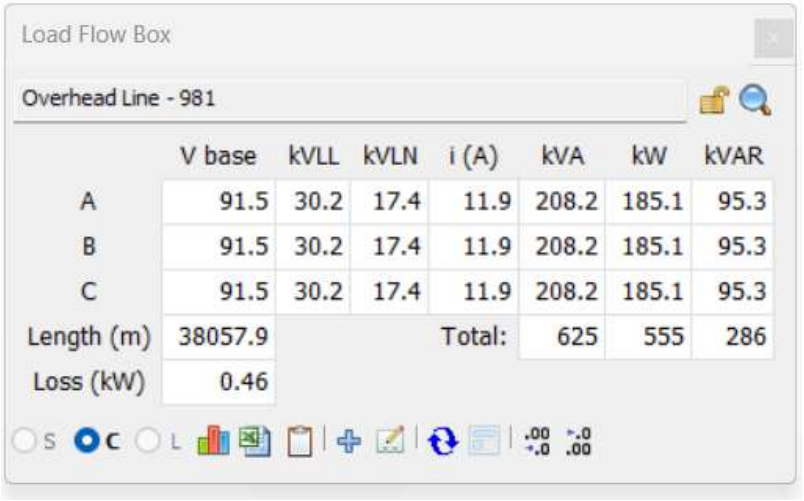
- New 33kV Line of 232 sq.mm is proposed from upcoming Sarasmal GSS to Balitikra PSS to avail supply to Tentelitikra PSS using RMU.
- 2.01 Ckm having conductor size 232 sqmm and 0.08 Ckm of 1Cx630 sqmm UG cable is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Pandkital	13594	41	988.6	28kV at Kapasira Megalift (tail end)
Sarasmal	Tentelitikra New	4111	17.45	100.3	Undervoltage at Tentelitikra PSS is 31.5kV Undervoltage at Kapasira Megalift is 30.2kV

Proposed SLD:



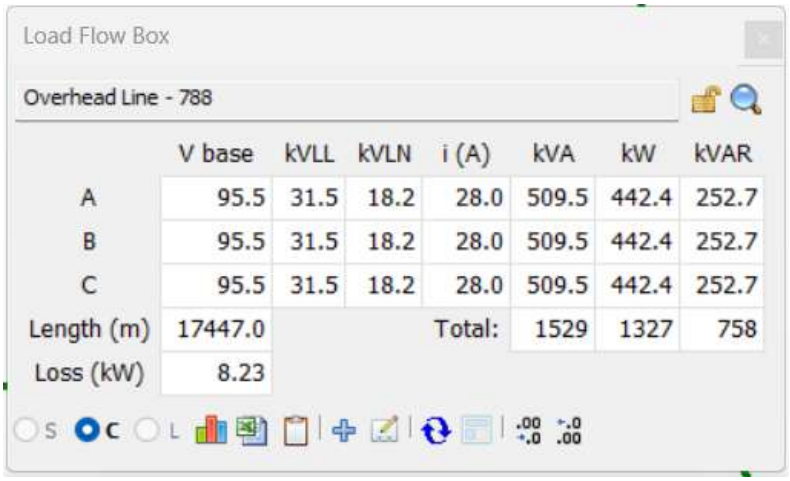
Load Flow Study of proposed scenario in Cyme Software:


Load Flow Box

Overhead Line - 981

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	91.5	30.2	17.4	11.9	208.2	185.1	95.3
B	91.5	30.2	17.4	11.9	208.2	185.1	95.3
C	91.5	30.2	17.4	11.9	208.2	185.1	95.3
Length (m)	38057.9			Total:	625	555	286
Loss (kW)	0.46						

33kV Pandkital Feeder


Load Flow Box

Overhead Line - 788

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	95.5	31.5	18.2	28.0	509.5	442.4	252.7
B	95.5	31.5	18.2	28.0	509.5	442.4	252.7
C	95.5	31.5	18.2	28.0	509.5	442.4	252.7
Length (m)	17447.0			Total:	1529	1327	758
Loss (kW)	8.23						

33kV Tenteltikira New Feeder

Detailed Scope of Work:

1. New 33KV line of 2.01CKm using 13mtr WPB poles, 232sqmm bare conductor(1.51Ckm) and 232sqmm Insulated conductor(0.5CKm).
2. Installation of 2nos of four pole (2-Way,90*) using 13mtr WPB poles.
3. Laying of 80mtr UG line using 3C*400 sqmm XLPE AL, AR Cable.
4. Installation of one 33Kv 4way RMU near Balitikra PSS.
5. Installation of One 33kV Bay at 33/11kV Balitikra PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-	**BWED (Bargarh)**		
Name of the Work :-	***Reliability improvement of Balitikra Area and Mitigation of Undervoltage:*** Construction of 33kV New Line to mitigate low voltage issues, improve reliability of network and provide quality power supply to Balitikra Area.		
Scope of work:-	1. New 33KV line of 2.01CKm using 13mtr WPB poles, 232sqmm bare conductor(1.51Ckm) and 232sqmm Insulated conductor(0.5CKm). 2. Installation of 2nos of four pole (2-Way,90*) using 13mtr WPB poles. 3. Laying of 80mtr UG line using 3C*400sqmm XLPE AL, AR Cable. 4. Installation of one 33kV 4way RMU near Balitikra PSS. 5. Installation of One 33kV Bay at 33/11kV Balitikra PSS.		
Names of Schemes: -	***TPWODL CAPEX (FY 26-27)***		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line of 1.51 Ckm with 232 Sq.mm. AAAC Bare conductor (Refer Annexure-111)	0.48
2	B	New 33kV Line of 0.5 Ckm with 232 sqmm Covered conductor (Refer Annexure-168)	0.21
3	C	Laying of 80mtr of 3C*400 sqmm XLPE UG cable.(4 Run) (Refer Annexure-167)	0.07
4	D	Installation of 4-pole using 13mtr WPB poles (Refer Annexure-169)	0.23
5	E	Installation of one 33kV 4-Way RMU (Refer Annexure-99)	0.57
6	F	Installation of 33kV Bay (Refer Annexure-162)	0.30
		Total Amount (In Cr)	**1.85**
Total estimated cost is Rs. 1.85 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 1.85 Cr.

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	**Barpali**	Pandkital	16667	1323				28kV at Kapasira Megalift (tail end)
After Proposal	**Barpali**	Pandkital	13594	988.6	**110**	**963837**	**39.6**	Undervoltage at Tentelitikra PSS is 31.5kV Undervoltage at Kapasira Megalift is 30.2kV
	Sarasmal	Tentelitikra New	4111	100.3				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	184.85	Rs. Lac
B	Load due to load growth	-	1746.29	kVA
C	Total kW due to load growth	1.732*33*B*Pf	1528	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	9088605	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)	129.51	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	39.60	Rs. Lac
J	Net Revenue Collected	H+I	169.11	Rs. Lac
K	% revenue return	(J/A)*100	91.5	%
L	Pay Back Period	100/K	1.09	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Pandkital feeder.
- Improved N-1 connectivity to Balitikra PSS.
- Ensuring reliable power supply to Tentelitikra PSS.
- Reliability improvement of the 33kV Pandkital Feeder.

Proposal for reliability of Power supply to Patrapali PSS:

Proposal:

Construction of new 33kV line from Patrapali to Patrapali PSS.

Requirement/ Need of the proposal:

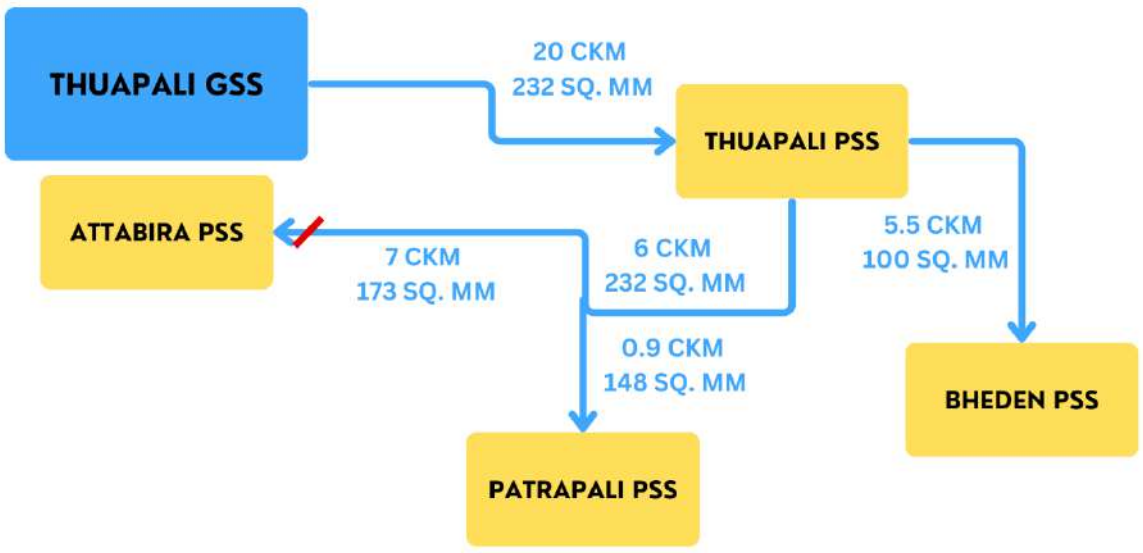
Objective: To ensure reliable power supply, strengthening of the existing network and providing N-1 connectivity to Patrapali PSS.

Existing Scenario:

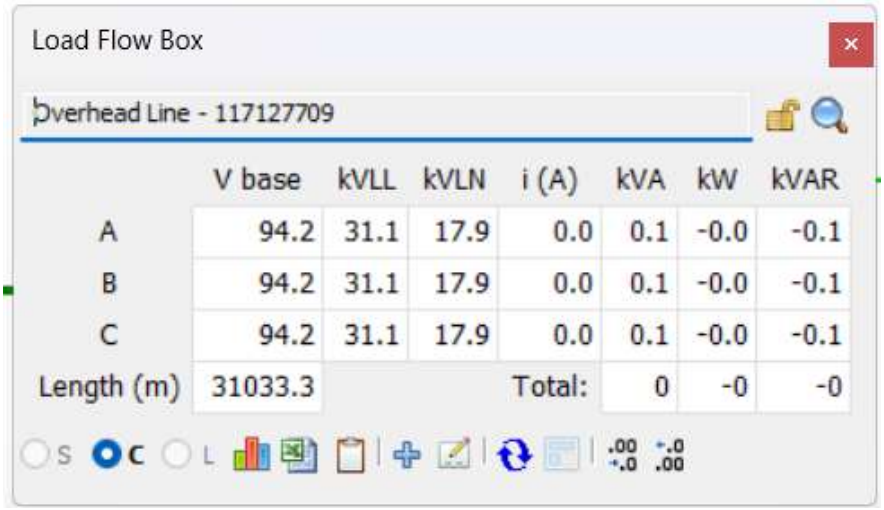
- At present, Patrapali PSS has a single source fed from 33kV Thuapali feeder having a total feeder length of 46.3 Ckm with conductor size of 100/148/173/232 sq.mm AAAC is emanating from Thuapali GSS.
- It feeds Thuapali, Bheden and Patrapali PSS. With a summer peak'25 of 10.5 MVA and experiences a minimum voltage of 31.1kV at tail end.
- Patrapali PSS is connected through a T-off of about 0.9 Ckm with 148 sqmm conductor with a summer peak of 3MVA and is on the farther end of the feeder.
- Considering load growth for 1 year @8.6% per year, 33kV Thuapali feeder will experience a projected load of 11.6 MVA and voltage of 30.8 at tail end.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Thuapali	Thuapali	9096	46.3	445.5	31.1 kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



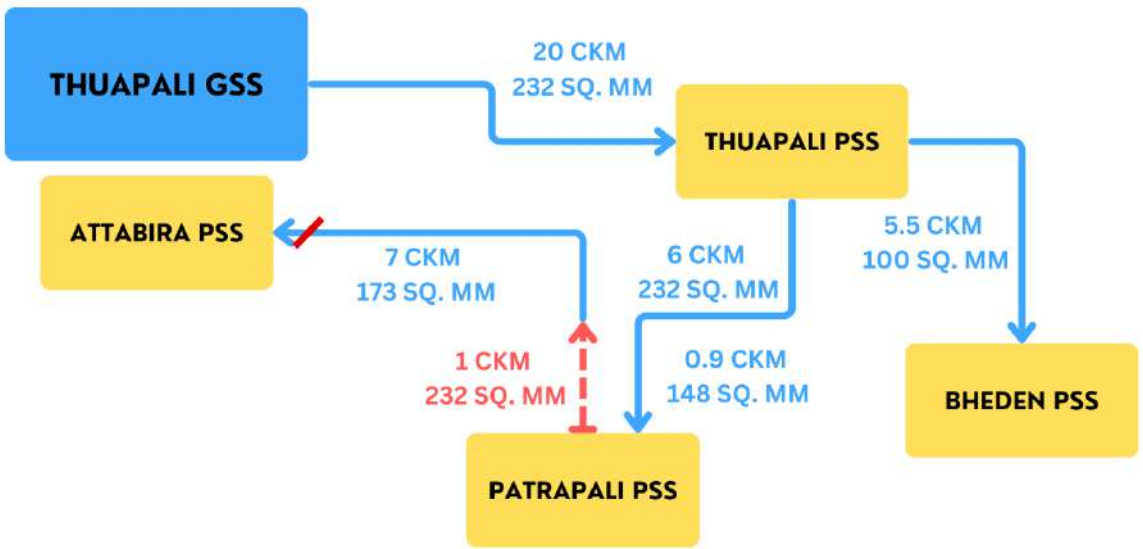
33kV Thuapali Feeder

Proposed Scenario:

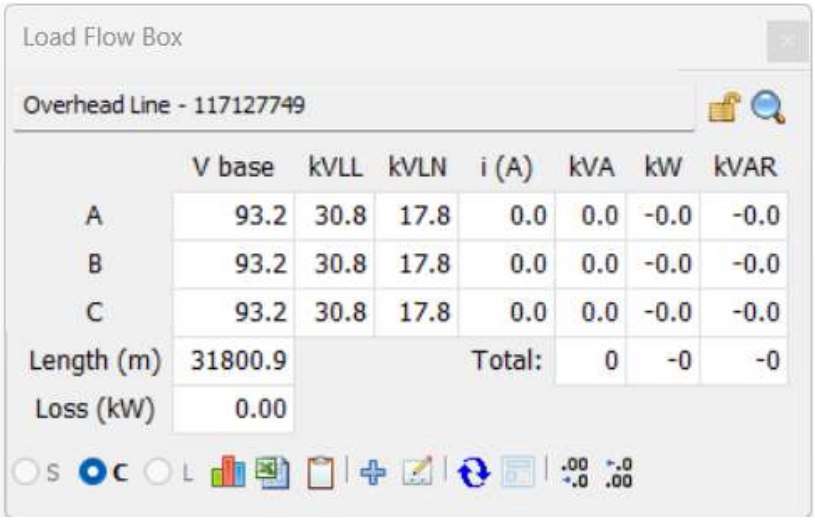
- New 33kV Line of 232 sq.mm is proposed from Patrapali to Patrapali PSS for N-1 connectivity.
- 1 Ckm 232 sqmm AAAC Covered conductor with 4-Pole is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Thuapali	Thuapali	11586	46.4	542.6	30.8 kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Thuapali Feeder

Detailed Scope of Work:

1. New 33KV line with 232sqmm Insulated conductor(1CKm).
2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles.
3. Installation of One 33kV Bay at 33/11kV Patrapali PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BED (Bargarh)**	
Name of the Work :-		***Reliability improvement of Patrapali PSS:*** Construction of new 33kV line from Patrapali to Patrapali PSS to improve reliablity of Power supply to Patrapali PSS.	
Scope of work:-		1. New 33KV line with 232sqmm Insulated conductor(1CKm). 2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles. 3. Installation of One 33kV Bay at 33/11kV Patrapali PSS.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33KV line with 232sqmm Insulated conductor(1CKm) (Refer Annexure-168)	0.41
2	B	Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles (Refer Annexure-169)	0.11
3	C	Installation of One 33kV Bay at 33/11kV Patrapali PSS (Refer Annexure-162)	0.3

		Total Amount (In Cr)	**0.82**
Total estimated cost is Rs. 0.82 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 0.82 Cr.

Cost Benefit Analysis:

- Patrapali PSS comes under Attabira constituency; any fault here leads to complete blackout of Patrapali Area.
- This proposal improves the reliability of Patrapali PSS and improves the reliability of domestic consumers.
- Potential penalties or compensation claims from domestic consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.

Benefit to the system and consumers:

- Improved N-1 connectivity to Patrapali PSS.
- Ensuring reliable power supply to Patrapali PSS.
- Reliability improvement of the 33kV Thuapali Feeder.

Proposal for reliability improvement of 33kV Sarandapali Feeder:

Proposal:

Construction of new 33kV line from Sarandapali PSS to Sarandapali Chowk.

Requirement/ Need of the proposal:

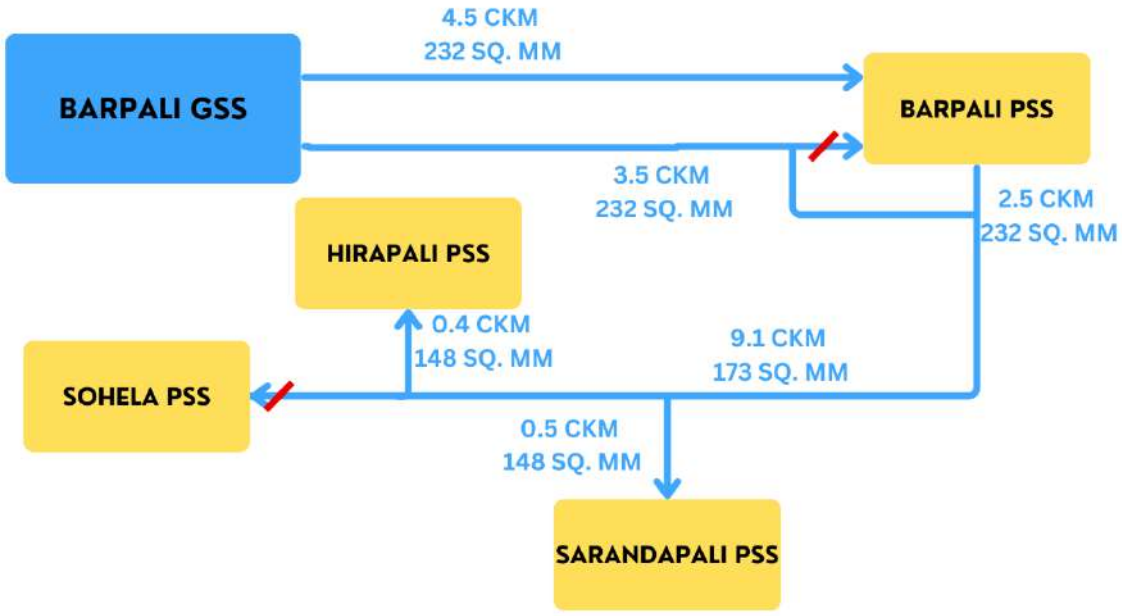
Objective: To ensure reliable power supply, strengthening of the existing network and providing N-1 connectivity to Sarandapali PSS.

Existing Scenario:

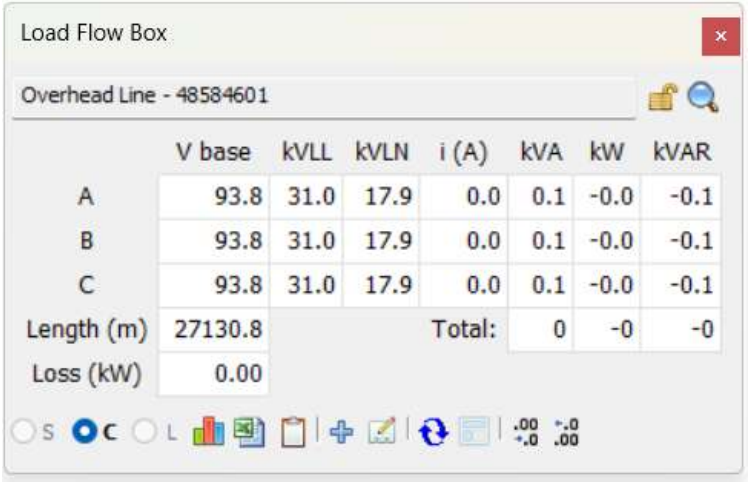
- At present, Sarandapali PSS has a single source fed from 33kV Sarandapali feeder having a total feeder length of 49.3 Ckm with conductor size of 148/173/232 sq.mm AAAC is emanating from Thuapali GSS.
- It feeds Sarandapali and Hirapali PSS. With a summer peak'25 of 14 MVA and experiences a minimum voltage of 31kV at tail end.
- Patrapali PSS is connected through a T-off of about 0.9 Ckm with 148 sqmm conductor with a summer peak of 3MVA and is on the farther end of the feeder.
- Considering load growth for 1 year @8.6% per year, 33kV Thuapali feeder will experience a projected load of 23 MVA and voltage of 30.7 kV at tail end.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Sarandapali	11593	38.8	522.5	31kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	93.8	31.0	17.9	0.0	0.1	-0.0	-0.1
B	93.8	31.0	17.9	0.0	0.1	-0.0	-0.1
C	93.8	31.0	17.9	0.0	0.1	-0.0	-0.1
Length (m)	27130.8			Total:	0	-0	-0
Loss (kW)	0.00						

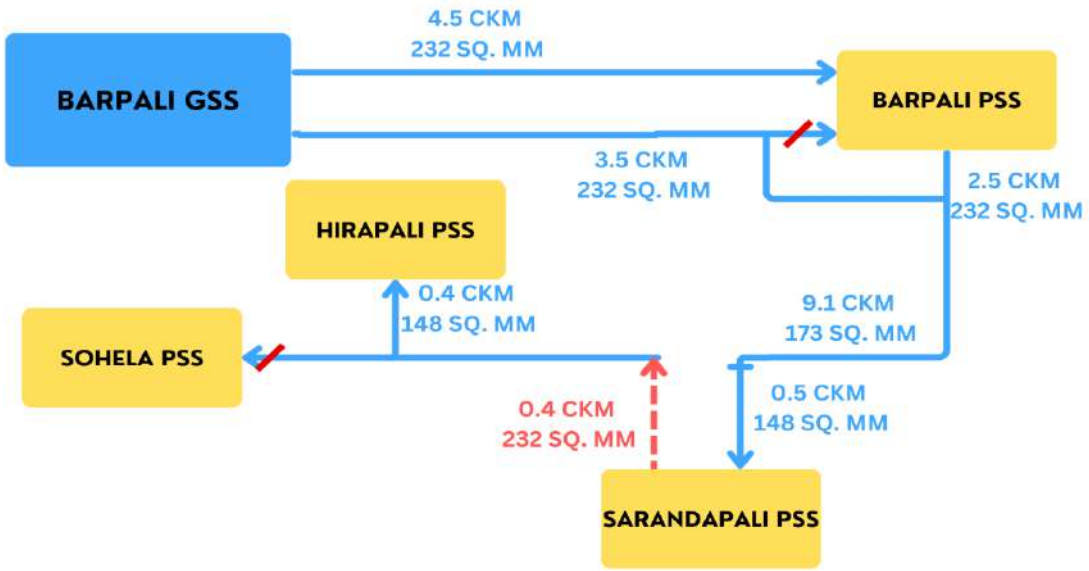
33kV Sarandapali Feeder

Proposed Scenario:

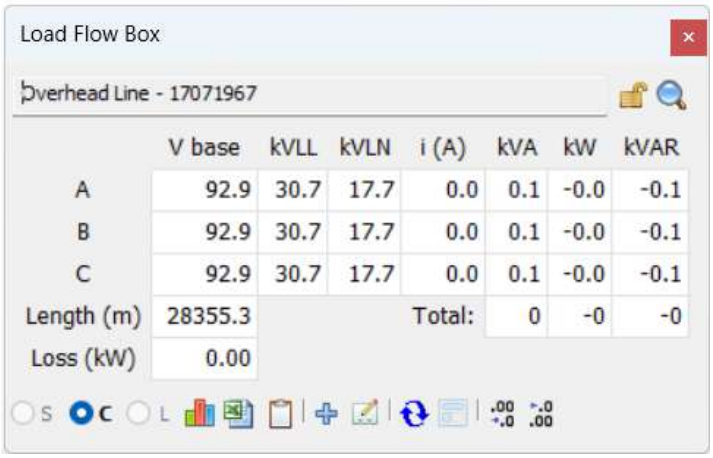
- New 33kV Line of 232 sq.mm is proposed from Sarandapali PSS to Sarandapali Chowk for N-1 connectivity.
- 0.4 Ckm 232 sqmm AAAC Covered conductor with 4-Pole is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Sarandapali	14750	49.7	673.2	30.7kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Sarandapali Feeder

Detailed Scope of Work:

1. New 33KV line with 232sqmm Insulated conductor(0.4CKm).
2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles.
3. Installation of one 33kV DP with Isolator.
4. Installation of One 33kV Bay at 33/11kV Sarandapali PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE-4			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BWED (Bargarh)**	
Name of the Work :-		***Reliability improvement of Sarandapali PSS:*** Construction of new 33kV line from Sarandapali PSS to Sarandapali Chowk to improve reliablity of 33kV Sarandapali Feeder.	
Scope of work:-		1. New 33KV line with 232sqmm Insulated conductor(0.4CKm). 2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles. 3. Installation of one 33kV DP with Isolator. 4. Installation of One 33kV Bay at 33/11kV Sarandapali PSS.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33KV line with 232sqmm Insulated conductor(0.4CKm) (Refer Annexure-168)	0.13
2	B	Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles (Refer Annexure-169)	0.11
3	C	Installation of One 33kV Bay at 33/11kV Sarandapali PSS (Refer Annexure-162)	0.06
4	D	Installation of one 33kV DP with Isolator (Refer Annexure-96)	0.30
		Total Amount (In Cr)	**0.60**

Total estimated cost is Rs. 0.60 Crore. (On TPWODL Capex Scheme)

Cost Estimate: ₹ 0.60 Cr. (For detailed BoQ refer BoQ-4).

Cost Benefit Analysis:

- Sarandapali PSS comes under Bhatli constituency; any fault here leads to complete blackout of Sarandapali Area.
- This proposal improves the reliability of Sarandapali PSS and improves the reliability of domestic consumers.
- Potential penalties or compensation claims from domestic consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.

Benefit to the system and consumers:

- Improved N-1 connectivity to Sarandapali PSS.
- Ensuring reliable power supply to Sarandapali PSS.
- Reliability improvement of the 33kV Sarandapali Feeder.

Proposal for reliability improvement and mitigation of undervoltage of 33kV Punjipathar Feeder:

Proposal:

Construction of new 33kV line from Punjipathar PSS to Arda PSS.

Requirement/ Need of the proposal:

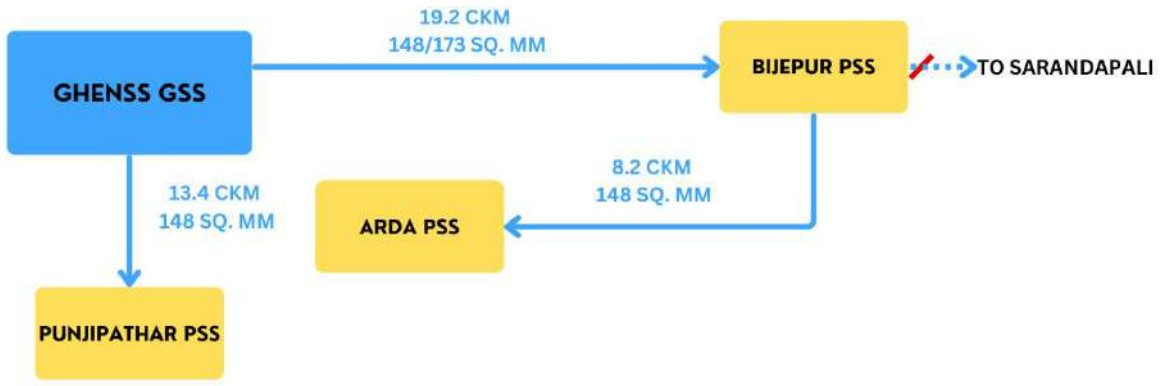
Objective: To ensure reliable power supply, mitigation of undervoltage, strengthening of the existing network and providing N-1 connectivity to Bijepur NAC and Arda PSS.

Existing Scenario:

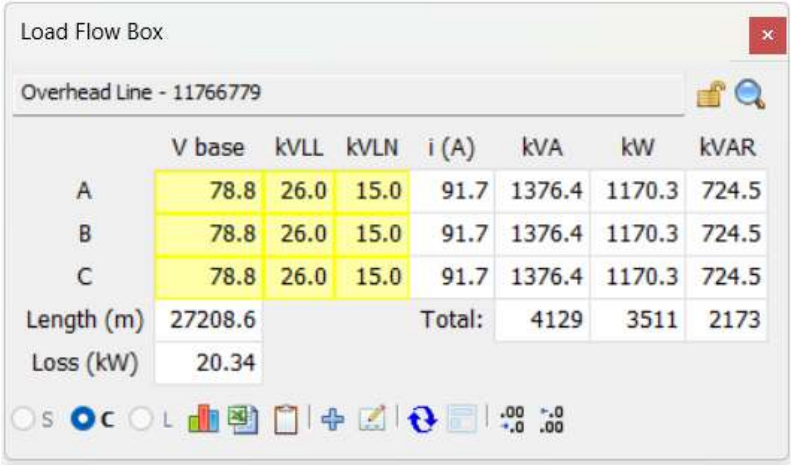
- At present, Arda PSS has a single source fed from 33kV Bijepur feeder having a total feeder length of 37.3 Ckm with conductor size of 148/173 sq.mm AAAC is emanating from Ghenss GSS.
- It also feeds Bijepur PSS with a total summer peak'25 of 24 MVA and experiences a minimum voltage of 26kV at tail end.
- Considering load growth for 1 year @8.6% per year, 33kV Bijepur feeder will experience a projected load of 25 MVA and undervoltage of 26.7kV.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Ghenss	Bijepur	19250	37.3	3037.8	Undervoltage (26.0kV at tail end)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



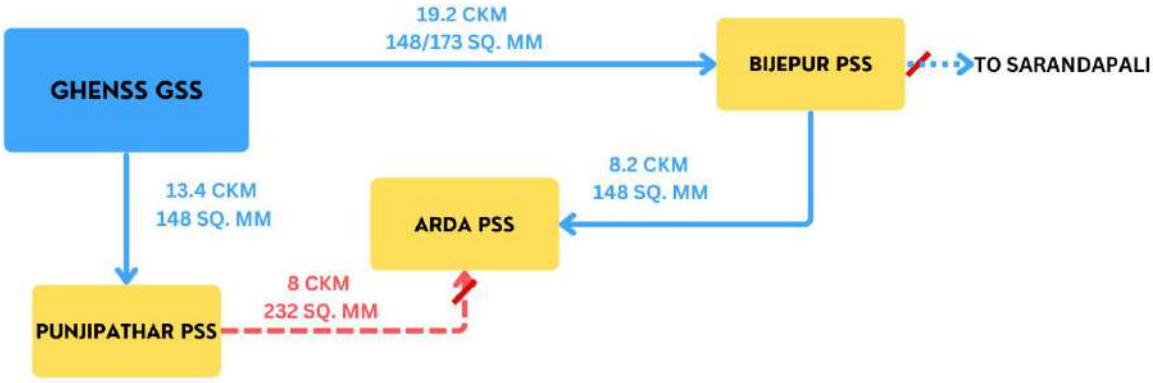
33kV Bijepur Feeder

Proposed Scenario:

- New 33kV Line of 232 sq.mm is proposed from Punjipathar to Arda for N-1 connectivity.
- 8 Ckm 232 sqmm AAAC Bare conductor with 4-Pole is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Ghenss	Bijepur	21706	27.25	2875.7	Undervoltage (26.7kV at tail end)
Ghenss	Punjipathar	4201	21.45	106.4	Undervoltage (32.2kV at tail end)

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 11766779

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	80.8	26.7	15.4	83.5	1286.2	1187.0	495.2
B	80.8	26.7	15.4	83.5	1286.2	1187.0	495.2
C	80.8	26.7	15.4	83.5	1286.2	1187.0	495.2
Length (m)	27208.6			Total:	3858	3561	1485
Loss (kW)	17.85						

33kV Bijepur Feeder

Load Flow Box

Overhead Line - 1236

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.5	32.2	18.6	0.6	11.0	0.0	-11.0
B	97.5	32.2	18.6	0.6	11.0	0.0	-11.0
C	97.5	32.2	18.6	0.6	11.0	0.0	-11.0
Length (m)	21444.0			Total:	33	0	-33
Loss (kW)	0.00						

33kV Punjipathar Feeder

Detailed Scope of Work:

1. New 33KV line with 232sqmm AAAC Bare conductor(8CKm).
2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles.
3. Installation of 2 33kV DP with Isolator.
4. Installation of One 33kV Bay at 33/11kV Arda PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BWED (Bargarh)**	
Name of the Work :-		***Reliability improvement of 33kV Punjipathar Feeder:*** Construction of new 33kV line from Punjipathar to Arda to improve reliablity of 33kV Punjipathar Feeder.	
Scope of work:-		1. New 33KV line with 232sqmm AAAC Bare conductor(8CKm). 2. Installation of 1nos of four pole (2-Way,90*) using 13mtr WPB poles. 3. Installation of 2 33kV DP with Isolator. 4. Installation of One 33kV Bay at 33/11kV Arda PSS.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 Sq.mm. AAAC Bare conductor (8) (Refer Annexure-111)	2.54
2	B	Installation of 4-pole using 13mtr WPB poles (Refer Annexure-169)	0.11
3	C	Installation of 33kV DP with Isolator(2) (Refer Annexure-96)	0.12
4	D	Installation of 33kV Bay (Refer Annexure-162)	0.30
		Total Amount (In Cr)	**3.07**
Total estimated cost is Rs. 3.07 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 3.07 Cr.

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	**Ghenss**	Bijepur	19250	3038	**26**	**230151**	**9.4**	26.7 kV at tail end
After Proposal	**Ghenss**	Bijepur	21760	2876				32.2 kV at tail end
	Ghenss	Punjipathar	4201	106.4				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	306.74	Rs. Lac
B	Load due to load growth	-	2510.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2196	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	13063383	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)	186.15	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	9.40	Rs. Lac
J	Net Revenue Collected	H+I	195.55	Rs. Lac
K	% revenue return	(J/A)*100	63.8	%
L	Pay Back Period	100/K	1.57	Years

Benefit to the system and consumers:

- Improved N-1 connectivity to Arda PSS.
- Ensuring reliable power supply to Arda PSS.
- Mitigation of undervoltage for 33kV Bijepur Feeder.
- Reliability improvement of the 33kV Bijepur Feeder.

Proposal for reliability improvement of Thakpada PSS:

Proposal:

Construction of new 33kV line from Thakpada tapping to Thakpada PSS with LILO arrangement.

Requirement/ Need of the proposal:

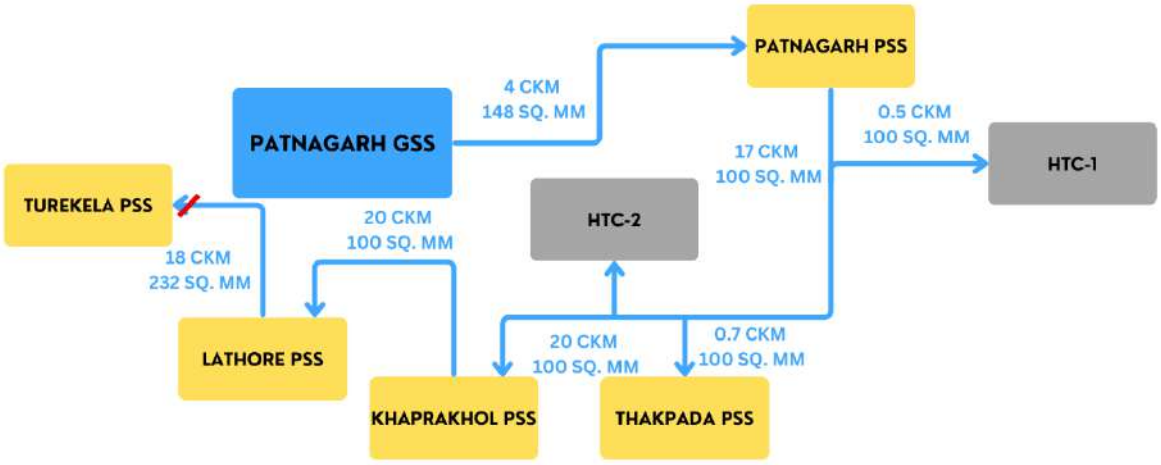
Objective: To ensure reliable power supply, mitigation of undervoltage, strengthening of the existing network and providing N-1 connectivity to Thakpada PSS.

Existing Scenario:

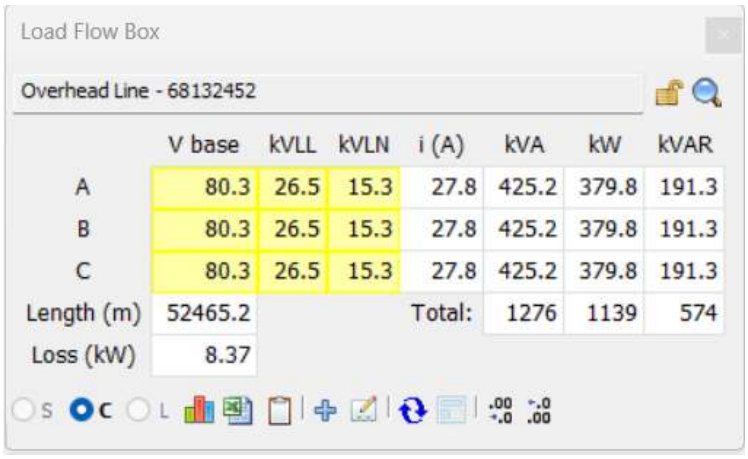
- At present, Thakpada PSS has a single source fed from 33kV Patnagarh feeder having a total feeder length of 54 Ckm with conductor size of 100/148 sq.mm AAAC is emanating from Patnagarh GSS.
- It also feeds Patnagarh, Khaprakhol and Lathore PSS with a total summer peak'25 of 24 MVA and experiences a minimum voltage of 26.5kV at tail end.
- Considering load growth for 1 year @6.52% per year, 33kV Patnagarh feeder will experience a projected load of 27 MVA and undervoltage of 26kV.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Patnagarh	Patnagarh	20905	54	1788.3	Undervoltage (26.5kV at tail end)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	80.3	26.5	15.3	27.8	425.2	379.8	191.3
B	80.3	26.5	15.3	27.8	425.2	379.8	191.3
C	80.3	26.5	15.3	27.8	425.2	379.8	191.3
Length (m)	52465.2			Total:	1276	1139	574
Loss (kW)	8.37						

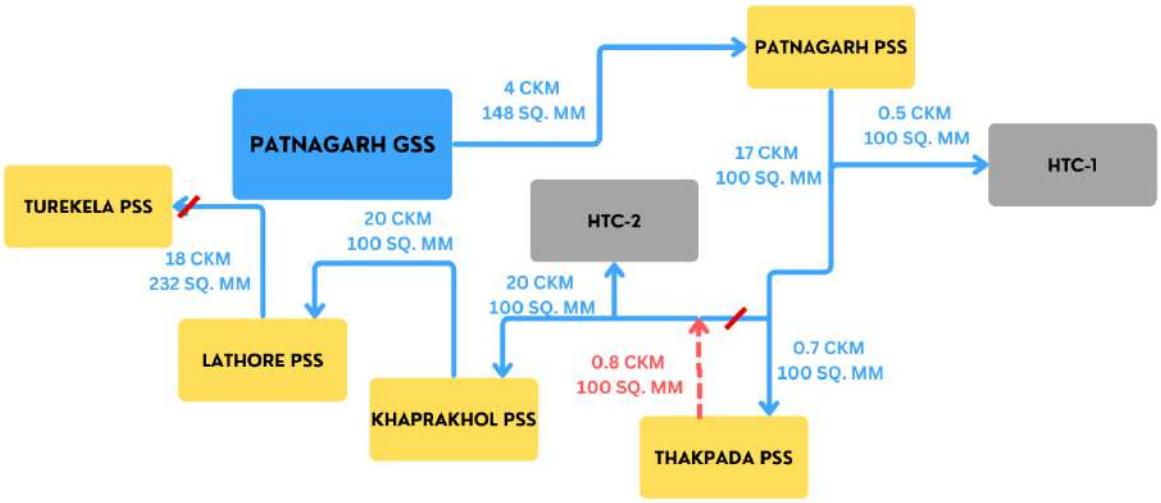
33kV Patnagarh Feeder

Proposed Scenario:

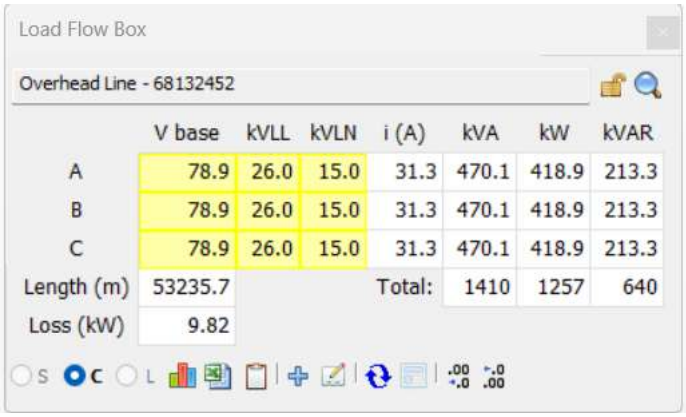
- New 33kV Line of 232 sq.mm is proposed from Thakpada tapping to Thakpada PSS for N-1 connectivity.
- 0.8 Ckm 232 sqmm AAAC Bare conductor is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Patnagarh	Patnagarh	23766	54	1967.4	Undervoltage (26kV at tail end)

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	78.9	26.0	15.0	31.3	470.1	418.9	213.3
B	78.9	26.0	15.0	31.3	470.1	418.9	213.3
C	78.9	26.0	15.0	31.3	470.1	418.9	213.3
Length (m)	53235.7			Total:	1410	1257	640
Loss (kW)	9.82						

33kV Patnagarh Feeder

Detailed Scope of Work:

1. New 33KV line with 232sqmm AAAC Bare conductor(0.8CKm).
2. Installation of One 33kV Bay at 33/11kV Thakpada PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-	**TED (Bolangir)**		
Name of the Work :-	***Reliability improvement of Thakpada PSS:*** Construction of new 33kV line from Thakpada tapping to Thakpada PSS with LILO arrangement.		
Scope of work:-	1. New 33KV line with 232sqmm AAAC Bare conductor(0.8CKm). 2. Installation of One 33kV Bay at 33/11kV Thakpada PSS.		
Names of Schemes: -	***TPWODL CAPEX (FY 26-27)***		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 Sq.mm. AAAC Bare conductor (0.8Ckm) (Refer Annexure-111)	0.25
2	B	Installation of 33kV Bay (Refer Annexure-162)	0.30
		Total Amount (In Cr)	**0.55**
Total estimated cost is Rs. 0.55 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 0.55 Cr.

Cost Benefit Analysis:

- Thakpada PSS comes under Titlagarh constituency; any fault here leads to complete blackout of Thakpada Area.
- This proposal improves the reliability of Thakpada PSS and improves the reliability of domestic consumers.
- Potential penalties or compensation claims from domestic consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.

Benefit to the system and consumers:

- Improved N-1 connectivity to Thakpada PSS.
- Ensuring reliable power supply to Thakpada PSS.
- Mitigation of undervoltage for 33kV Patnagarh Feeder.
- Reliability improvement of the 33kV Patnagarh Feeder.

Proposal for reliability improvement of Hikudi/Raxa Chowk PSS:

Proposal:

Construction of new 33kV line from Birmaharajpur to HikudiorRaxa Chowk PSS.

Requirement/ Need of the proposal:

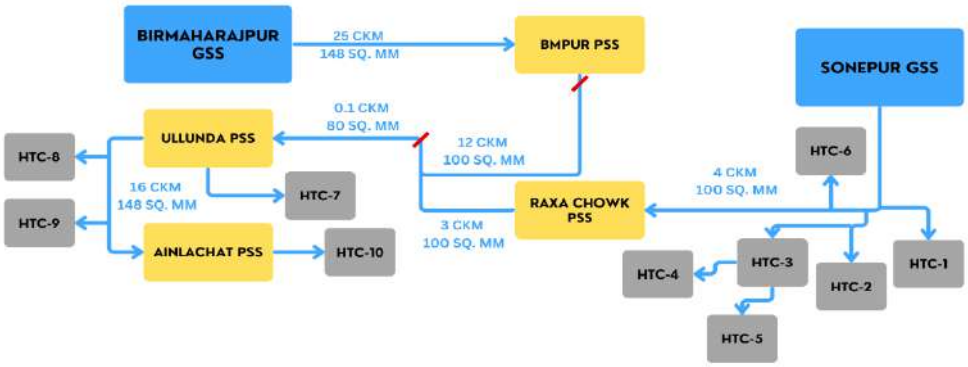
Objective: To ensure reliable power supply, strengthening of the existing network and providing N-1 connectivity to Raxa Chowk PSS.

Existing Scenario:

- At present, Raxa Chowk PSS has a single source fed from 33kV Birmaharajpur-2 feeder having a total feeder length of 4 Ckm with conductor size of 55/100 sq.mm AAAC and is emanating from Sonepur GSS.
- It has a total summer peak'25 of 2 MVA and experiences a minimum voltage of 32.9kV at tail end.
- Birmaharajpur PSS is fed from Birmaharajpur GSS through 33kV Birmaharajpur-1 feeder having a total feeder length of 4 Ckm with conductor size of 148 sq.mm AAAC.
- It has a total summer peak'25 of 6.5 MVA and experiences a minimum voltage of 32.7kV at tail end.
- Considering load growth for 1 year @6.52% per year, 33kV Birmaharajpur-1 feeder will experience a projected load of 10 MVA and minimum voltage of 31.8kV whereas 33kV Birmaharajpur-2 feeder will experience a projected load of 1.1 MVA and minimum voltage of 33kV.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Birmaharajpur	Birmaharajpur -1	5726	2.5	90.18	32.7kV at tail end
Sonepur	Birmaharajpur -2	1697	29.2	15.81	32.9kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 567

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	99.2	32.7	18.9	114.7	2167.8	1895.2	1052.2
B	99.2	32.7	18.9	114.7	2167.8	1895.2	1052.2
C	99.2	32.7	18.9	114.7	2167.8	1895.2	1052.2
Length (m)	2519.8			Total:	6503	5686	3157
Loss (kW)	50.10						

33kV Birmaharajpur-1 Feeder

Load Flow Box

Overhead Line - 60220144

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	99.6	32.9	19.0	0.0	0.3	-0.0	-0.3
B	99.6	32.9	19.0	0.0	0.3	-0.0	-0.3
C	99.6	32.9	19.0	0.0	0.3	0.0	-0.3
Length (m)	22099.8			Total:	1	-0	-1
Loss (kW)	0.00						

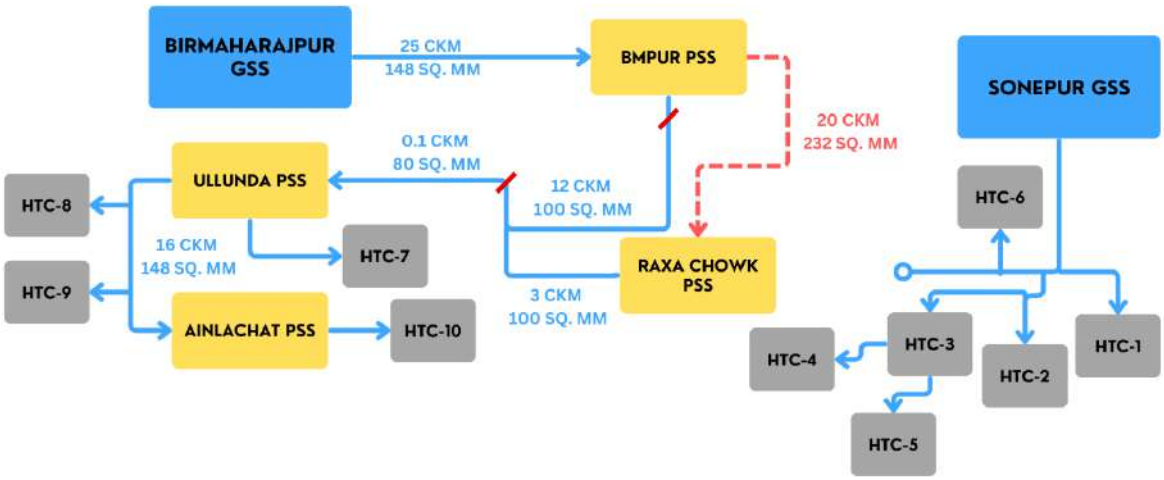
33kV Birmaharajpur-2 Feeder

Proposed Scenario:

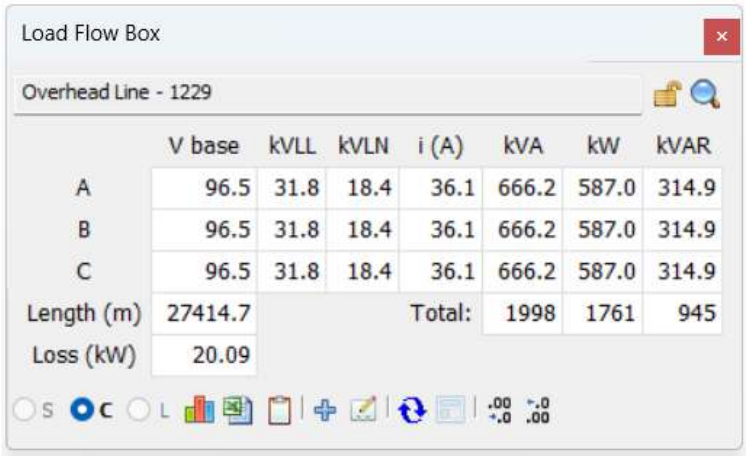
- New 33kV Line of 232 sq.mm is proposed from Birmaharajpur to Hikudi/Raxa Chowk PSS for N-1 connectivity.
- 20 Ckm 232 sqmm AAAC Bare conductor with DP is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Birmaharajpur	Birmaharajpur-1	9357	26.6	231.7	31.8kV at tail end
Sonepur	Birmaharajpur-2	963	10.4	0.84	

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Birmaharajpur-1 Feeder

Detailed Scope of Work:

1. New 33KV line with 232sqmm AAAC Bare conductor(20CKm).
2. Installation of 33kV Bay at both Raxa Chowk PSS and Birmaharajpur PSS.
3. Installation of 6 Nos. of DP with Isolator.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**Sonepur (Bolangir)**	
Name of the Work :-		***Reliability improvement of Raxa Chowk PSS:*** Construction of new 33kV line from Birmaharajpur to Hikudi/Raxa Chowk PSS for N-1 supply.	
Scope of work:-		1. New 33KV line with 232sqmm AAAC Bare conductor(20CKm). 2. Installation of 33kV Bay at both Raxa Chowk PSS and Birmaharajpur PSS. 3. Installation of 6 Nos. of DP with Isolator.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 Sq.mm. AAAC Bare conductor (20Ckm) (Refer Annexure-111)	6.35
2	B	Installation of 33kV Bay (Refer Annexure-162)	0.59
3	C	Installation of DP with Isolator (Refer Annexure-96)	0.35
		Total Amount (In Cr)	**7.29**
Total estimated cost is Rs. 7.29 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 7.29 Cr.

Cost Benefit Analysis:

- Raxa Chowk PSS comes under Sonepur constituency; any fault here leads to complete blackout of Raxa Chowk Area.
- This proposal improves the reliability of Raxa Chowk PSS and improves the reliability of domestic consumers.
- Potential penalties or compensation claims from domestic consumers due to unscheduled outages.
- Increasing load demand on feeder without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.

Benefit to the system and consumers:

- Improved N-1 connectivity to Raxa Chowk PSS.
- Ensuring reliable power supply to Raxa Chowk PSS.
- Reliability improvement of the 33kV Birmaharajpur Feeder.

Proposal for reliability improvement of Industrial Estate PSS:

Proposal:

Construction of new 33kV line from Power House PSS to Indutrial Estate PSS.

Requirement/ Need of the proposal:

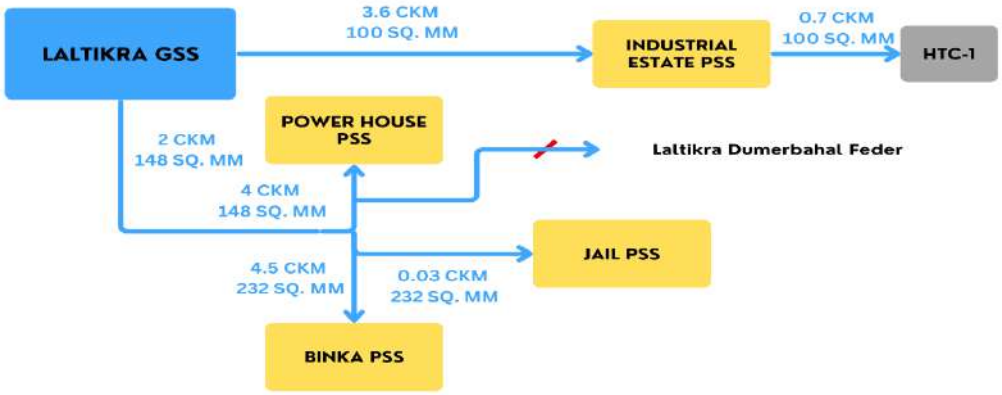
Objective: To ensure reliable power supply, strengthening of the existing network and providing N-1 connectivity to high revenue Indutrial Estate PSS.

Existing Scenario:

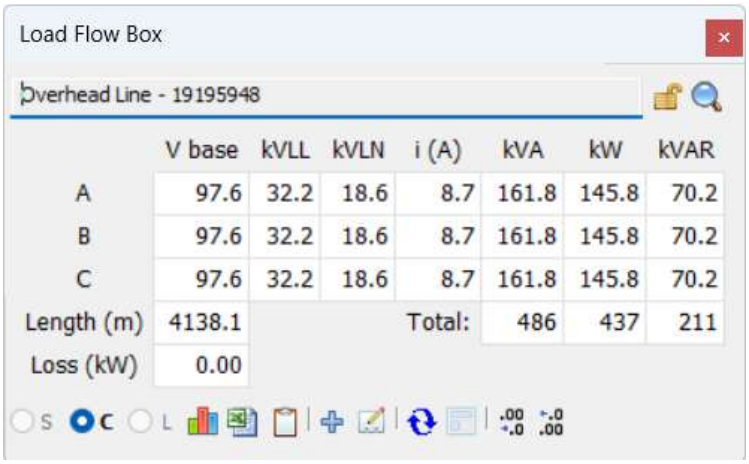
- At present, Indutrial Estate PSS has a single source fed from 33kV Titlagarh feeder having a total feeder length of 4.2 Ckm with conductor size of 100 sq.mm AAAC and is emanating from Laltikra GSS.
- It has a total peak FY25-26 of 13.4 MVA and experiences a minimum voltage of 32.2kV at tail end.
- Power House PSS is fed from Laltikra GSS through 33kV Boudh feeder having a total feeder length of 7 Ckm with conductor size of 80/148/232 sq.mm AAAC.
- It has a total peak FY25-26 of 19 MVA and experiences a minimum voltage of 32.1kV at tail end.
- Considering load growth for 1 year @6.52% per year, 33kV Titlagarh feeder will experience a projected load of 16 MVA and minimum voltage of 32.1kV whereas 33kV Boudh feeder will experience a projected load of 21.6 MVA and minimum voltage of 32kV.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Laltikra	Titlagarh	11751	4.2	318.5	32.2kV at tail end
Laltikra	Boudh	16354	7	313	32.1kV at tail end

Existing SLD:

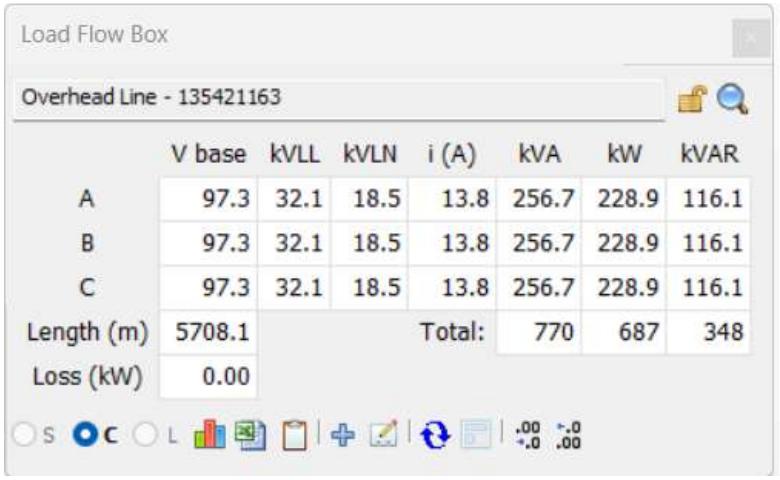


Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.6	32.2	18.6	8.7	161.8	145.8	70.2
B	97.6	32.2	18.6	8.7	161.8	145.8	70.2
C	97.6	32.2	18.6	8.7	161.8	145.8	70.2
Length (m)	4138.1			Total:	486	437	211
Loss (kW)	0.00						

33kV Titlagarh Feeder



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.3	32.1	18.5	13.8	256.7	228.9	116.1
B	97.3	32.1	18.5	13.8	256.7	228.9	116.1
C	97.3	32.1	18.5	13.8	256.7	228.9	116.1
Length (m)	5708.1			Total:	770	687	348
Loss (kW)	0.00						

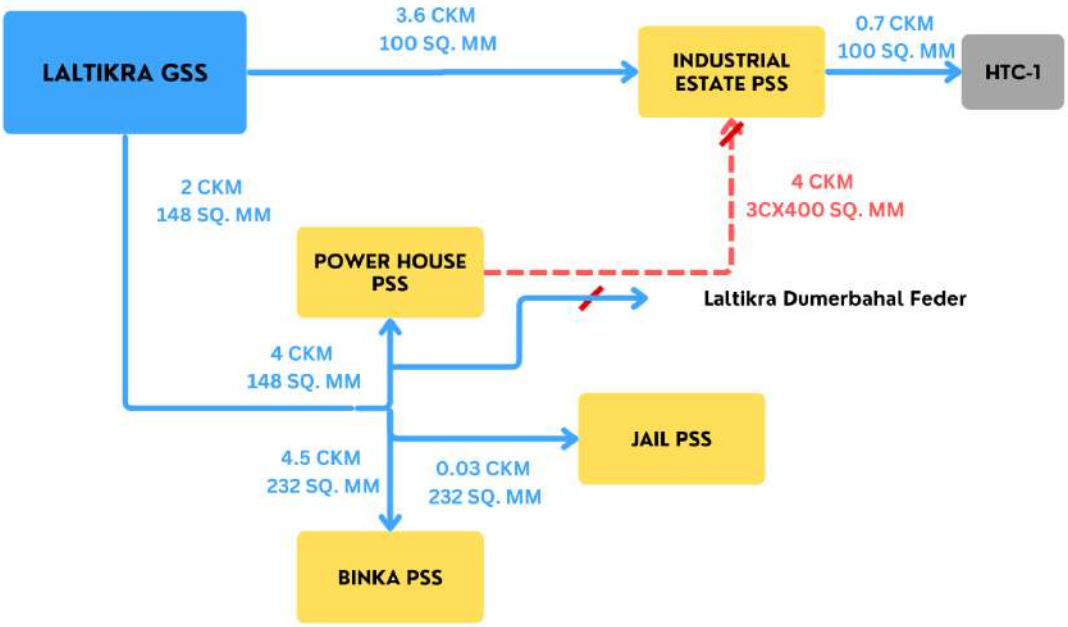
33kV Boudh Feeder

Proposed Scenario:

- New 33kV Line of 3CX400 sq.mm is proposed from Power House PSS to Indutrial Estate PSS for N-1 connectivity.
- 4 Ckm of 3CX400 sqmm XLPE UG cable with 4-Way RMU is proposed.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Laltikra	Titlagarh	13529	4.2	420	32.1kV at tail end
Laltikra	Boudh	18793	11	405	32.0kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 19195948

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.2	32.1	18.5	9.4	174.6	157.4	75.7
B	97.2	32.1	18.5	9.4	174.6	157.4	75.7
C	97.2	32.1	18.5	9.4	174.6	157.4	75.7
Length (m)	4138.1			Total:	524	472	227
Loss (kW)	0.00						

33kV Titlagarh Feeder

Load Flow Box

Overhead Line - 135421079

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	96.9	32.0	18.5	15.0	276.9	247.0	125.3
B	96.9	32.0	18.5	15.0	276.9	247.0	125.3
C	96.9	32.0	18.5	15.0	276.9	247.0	125.3
Length (m)	5709.1			Total:	831	741	376
Loss (kW)	0.00						

33kV Boudh Feeder

Detailed Scope of Work:

1. New 33KV line with 3CX400 sqmm XLPE UG cable (4CKm).
2. Installation of 33kV Bay at Power House PSS.
3. Installation of 2 Nos. of DP with Isolator.
4. Installation of one 33kV 4-Way RMU.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BED (Bolangir)**	
Name of the Work :-		***Reliability improvement of Industrial Estate PSS:*** Construction of new 33kV line from Power House PSS to Indutrial Estate PSS for N-1 supply.	
Scope of work:-		1. New 33KV line with 3CX400 sqmm XLPE UG cable (4CKm). 2. Installation of 33kV Bay at Power House PSS. 3. Installation of 2 Nos. of DP with Isolator. 4. Installation of 1 33kV 4-Way RMU.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with with 3CX400 sqmm XLPE UG cable (4CKm) (Refer Annexure-167)	3.59
2	B	Installation of 33kV Bay (Refer Annexure-162)	0.30
3	C	Installation of DP with Isolator (Refer Annexure-96)	0.12
4	D	Installation of 33kV 4-Way RMU (Refer Annexure-99)	0.57
		Total Amount (In Cr)	**4.56**
Total estimated cost is Rs. 4.56 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 4.56 Cr.

Cost Benefit Analysis:

- Industrial Estate PSS comes under Bolangir District; any fault here leads to complete blackout of Industrial Area.
- This proposal improves the reliability of Industrial Estate PSS and improves the reliability of domestic consumers.
- Potential penalties or compensation claims from domestic consumers due to unscheduled outages.
- Increasing load demand on feeder without redundancy increases stress on existing infrastructure.

Benefit to the system and consumers:

- Improved N-1 connectivity to Industrial Estate PSS.
- Ensuring reliable power supply to Industrial Estate PSS.
- Reliability improvement of the 33kV Titlagarh and Boudh Feeder.

Proposal for reliability improvement and mitigation of undervoltage for 33kV Pandkital Feeder:

Proposal:

Construction of new 33kV line from proposed Sarasmal GSS to Pandkital PSS.

Requirement/ Need of the proposal:

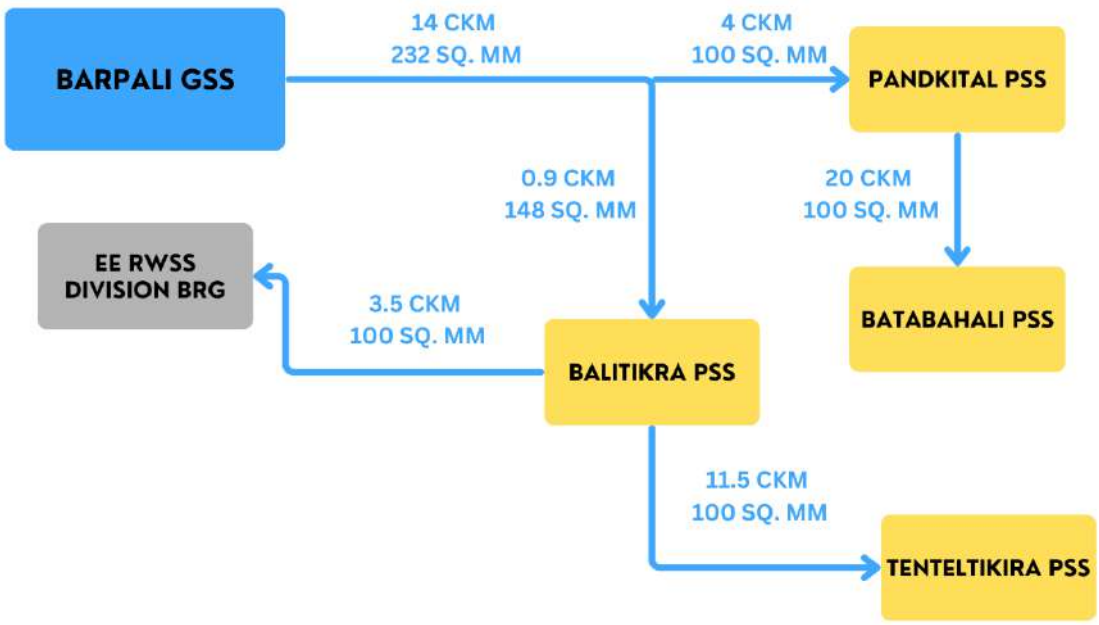
Objective: To ensure reliable power supply, strengthening of the existing network, mitigation of undervoltage and providing N-1 connectivity of 33kV Pandkital Feeder.

Existing Scenario:

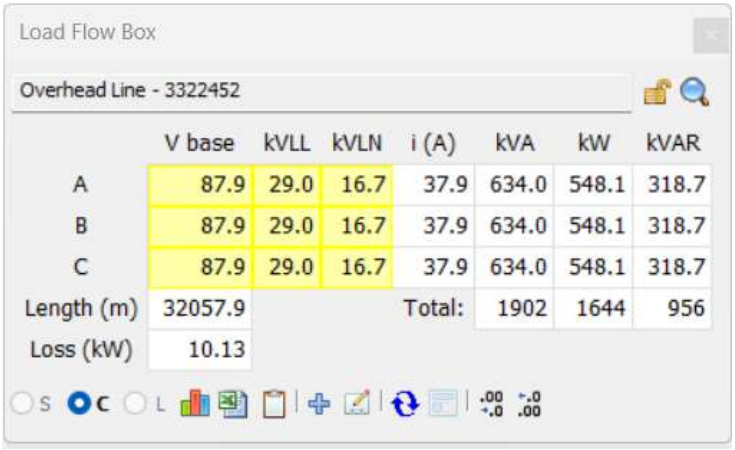
- At present, 33kV Pandkital feeder having a total feeder length of 35 Ckm with conductor size of 100/148/232 sq.mm AAAC and is emanating from Barpali GSS.
- It has a total FY25-26 Peak of 17 MVA and experiences a minimum voltage of 29kV at tail end.
- Considering load growth for 1 year @6.52% per year, 33kV Pandkital feeder will experience a projected load of 21.2 MVA and minimum voltage of 28kV.

Existing Condition					
Name of the GSS	33kV feeder Name	Feeder Peak (KW)	Feeder Length (CKM)	Loss (KW)	Remarks
Barpali	Pandkital	14259	35	982	29kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	87.9	29.0	16.7	37.9	634.0	548.1	318.7
B	87.9	29.0	16.7	37.9	634.0	548.1	318.7
C	87.9	29.0	16.7	37.9	634.0	548.1	318.7
Length (m)	32057.9			Total:	1902	1644	956
Loss (kW)	10.13						

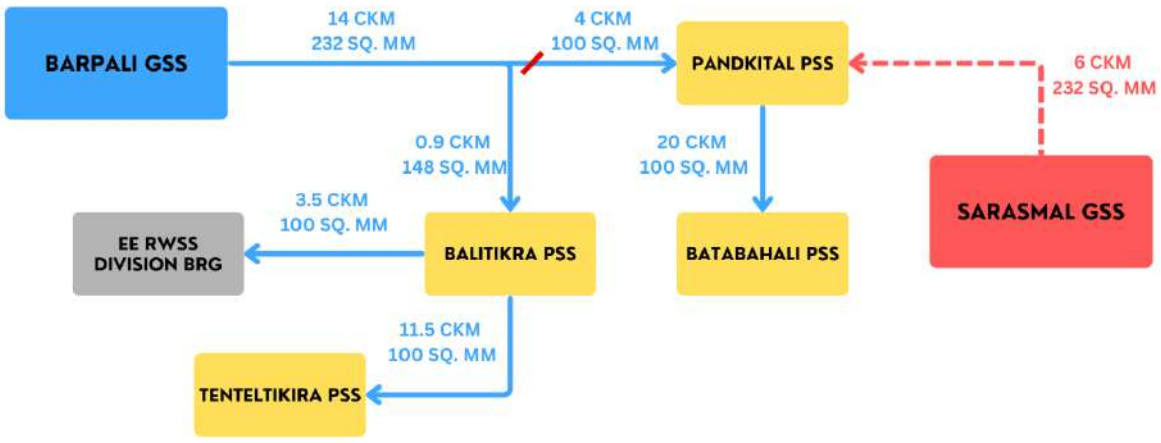
33kV Pandkital Feeder

Proposed Scenario:

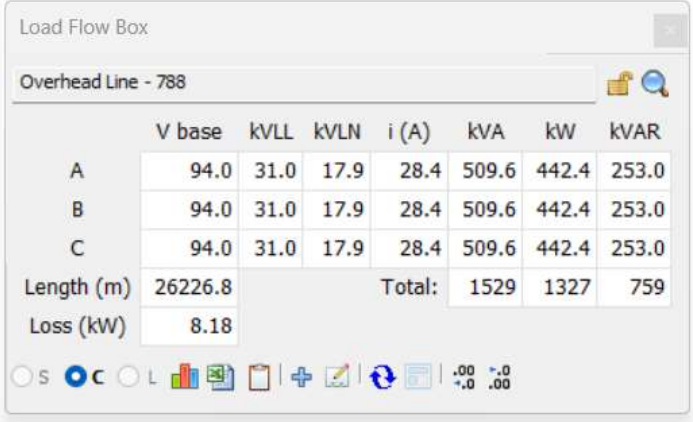
- New 33kV Line of 232 sq.mm is proposed from Sarasmal GSS to Pandkital PSS.
- 6 Ckm of 232 sqmm AAAC Bare conductor with 4-Pole is proposed.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Pandkital	7628	29	283.8	31kV at tail end
Sarasmal	Pandkital New	9659	29.6	386.7	30.7 at tail end

Proposed SLD:



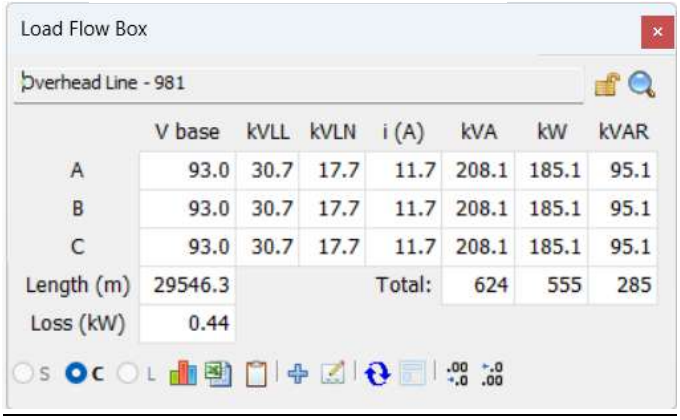
Load Flow Study of proposed scenario in Cyme Software:


Load Flow Box

Overhead Line - 788

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	94.0	31.0	17.9	28.4	509.6	442.4	253.0
B	94.0	31.0	17.9	28.4	509.6	442.4	253.0
C	94.0	31.0	17.9	28.4	509.6	442.4	253.0
Length (m)	26226.8			Total:	1529	1327	759
Loss (kW)	8.18						

33kV Pandkital Feeder


Load Flow Box

Overhead Line - 981

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	93.0	30.7	17.7	11.7	208.1	185.1	95.1
B	93.0	30.7	17.7	11.7	208.1	185.1	95.1
C	93.0	30.7	17.7	11.7	208.1	185.1	95.1
Length (m)	29546.3			Total:	624	555	285
Loss (kW)	0.44						

33kV Pandkital New Feeder

Detailed Scope of Work:

1. New 33kV Line with 232 sqmm AAAC Bare conductor (6CKm).
2. Installation of 33kV Bay at Pandkital PSS.
3. Installation of 2 Nos. 4-Pole.

Proposed Cost with Estimate Break-up:

Annexure			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**Sonepur (Bolangir)**	
Name of the Work :-		***Reliability improvement of 33kV Pandkital feeder:*** Construction of new 33kV line from Sarasmal GSS to Pandkital PSS for reliable power supply and undervoltage mitigation.	
Scope of work:-		1. New 33kV Line with 232 sqmm AAAC Bare conductor (6CKm). 2. Installation of 33kV Bay at Pandkital PSS. 3. Installation of 2 Nos. 4-Pole.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**

1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (6CKm) (Refer Annexure-111)	1.91
2	B	Installation of 33kV Bay (Refer Annexure-162)	0.30
3	C	Installation of 4-Pole (Refer Annexure-169)	0.23
		Total Amount (In Cr)	**2.43**
Total estimated cost is Rs. 2.43 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 2.43 Cr.

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	Barpali	Pandkital	14259	982	**146**	**1282508**	**52.6**	29kV at tail end
After Proposal	Barpali	Pandkital	7628	283.8				31kV at tail end
	Saras mal	Pandkital New	9659	386.7				30.7 at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	243.05	Rs. Lac
B	Load due to load growth	-	4291.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	3755	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	22332660	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)	318.24	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	52.60	Rs. Lac
J	Net Revenue Collected	H+I	370.84	Rs. Lac
K	% revenue return	(J/A)*100	152.6	%
L	Pay Back Period	100/K	0.66	Years

Benefit to the system and consumers:

- Improved N-1 connectivity to Pandkital PSS.
- Ensuring reliable power supply to Pandkital and Batabahali PSS.
- Reliability improvement of the 33kV Pandkital Feeder.

Proposal for reliability improvement and mitigation of undervoltage for 33kV Binka Feeder:

Proposal:

Construction of new 33kV line from proposed Sarasmal GSS to Bisalpali PSS.

Requirement/ Need of the proposal:

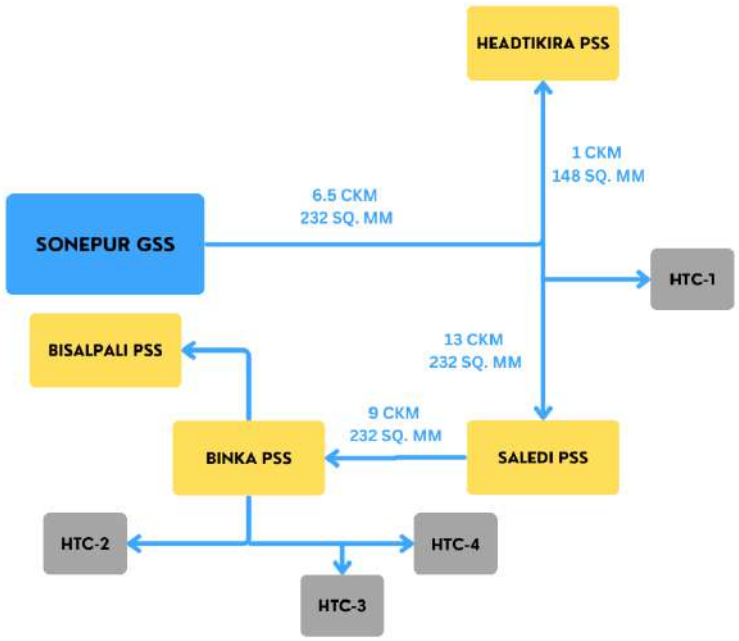
Objective: To ensure reliable power supply, strengthening of the existing network, mitigation of undervoltage and providing N-1 connectivity of 33kV Binka Feeder.

Existing Scenario:

- At present, 33kV Binka feeder having a total feeder length of 44 Ckm with conductor size of 100/232 sq.mm AAAC and is emanating from Sonepur GSS. It feeds Binka, Headtikra, Saledi and Bisalpalli PSS.
- It has a total summer peak'25 of 16 MVA and experiences a minimum voltage of 29.1kV at tail end.
- Considering load growth for 1 year @6.52% per year, 33kV Pandkital feeder will experience a projected load of 18.6 MVA and minimum voltage of 28.4kV.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Sonepur	Binka	13876	44	863.3	29.1kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 8931872

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	88.3	29.1	16.8	0.6	10.5	9.9	3.6
B	88.3	29.1	16.8	0.6	10.5	9.9	3.6
C	88.3	29.1	16.8	0.6	10.5	9.9	3.6
Length (m)	36374.9			Total:	32	30	11
Loss (kW)	5.83						

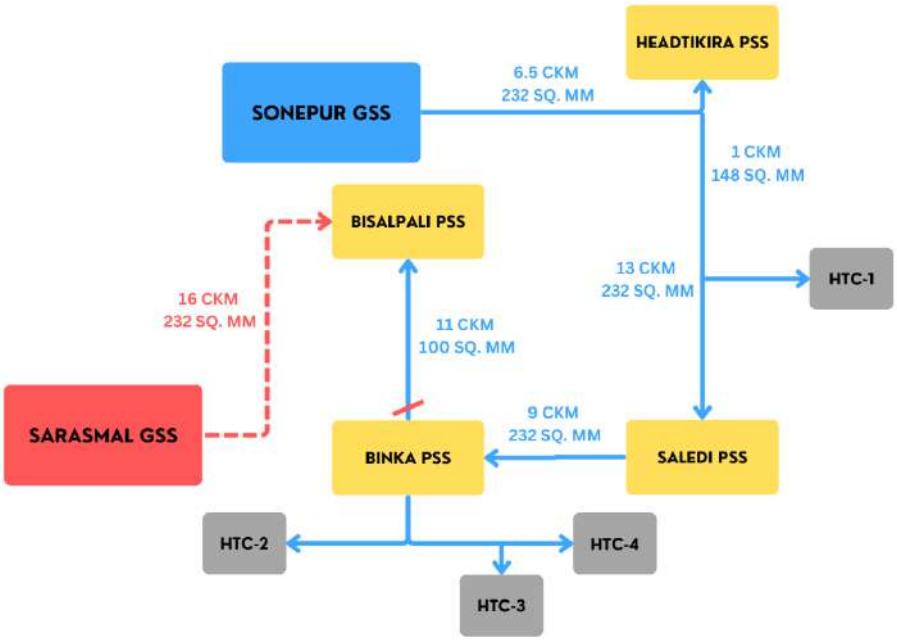
33kV Binka Feeder

Proposed Scenario:

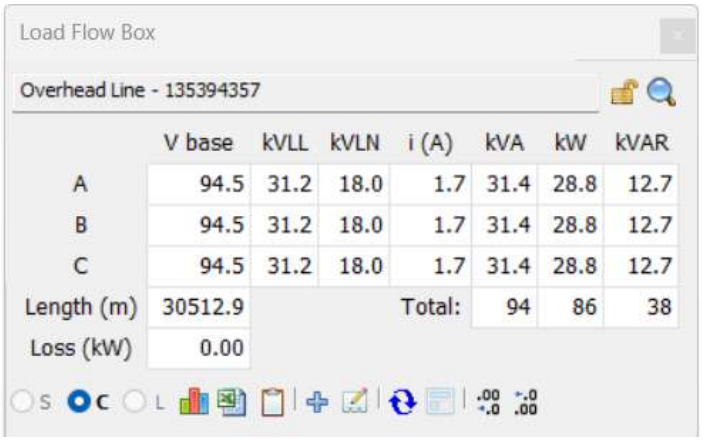
- New 33kV Line of 232 sq.mm is proposed from Sarasmal GSS to Bisalpali PSS.
- 16 Ckm of 232 sqmm AAAC Bare conductor with is proposed.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Sonepur	Binka	9653	35	319.6	31.2kV at tail end
Sarasmal	Bisalpali New	5684	27	144.2	32kV at tail end

Proposed SLD:

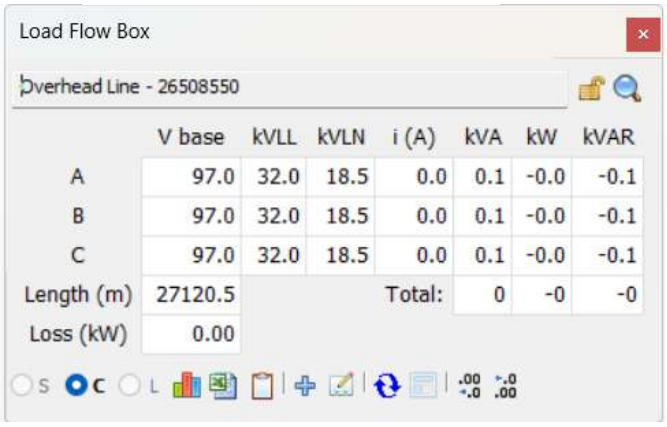


Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	94.5	31.2	18.0	1.7	31.4	28.8	12.7
B	94.5	31.2	18.0	1.7	31.4	28.8	12.7
C	94.5	31.2	18.0	1.7	31.4	28.8	12.7
Length (m)	30512.9			Total:	94	86	38
Loss (kW)	0.00						

33kV Binka Feeder



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.0	32.0	18.5	0.0	0.1	-0.0	-0.1
B	97.0	32.0	18.5	0.0	0.1	-0.0	-0.1
C	97.0	32.0	18.5	0.0	0.1	-0.0	-0.1
Length (m)	27120.5			Total:	0	-0	-0
Loss (kW)	0.00						

33kV Bisalpali New Feeder

Detailed Scope of Work:

1. New 33kV Line with 232 sqmm AAAC Bare conductor (16CKm).
2. Installation of 33kV Bay at Bisalpali PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**Sonepur (Bolangir)**	
Name of the Work :-		***Reliability improvement of 33kV Binka feeder:*** Construction of new 33kV line from Sarasmal GSS to Bisalpali PSS for reliable power supply and undervoltage mitigation.	
Scope of work:-		1. New 33kV Line with 232 sqmm AAAC Bare conductor (16CKm). 2. Installation of 33kV Bay at Bisalpali PSS.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (16CKm) (Refer Annexure-111)	5.08
2	B	Installation of 33kV Bay (Refer Annexure-162)	0.30

		Total Amount (In Cr)	**5.38**
Total estimated cost is Rs. 5.38 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 5.38 Cr.

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	**Sonepur**	Binka	13876	863.3	**188**	**1644821**	**67.5**	29.1kV at tail end
After Proposal	**Sonepur**	Binka	9653	319.6				31.2kV at tail end
	Saras mal	Bisalpalil New	5684	144.2				32kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	537.90	Rs. Lac
B	Load due to load growth	-	2399.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2099	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	12485679	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)	177.92	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	67.50	Rs. Lac
J	Net Revenue Collected	H+I	245.42	Rs. Lac
K	% revenue return	(J/A)*100	45.6	%
L	Pay Back Period	100/K	2.19	Years

Benefit to the system and consumers:

- Improved N-1 connectivity to Bisalpali PSS.
- Ensuring reliable power supply to Bisalpali PSS.
- Reliability improvement of the 33kV Binka and Thuapali Feeder.

Proposal for 2 nos of 33 KV New Feeders from Approved M Rampur GSS to Bifurcate 33 KV Narla feeder to mitigate the Low Voltage issue and for Reliability Improvement:

***Proposal*:**

Construction of new 33kV line from proposed M Rampur GSS to Balipada Tapping.

Requirement/ Need of the proposal:

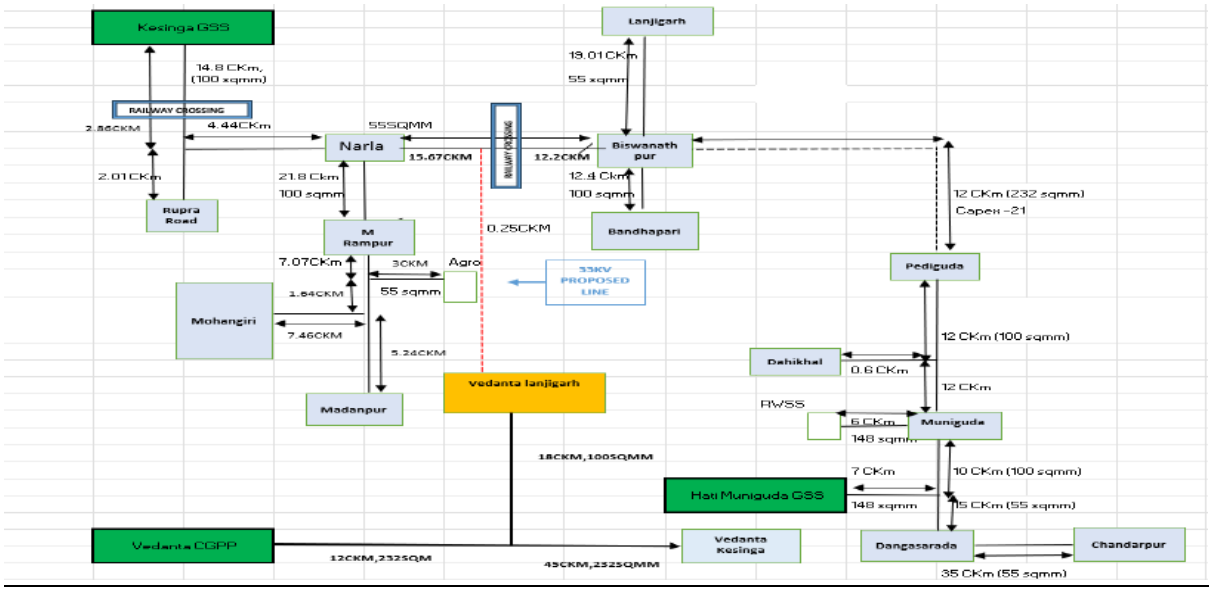
Objective: To Provide quality 33 KV Power to the PSS connected to 33 KV Narla Feeder and to improve the reliability factor.

Existing Scenario:

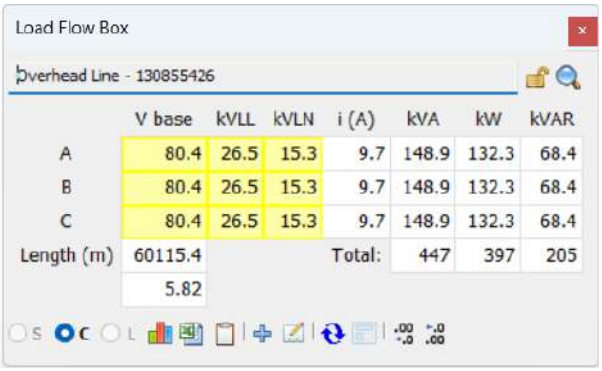
- Currently 33 KV Narla feeder emantes from 132/33 KV Kesinga GSS. The length of the feeder is 129.8 Ckm with 55/80/100 sqmm ACSR and the peak load of the feeder is 277 A.
- This 33 KV Narla feeder feeds 8 Nos of 33/11KV PSS: Rupra Road, Narla, M Rampur, Madanpur, Banjamunda, Biswanathpur, Bandhapari, and Lanjigarh PSS. The tail end voltage goes down to 26.5 KV.
- Considering the future load growth, low voltage issue and including new industrial loads in Narla Subdivision, a new 132/33KV OPTCL grid is commissioning in M Rampur area.
- Proposing the construction of a new line Between M Rampur GSS to Balipada Tapping, incorporating dual lines to serve seperate areas. One line will supply Narla and upcoming Balipada PSS (ODSSP-IV), while the other will provide for M Rampur, Mohangiri, and Madanpur PSS, thereby establishing N-1 supply for each PSS on both feeders. thereby enhancing reliability and operational efficiency.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Narla	13770	35	1358.6	Undervoltage (26.5kV)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



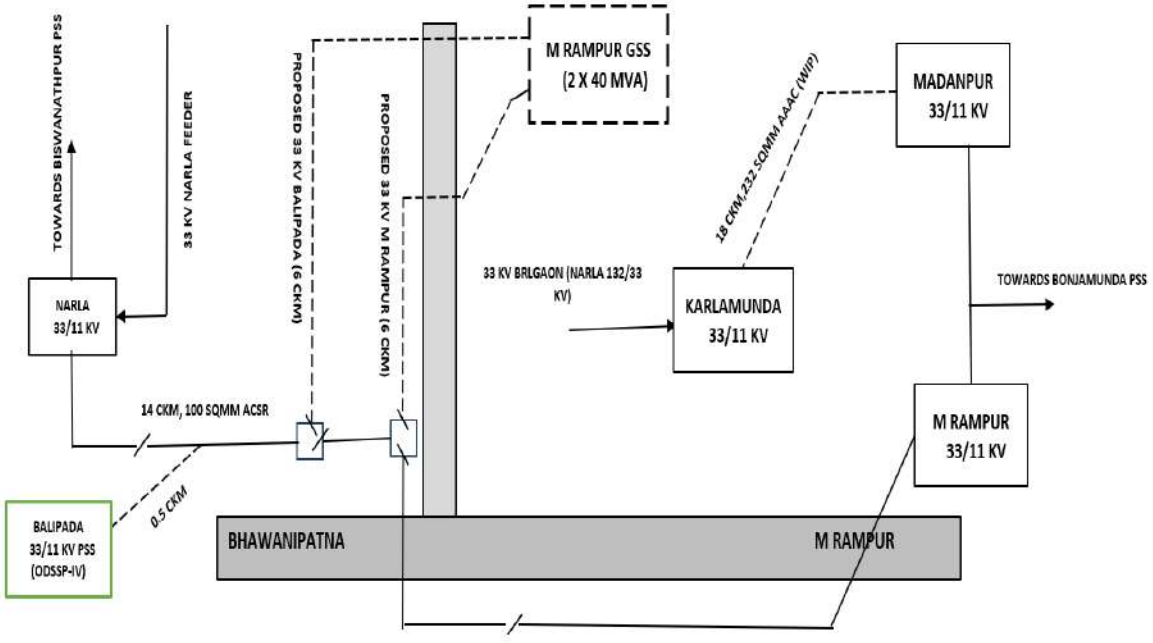
33kV Narla Feeder

Proposed Scenario:

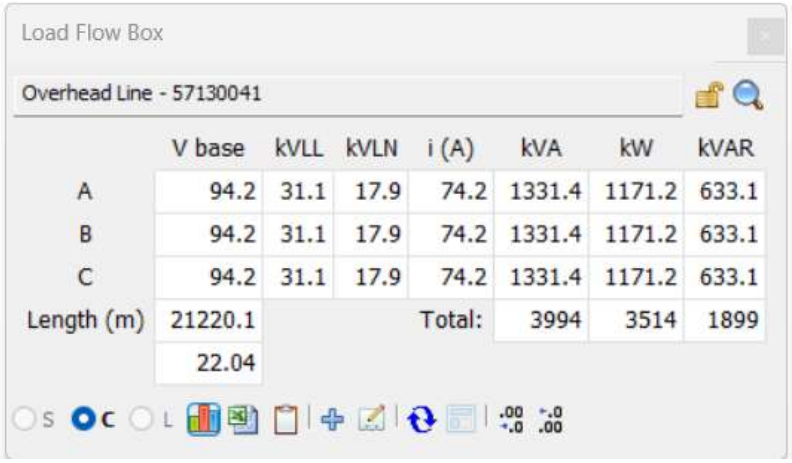
- 2 nos. of 33 KV feeder will be emanated from the ongoing GSS M Rampur i.e. M Rampur & Balipada & after 6 CKm , both proposed 33 KV feeders will be terminated at the existing 33 KV Narla feeder with 2 nos. of 4 pole structure with 2 nos. of 33 KV Isolator each.
- 2 no of DP with Isolator (800 A) will be required as the existing line from both tappings has less no of switching points.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Narla	1776	24.2CKM	27.1	Undervoltage Mitigated
M Rampur (Proposed)	Proposed Balipada	5186	80CKM	280.3	Undervoltage Mitigated
M Rampur (Proposed)	Proposed M Rampur	4066	40.5CKM	86.6	Undervoltage Mitigated

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	94.2	31.1	17.9	74.2	1331.4	1171.2	633.1
B	94.2	31.1	17.9	74.2	1331.4	1171.2	633.1
C	94.2	31.1	17.9	74.2	1331.4	1171.2	633.1
Length (m)	21220.1			Total:	3994	3514	1899
	22.04						

Detailed Scope of Work:

- 12 Ckm of New Line with 232 sqmm,AAAC using 13 Mtr WPB Pole with 2 Nos. of Cradle Guard Arrangement.
- 2 Nos. of Four Pole with 2 Isolator (800 Amp) each using 13 Mtr WPB Pole.
- 3 nos of DP with Isolator (800 A) using 13 Mtr WPB pole for maintenance purpose.
- Installation of one 33kV bay.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**KEED (Kalahandi)**	
Name of the Work :-		***Reliability improvement of Gaisilet Area and Mitigation of Undervoltage:*** Construction of 2 Nos of 33kV New Line to mitigate low voltage issues, improve reliability of network and provide quality power supply to Connected PSSs in 33 KV Narla Feeder.	
Scope of work:-		1. Proposal for construction & laying of 12 Ckm ,232 Sq.mm. AAAC Bare conductor 2. 2 nos of FP with 2 nos of Isolator. 3. 3 nos of DP with Isolator 800 A. 4. Installation of one 33kV bay.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-111)	3.81
2	B	Installation of one 33kV Bay (Refer Annexure-162)	0.30
3	C	Installation of DP with Isolator (Refer Annexure-96)	0.17
4	D	Installation of 4-pole (Refer Annexure-169)	0.23
			4.51
Total estimated cost is Rs. 4.51 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 4.51 Cr.

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	Kesinga	Narla	13770	863.3				Undervoltage (26.5kV)
After Proposal	Kesinga	Narla	1776	27.1	**221**	**1932202**	**79.3**	31.1kV at tail end
	M Rampur	Proposed Balipada	5186	280.3				
	M Rampur	Proposed M Rampur	4066	86.6				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	451.01	Rs. Lac
B	Load due to load growth	-	839.97	kVA
C	Total kW due to load growth	1.732*33*B*Pf	735	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	4371653	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)	62.30	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	79.30	Rs. Lac
J	Net Revenue Collected	H+I	141.60	Rs. Lac
K	% revenue return	(J/A)*100	31.4	%
L	Pay Back Period	100/K	3.19	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Narla feeder.
- Ensuring reliable power supply to the PSS connected to Narla Feeder.
- The above arrangement will help to release power supply to upcoming potential consumers.

Proposal for of 33 KV New Feeder from Approved M Rampur GSS to Juradubra PSS to mitigate the Low Voltage issue and for N-1 Connectivity:

***Proposal*:**

Construction of new 33kV line from proposed M Rampur GSS to Juradubra PSS.

Requirement/ Need of the proposal:

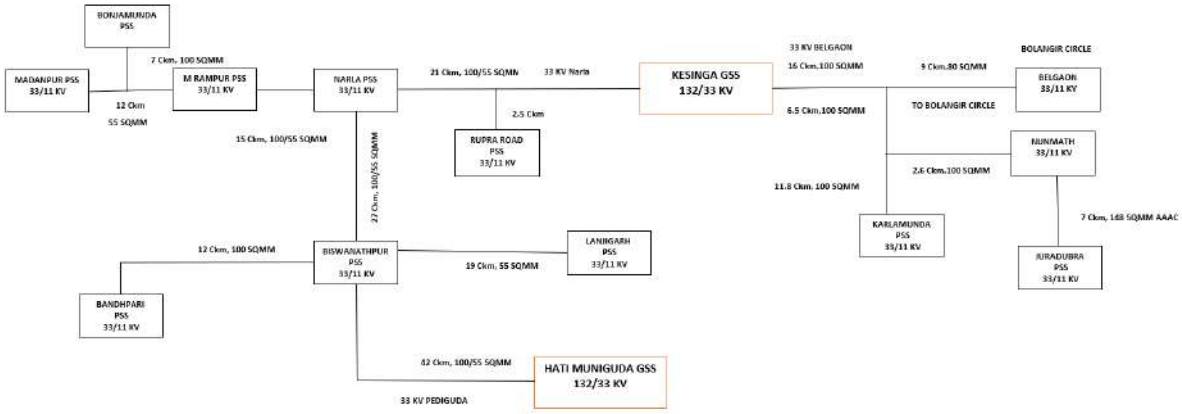
Objective: To Provide quality 33 KV Power to the Juradubra PSS connected to 33 KV Belgaon Feeder and to establish the N-1 Connectivity for both Feeders.

Existing Scenario:

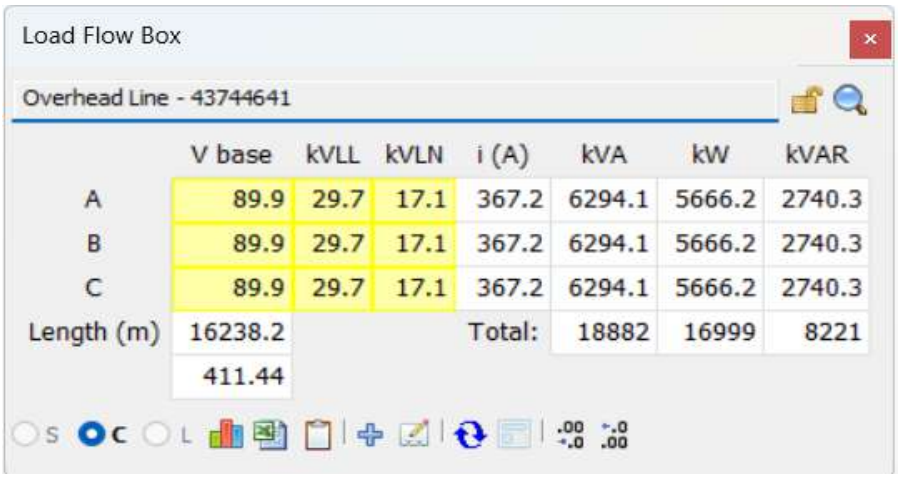
- The 33 KV Belgaon feeder currently originates from the 132/33 KV Kesinga GSS. The total length of the feeder is 97.75 Ckm with 80/100/148 sqmm AAAC conductors. The peak load of the feeder is 135.1 A.
- This feeder feeds HT supply to five nos of 33/11 KV PSS: Nunmath, Juradabra (Sisakhal), Karlamunda, and Belgaon PSS (under Bolangir circle), along with four HT consumers: Gaytri Agro Oil, Bajipadar PHD, Maa Laxmi Rice Mill, and Mahaveer Paper (under Bolangir circle).
- The tail end voltage of this feeder at Karlamunda PSS is 30.4 KV and the Bus Voltage at Juradubra PSS is 28.0 KV, Nunmath PSS is 29.7 KV.
- As this feeder is a lengthy feeder any fault intrruptions in this feeder requires surplus time to locate. This 33 KV Belgaon feeder is a radial in Nature for which the reliability of the Juradubra PSS along with other PSS and loads gets affected.
- Considering future load growth and the reliability issues in the Narla and Belgaon feeders, including new industrial loads, frequent line tripping has been observed, leading to revenue losses and customer dissatisfaction in the Narla Sub-Division, a new 220/132/33 KV OPTCL grid is being commissioned at the M Rampur Location.
- So hereby it is proposed to erect a new line from M Rampur GSS to Juradubra PSS.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Belgaon	6398	100	447.7	Undervoltage (28.0 KV AT Juradubra PSS 29.7 KV (At Nunmath PSS)

Existing SLD:



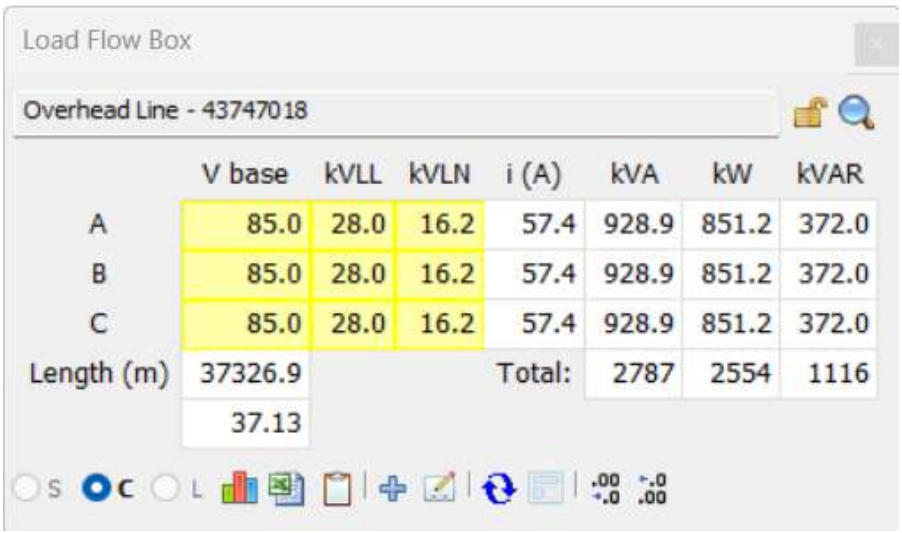
Load Flow Study of existing scenario in Cyme Software:



Load Flow Box

Overhead Line - 43744641

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	89.9	29.7	17.1	367.2	6294.1	5666.2	2740.3
B	89.9	29.7	17.1	367.2	6294.1	5666.2	2740.3
C	89.9	29.7	17.1	367.2	6294.1	5666.2	2740.3
Length (m)	16238.2			Total:	18882	16999	8221
	411.44						



Load Flow Box

Overhead Line - 43747018

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	85.0	28.0	16.2	57.4	928.9	851.2	372.0
B	85.0	28.0	16.2	57.4	928.9	851.2	372.0
C	85.0	28.0	16.2	57.4	928.9	851.2	372.0
Length (m)	37326.9			Total:	2787	2554	1116
	37.13						

33kV Belgaon Feeder

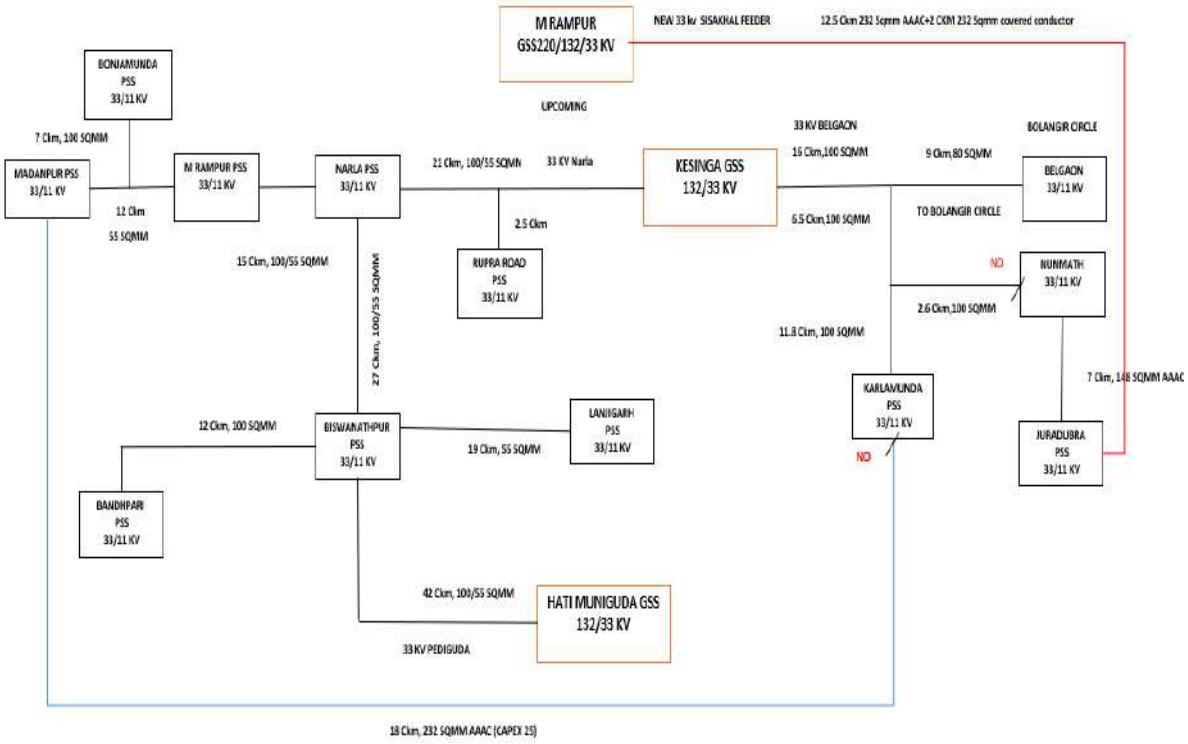
Proposed Scenario:

- To mitigate the reliability issue as well as to establish N-1 supply to both the feeders hereby it is proposed to erect a 14.5 Ckm of new 33 KV Sisakhal feeder from approved 132/33 KV M Rampur GSS to Juradubra (Sisakhal) PSS with 232 sqmm AAAC using 13 Mtr WPB Pole.(Out of the 14.5 Ckm of new line 2 Ckm of 232 sqmm Insulated Conductor will be stringed as the proposed path is a forest Zone).
- 2 Nos of Four Pole for river crossing with Span length (70-80 Mtr) & 2 Nos of Four Pole for right angle in right of way.

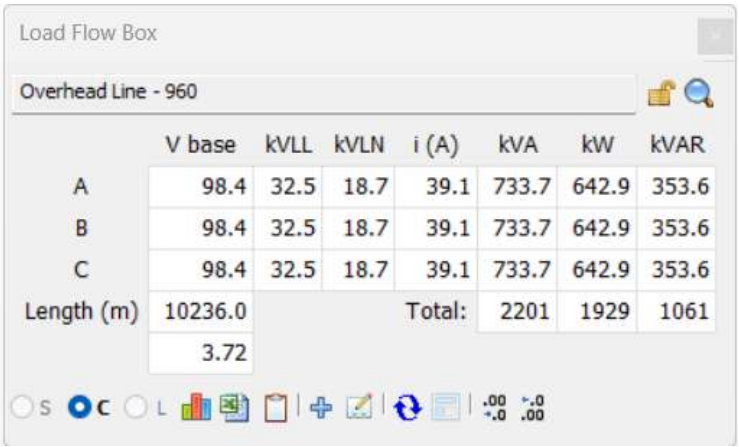
- 2 Nos of DP with isolator using 13 Mtr WPB Pole for maintanence purpose.
- 1 No of 33 KV BAY (O/D), VCB, CT, PT with ID CR Panel at Juradubura PSS -ODSSP. (No B/C Isolator will be required as the PSS HT Bus is having 1250 A B/C Isolator).

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Belgaon	5283	92.7	97.8	Undervoltage Mitigated (32.5kV)
M rampur	Proposed Sisakhal	3186	21.8	67.8	Undervoltage Mitigated (32.1kV)

Proposed SLD:

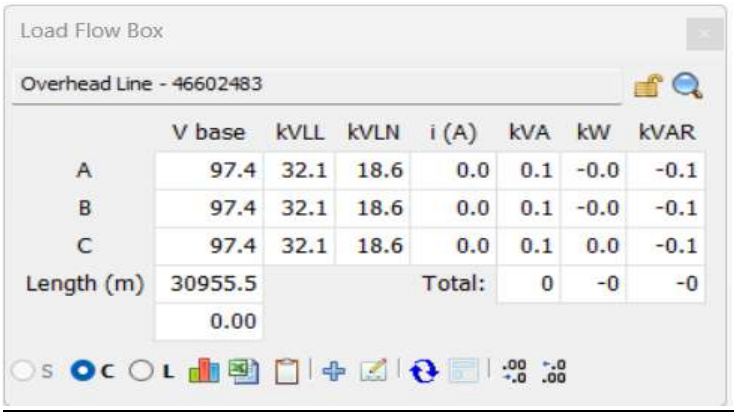


Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	98.4	32.5	18.7	39.1	733.7	642.9	353.6
B	98.4	32.5	18.7	39.1	733.7	642.9	353.6
C	98.4	32.5	18.7	39.1	733.7	642.9	353.6
Length (m)	10236.0			Total:	2201	1929	1061
	3.72						

33kV Belgaon Feeder


Load Flow Box

Overhead Line - 46602483

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	97.4	32.1	18.6	0.0	0.1	-0.0	-0.1
B	97.4	32.1	18.6	0.0	0.1	-0.0	-0.1
C	97.4	32.1	18.6	0.0	0.1	0.0	-0.1
Length (m)	30955.5			Total:	0	-0	-0
	0.00						

S C L

33kV Sisakhal Proposed Feeder

Detailed Scope of Work:

- 14.5 Ckm of 33 KV new line with 232 sqmm AAAC using 13 Mtr WPB Pole.
- 4 nos of Four Pole structures using 13 Mtr WPB Pole.
- 2 nos of DP with Isolator (800 A) using 13 Mtr WPB Pole.
- 1 no of 33 KV BAY (structure type), VCB, CT, PT with ID CR Panel.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division:-	**KEED (Kalahandi)**		
Name of the Work: -	***Reliability improvement of Juradubra PSS and Mitigation of Undervoltage:*** Construction of of 33kV New Line to mitigate low voltage issues, improve reliability of network and provide quality power supply to Connected PSSs in 33 KV Narla Feeder.		
Scope of work: -	1. Proposal for construction & laying of 14.5 Ckm ,232 Sq.mm. AAAC Bare conductor. 2. 4 nos of FP. 3. 2 nos of DP with Isolator 800 A. 4. 1 no of 33 KV OD Bay VCB		
Names of Schemes: -	***TPWODL CAPEX (FY 26-27)***		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-111)	4.61
2	B	Installation of one 33kV Bay (Refer Annexure-162)	0.30
3	C	Installation of DP with Isolator (Refer Annexure-96)	0.12
4	D	Installation of 4-pole (Refer Annexure-169)	0.46
		Total Amount (In Cr)	**5.47**
Total estimated cost is Rs. 5.47 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 5.47 Cr.

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	Kesinga	Belgaon	6398	447.7	**133**	**1161462**	**47.7**	Undervoltage (28kV)
After Proposal	Kesinga	Belgaon	5283	97.8				32.1kV at tail end
	M Rampur	Proposed Sisakhal	3186	67.8				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	547.48	Rs. Lac
B	Load due to load growth	-	390.28	kVA
C	Total kW due to load growth	1.732*33*B*Pf	341	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2031216	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)	28.94	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	47.70	Rs. Lac
J	Net Revenue Collected	H+I	76.64	Rs. Lac
K	% revenue return	(J/A)*100	14.0	%
L	Pay Back Period	100/K	7.14	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Belgaon feeder.
- Ensuring reliable power supply to the PSS connected to Belgaon Feeder.
- N-1 connectivity to Juradubra PSS.

Proposal for of 33 KV New Feeder from Khariar GSS to Badi tapping to mitigate the reliability issue:

***Proposal*:**

Construction of new 33kV line from Khariar GSS to Badi tapping.

Requirement/ Need of the proposal:

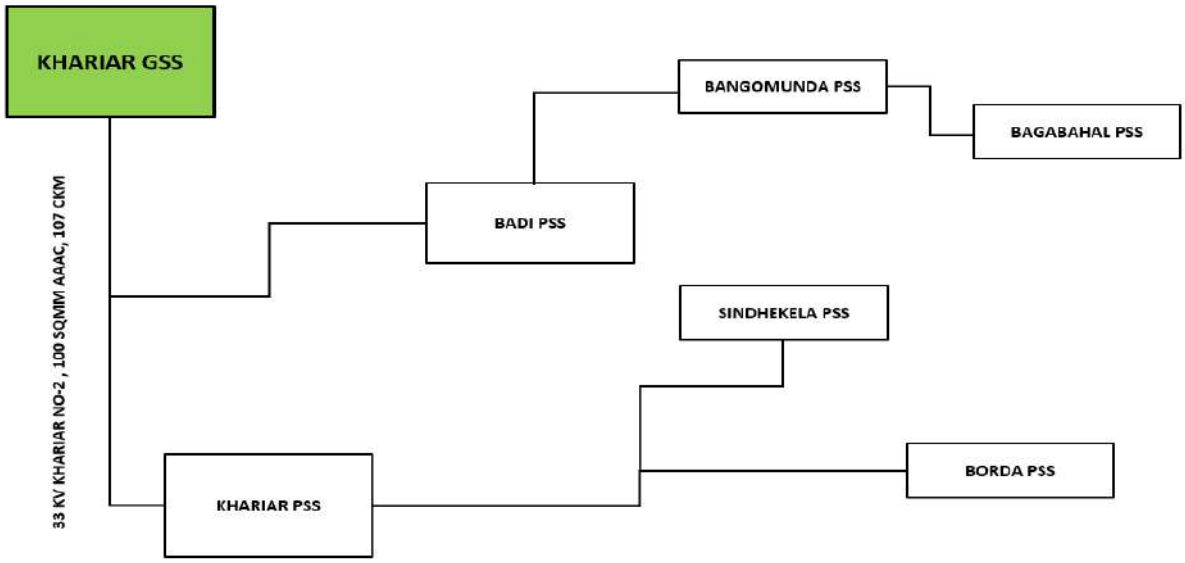
Objective: To Provide reliable Power Supply to Badi PSS, Raisingpur PSS (ODSSP-IV), Bagbahal PSS (Bolangir PSS) by erecting a new 33 KV Line from Khariar GSS.

Existing Scenario:

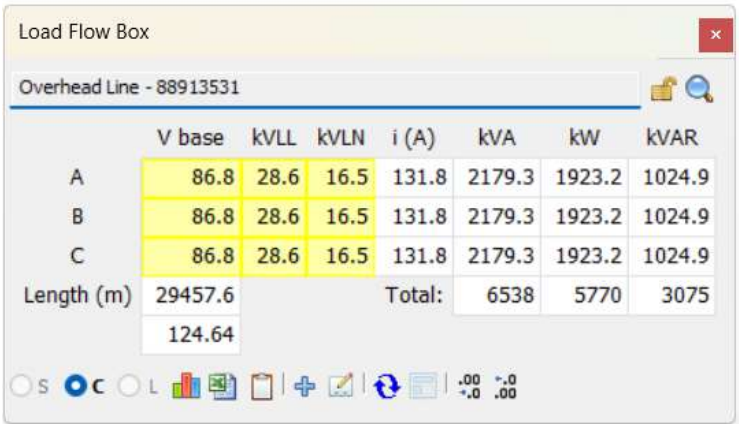
- Presently 33 KV Khariar No.2 feeder emenates from 132/33 KV Khariar GSS. The total length of the feeder is 107.778 Ckm with 100 sq.mm AAAC and the peak load of the feeder is 242 A.
- This feeder feeds HT supply to Badi PSS,Bagbahal PSS (SEEC-Bolangir), Bamgomunda PSS (SEEC-Bolangir), Khariar PSS,Sindhekela PSS and Boda PSS.
- As this is a lengthy feeder the routine maintenance and fault rectification takes enough time which impacts the reliability and the feeder is an overloaded one.
- So, to improve the reliability hereby it is proposed to erect a new 33 KV Line from Khariar GSS to Badi tapping.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Khariar GSS	Khariar No.2	14908	108	1095.6	UnderVoltage (28.6 KV)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	86.8	28.6	16.5	131.8	2179.3	1923.2	1024.9
B	86.8	28.6	16.5	131.8	2179.3	1923.2	1024.9
C	86.8	28.6	16.5	131.8	2179.3	1923.2	1024.9
Length (m)	29457.6			Total:	6538	5770	3075
	124.64						

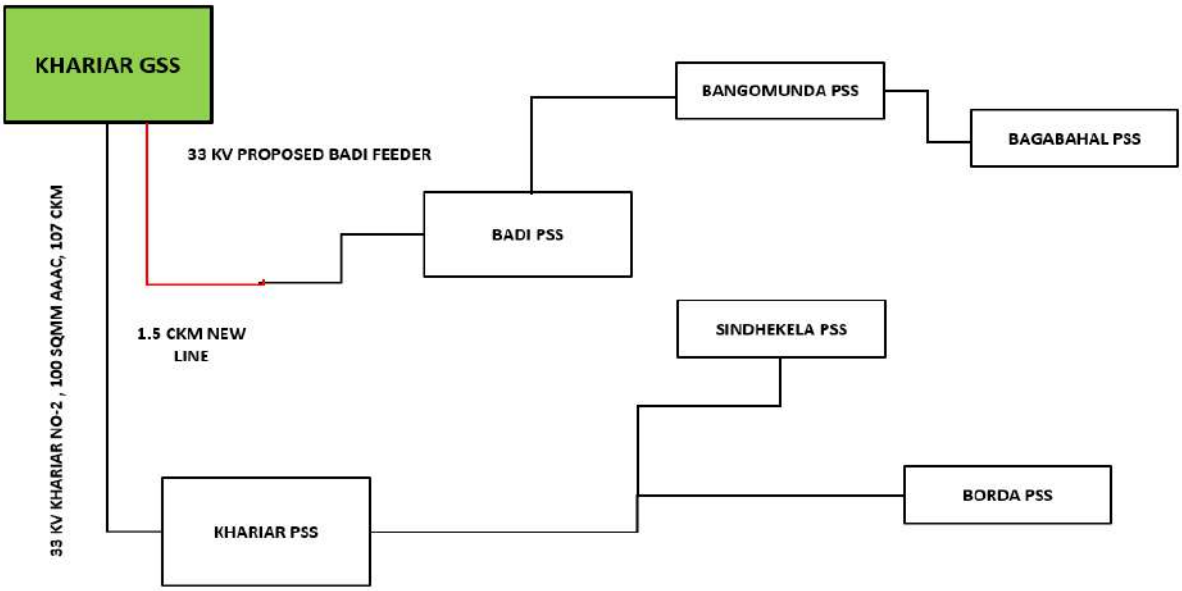
33kV Khariar No.2 Feeder

Proposed Scenario:

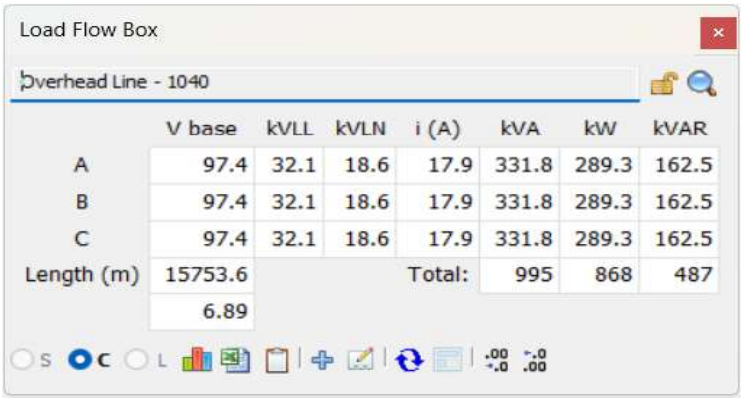
- To mitigate the reliability issue hereby it is proposed to erect 1.5 Ckm of 33 KV new line from Khariar GSS to Badi tapping and 1 no of DP with Isolator for NO & NC operation.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Khariar	Khariar No-2	4907	93	145	Undervoltage Mitigated
Khariar	Badi feeder	6002	22	140	Undervoltage Mitigated (32.1 kV)

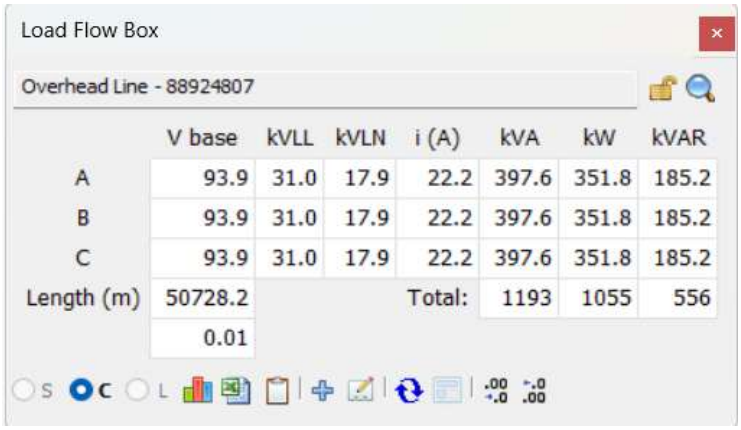
Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Badi New Feeder



33kV Khariar No.2 Feeder

Detailed Scope of Work:

- 1.5 Ckm of 33 KV new line with 232 sqmm AAAC.
- 1 no of DP with Isolator using 13 Mtr WPB Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division:-		**NED (Kalahandi)**	
Name of the Work: -		***Reliability improvement of 33 KV Khariar NO-2 Feeder:*** Construction of of 33kV New Line from Khariar GSS to Badi tapping for reliability improvement to.	
Scope of work: -		• 11.5 Ckm of 33 KV new line with 232 sqmm AAAC. • 1 no of DP with Isolator using 13 Mtr WPB Pole.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-111)	0.48
2	B	Installation of 4-pole (Refer Annexure-169)	0.11
		Total Amount (In Cr)	**0.59**
Total estimated cost is Rs. 0.59Crore. (On TPWODL Capex Scheme)			

Cost Estimate: 0.59Cr.

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	Khariar GSS	Khariar No.2	14908	1095.6	**379**	**3316816**	**136.2**	Undervoltage (28kV)
After Proposal	Khariar	Khariar No-2	4907	145				32.1kV at tail end
	Khariar	Badi feeder	6002	145				

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	59.07	Rs. Lac
B	Load due to load growth	-	909.39	kVA
C	Total kW due to load growth	1.732*33*B*Pf	796	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	4732942	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)	67.44	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	136.20	Rs. Lac
J	Net Revenue Collected	H+I	203.64	Rs. Lac
K	% revenue return	(J/A)*100	344.8	%
L	Pay Back Period	100/K	0.29	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Khariar No.2 feeder.
- Ensuring reliable power supply to the PSS connected to Khariar No.2 Feeder.
- N-1 connectivity to Badi PSS.

Proposal for of 33 KV LILO Line at Utkela PSS for reliability improvement:

***Proposal*:**

Construction of new 33kV LILO line at Utkela PSS.

Requirement/ Need of the proposal:

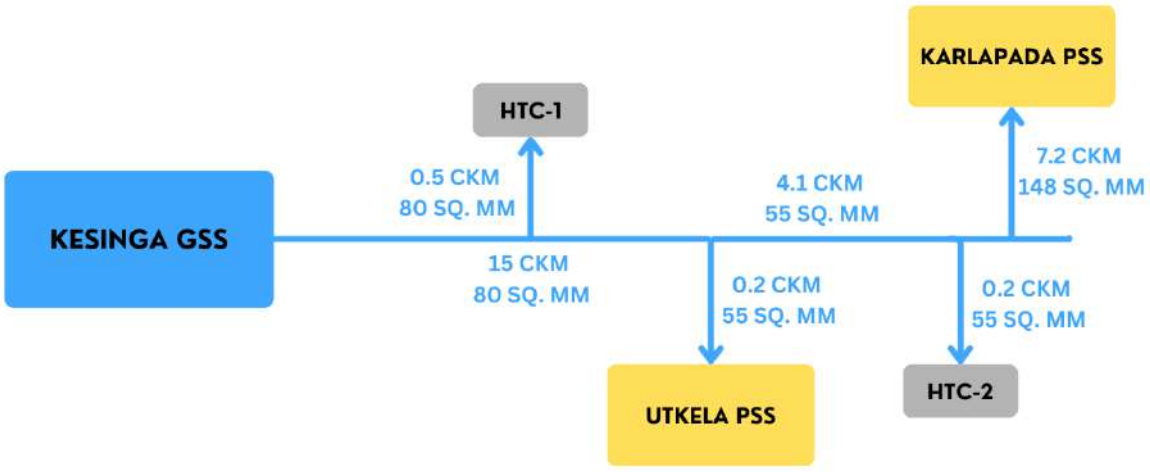
Objective: To erect a new 33 KV LILO line at Utkela PSS reliability improvement.

Existing Scenario:

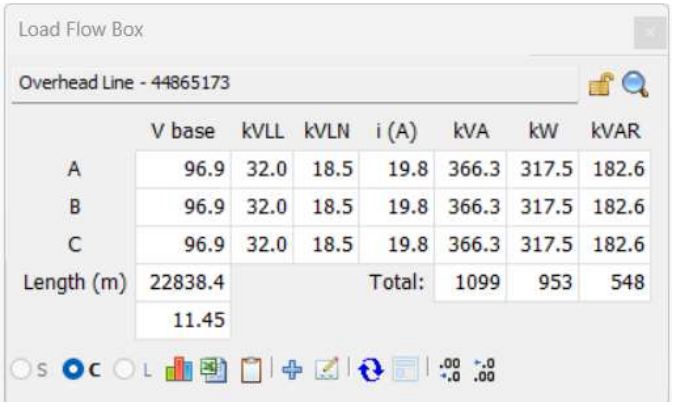
- At present, 33kV Bhawanipatna-1 New feeder having a total feeder length of 24 Ckm with conductor size of 55/80/148 sq.mm AAAC is emanating from Kesinga GSS.
- It feeds Utkela and Karlapada PSS and has total summer peak'25 of 3.3 MVA and experiences a minimum voltage of 32kV at tail end.
- 33 KV Bhawanipatna No-1 feeder is an old feeder and line trippings are frequent on this feeder so, this feeder interruptions impacts the HT supply for 33/11 KV Utkela PSS as there is no alternate supply is available for this PSS.
- So, it is necessary to create a LILO line for Utkela PSS for the reliability of this PSS can be retain.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna No-1	2907	24	94.66	32kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	96.9	32.0	18.5	19.8	366.3	317.5	182.6
B	96.9	32.0	18.5	19.8	366.3	317.5	182.6
C	96.9	32.0	18.5	19.8	366.3	317.5	182.6
Length (m)	22838.4			Total:	1099	953	548
	11.45						

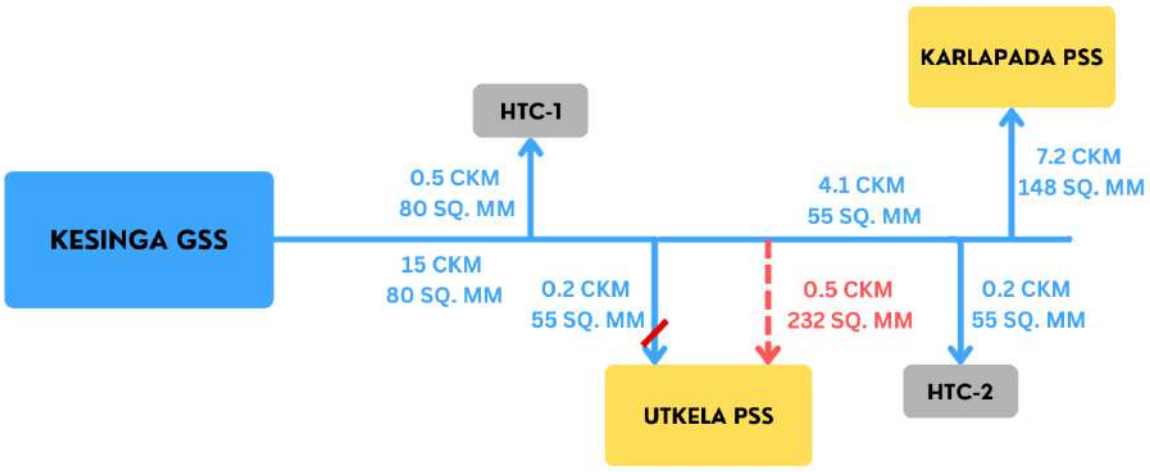
33kV Bhawanipatna-1 Feeder

Proposed Scenario:

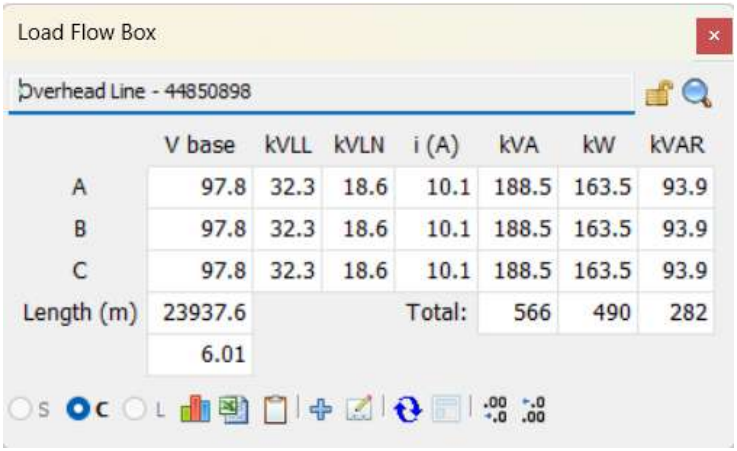
- To avoid the T-offs of Utkela PSS and to establish alternate source/circuits for N-1 supply hereby proposed to erect a 33 KV new line of 0.5 CKm from T-off Utkela PSS to Utkela PSS and the proposed line will be terminated at Utkela PSS by mounting a 33 KV 3 WAY RMU.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna No-1	3747	25	62.8	32.3kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Bhawanipatna-1 Feeder

Detailed Scope of Work:

- 0.5 Ckm of 33 KV new line with 232 sqmm AAAC using 13 Mtr WPB Poles.
- 1 no of 33 KV Bay.
- 1 Nos. of 4-Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division:-		**KEED (Kalahandi)**	
Name of the Work: -		***Reliability improvement by erecting 33 KV LILO Line at Utkela PSS:*** Construction of of 33kV LILO Line at Utkela PSS for Reliability Improvement	
Scope of work: -		• 0.5 Ckm of 33 KV new line with 232 sqmm AAAC using 13 Mtr WPB Poles. • 1 no of 33 KV bay. • 1 Nos. of 4-Pole.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-111)	0.16
2	B	Installation of one 33Kv Bay (Refer Annexure-162)	0.30
3	C	Installation of 4-pole (Refer Annexure-169)	0.11
		Total Amount (In Cr)	**0.57**
Total estimated cost is Rs. 0.57 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: 0.57 Cr.

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	**Kesinga**	Bhawanipatna-1	2907	94.66	**15**	**131174**	**5.4**	32kV at tail end
After Proposal	**Kesinga**	Bhawanipatna-1	3747	62.8				32.3kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	56.90	Rs. Lac
B	Load due to load growth	-	177.33	kVA
C	Total kW due to load growth	1.732*33*B*Pf	155	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	922905	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)	13.15	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	5.40	Rs. Lac
J	Net Revenue Collected	H+I	18.55	Rs. Lac
K	% revenue return	(J/A)*100	32.6	%
L	Pay Back Period	100/K	3.07	Years

Benefit to the system and consumers:

- Reliability improvement of existing 33kV Bhawanipatna-1 feeder.
- Ensuring reliable power supply to the PSS connected to Bhawanipatna-1 Feeder.
- N-1 connectivity to Utkela PSS.

Proposal for of 33 KV LILO Line at Mahichala PSS for reliability improvement:

***Proposal*:**

Construction of new 33kV LILO line at Mahichala PSS.

Requirement/ Need of the proposal:

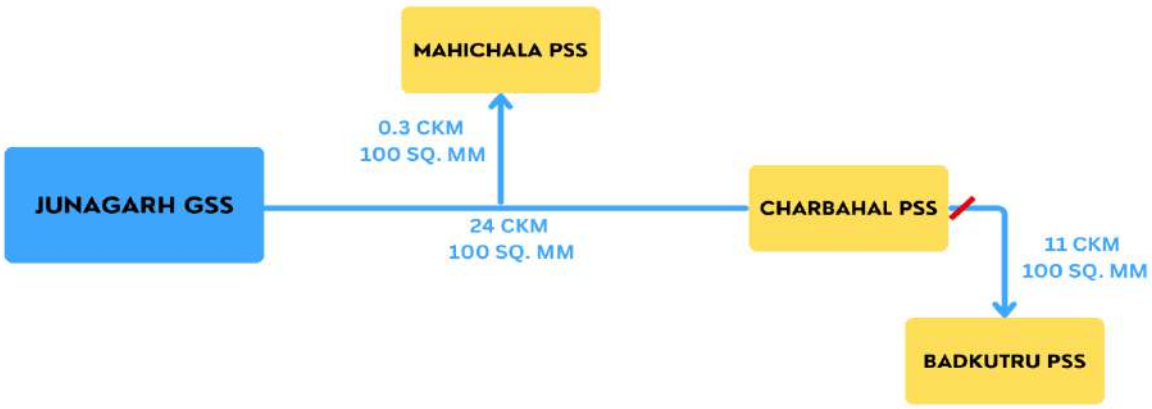
Objective: To erect a new 33 KV LILO line at Mahichala PSS reliability improvement.

Existing Scenario:

- Currently, the 33KV Charbahal feeder emenates from the 132/33KV Junagarh GSS. The total length of the feeder is with conductor size of 100 sqmm ACSR and the peak load of the feeder is 138 A. 33 KV Charbahal feeder supplies HT feeds to Mahichala PSS and Charbahal PSS.
- Charbahal PSS has a N-2 supply from Baner 220/132/33 KV Baner GSS through Badkatru PSS and whereas Mahichala PSS has no alteranate supply as the Mahichala PSS has a T-0ff of 0.4 Ckm from the 33 KV Mahichala PSS and the PSS is 17.5 Ckm away from the Junagarh 132/33 KV GSS.
- 33 KV Charbahal feeder is an old feeder and line trippings are frequent on this feeder so, this feeder interruptions impacts the HT supply for 33/11 KV Mahichala PSS as there is no alternate supply is available for this PSS.
- So, it is necessary to create a LILO line for Mahichala PSS for whichthis PSS can draw the alternate supply from 33/11 KV Charbahal PSS.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Junagarh	Charbahal	6894	42.6	505.7	30.3kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:

Load Flow Box

Overhead Line - 134921930

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	91.7	30.3	17.5	0.0	0.0	-0.0	-0.0
B	91.7	30.3	17.5	0.0	0.0	-0.0	-0.0
C	91.7	30.3	17.5	0.0	0.0	-0.0	-0.0
Length (m)	42250.7			Total:	0	-0	-0
	0.00						

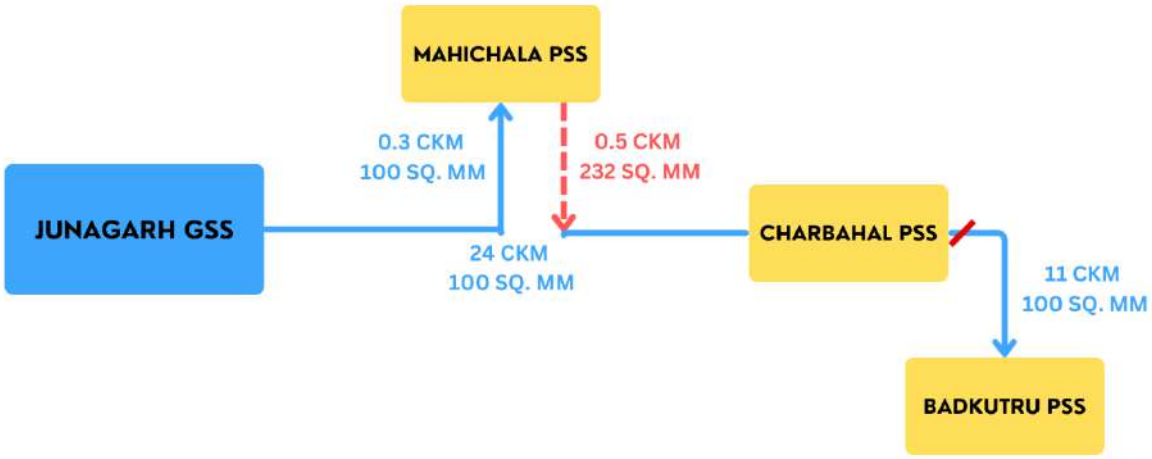
33kV Charbahal Feeder

Proposed Scenario:

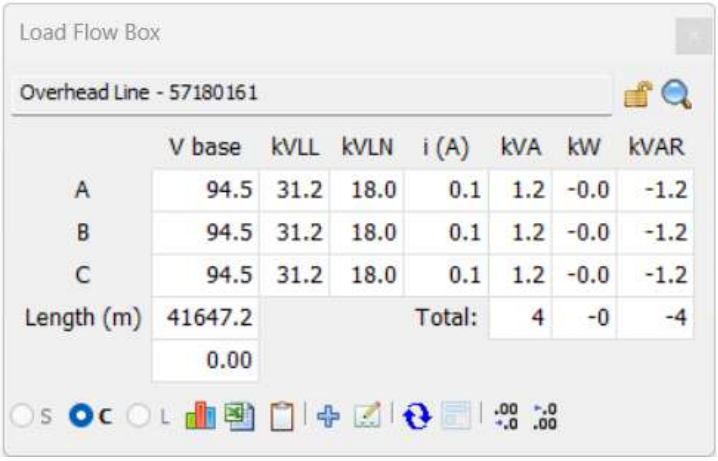
- To avoid the T-offs of Mahichala PSS and to establish alternate source/circuits for N-1 supply hereby proposed to erect a 33 KV new line of 0.5 CKm from T-off Mahichala PSS to Mahichala PSS and the proposed line will be terminated at Mahichala PSS by mounting a 33 KV 3 WAY RMU.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Junagarh	Charbahal	9850	43	339.5	Undervoltage Mitigated

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	94.5	31.2	18.0	0.1	1.2	-0.0	-1.2
B	94.5	31.2	18.0	0.1	1.2	-0.0	-1.2
C	94.5	31.2	18.0	0.1	1.2	-0.0	-1.2
Length (m)	41647.2			Total:	4	-0	-4
	0.00						

33kV Charbahal Feeder

Detailed Scope of Work:

- 0.5 Ckm of 33 KV new line with 232 sqmm AAAC using 13 Mtr WPB Poles.
- 1 no of 33 KV Bay.
- 1 Nos. of 4-Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE-15			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division:-		**KEED (Kalahandi)**	
Name of the Work: -		***Reliability improvement by erecting 33 KV LILO Line at Mahichala:*** Construction of of 33kV LILO Line at Mahichala PSS for Reliability Improvement	
Scope of work: -		• 0.5 Ckm of 33 KV new line with 232 sqmm AAAC using 13 Mtr WPB Poles. • 1 no of 33 KV bay. • 1 Nos. of 4-Pole	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	New 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-111)	0.16
2	B	Installation of one 33Kv Bay (Refer Annexure-162)	0.30
3	C	Installation of 4-pole (Refer Annexure-169)	0.11
		Total Amount (In Cr)	**0.57**
Total estimated cost is Rs. 0.57 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: 0.57 Cr.

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	**Junagarh**	Charbahal	6894	505.7	**78**	**684279**	**28.1**	30.3kV at tail end
After Proposal	**Junagarh**	Charbahal	9850	339.5				31.2kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	56.90	Rs. Lac
B	Load due to load growth	-	420.53	kVA
C	Total kW due to load growth	1.732*33*B*Pf	368	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2188684	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)	31.19	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	28.10	Rs. Lac
J	Net Revenue Collected	H+I	59.29	Rs. Lac
K	% revenue return	(J/A)*100	104.2	%
L	Pay Back Period	100/K	0.96	Years

Benefit to the system and consumers:

- Undervoltage mitigation of existing 33kV Charbahal feeder.
- Ensuring reliable power supply to the PSS connected to Charbahal Feeder.
- N-1 connectivity to Mahichala PSS.

Mitigation of 33kV Feeder Overloading Issue

Proposal for overloading mitigation and Reliability improvement of 33kV Kuarmunda Industrial Feeder:

Proposal:

Construction of 33kV UG line for Kuarmunda Industrial feeder for overload Mitigation

- Proposal for New line for railways crossing near TISCO Hokey stadium (from- 22.2461477,84.8022504 to 22.245803,84.801884)
- Proposal for New line for Overbridge crossing Sai Valley World School rourkela (from- 22.2496175,84.7962178 to 22.2490838,84.7960434)

Requirement/ Need of the proposal:

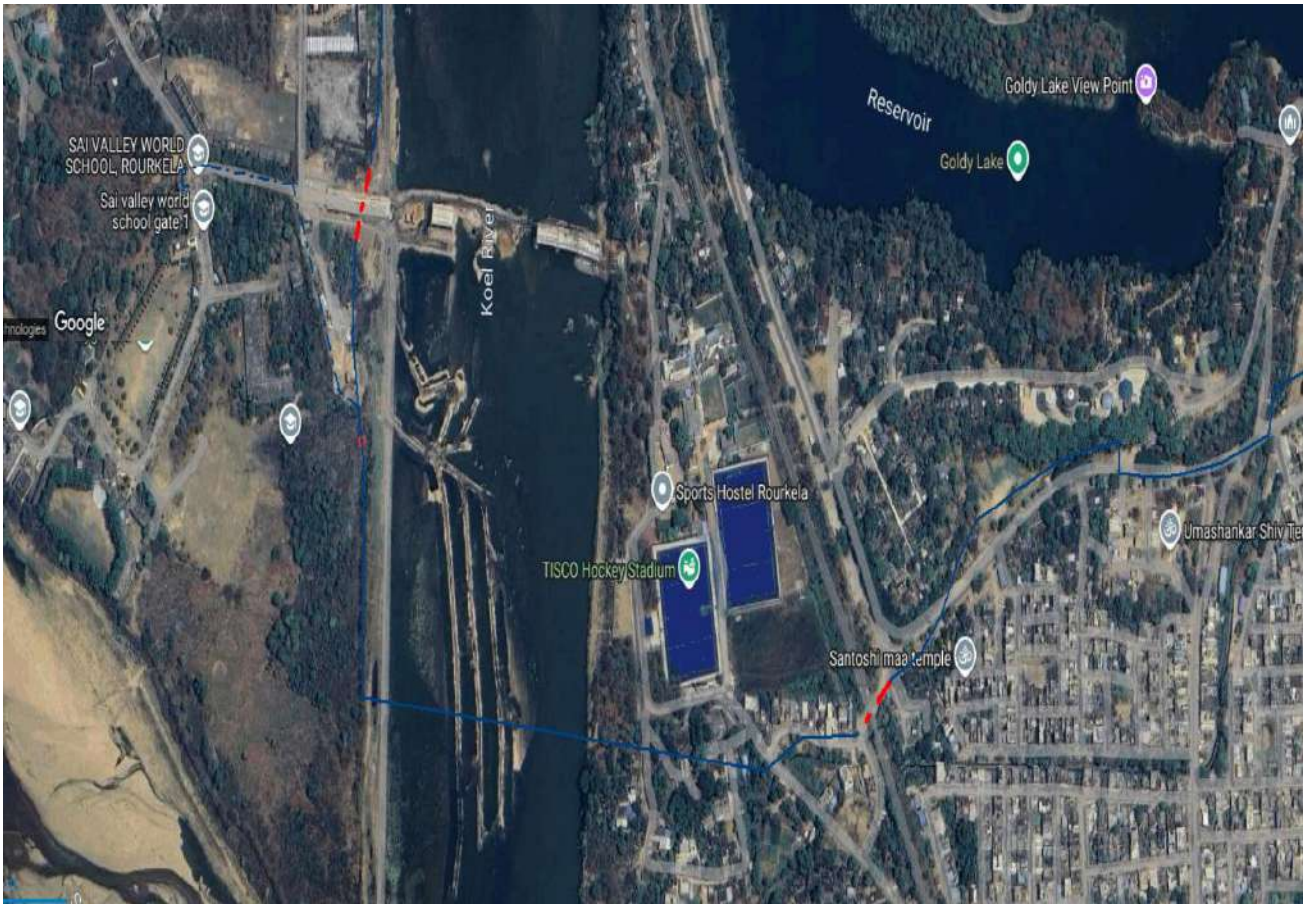
Objective: 33kV New Line for near Railways & Overbridge crossing of 33 kV Kuarmunda Industrial (High revenue) Feeder to mitigate overloading and improve reliablity.

Existing Scenario:

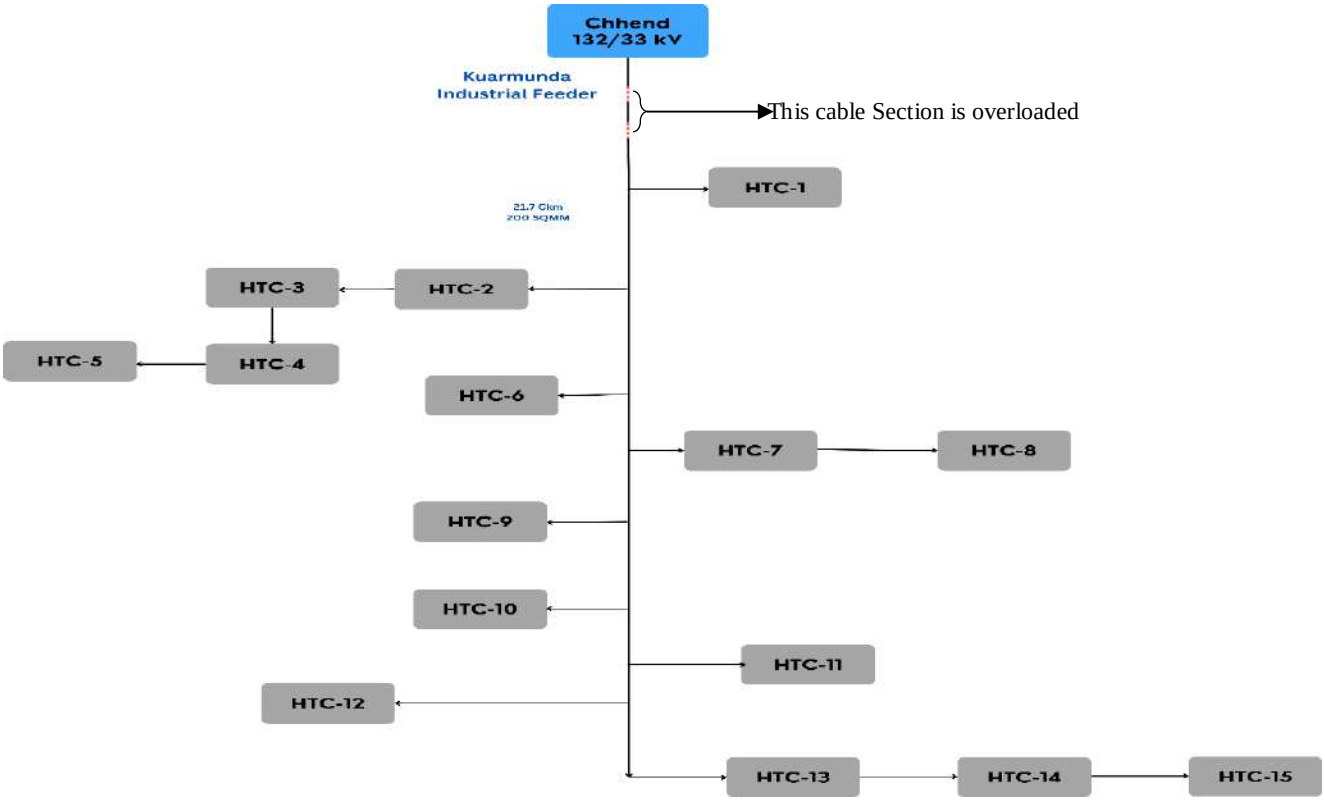
- At present, 33kV Kuarmunda Industrial feeder is emanating from Chhend GSS. The total length of this feeder is 21.72 KM and the peak load is 442.2 AMP.
- The conductor size of 33kV Kuarmunda Industrial feeder emanating from Chhend GSS is 200sq.mm ACSR.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- At present the part of feeder section is overloaded is loaded up to 147.9%.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new line for with 400Sqmm XLPE at Railway & bridge crossing of this feeder is proposed for improving reliability.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Kuarmunda industrial	21977	21.72	1181	2 Cable part is getting overloaded

GIS Map:

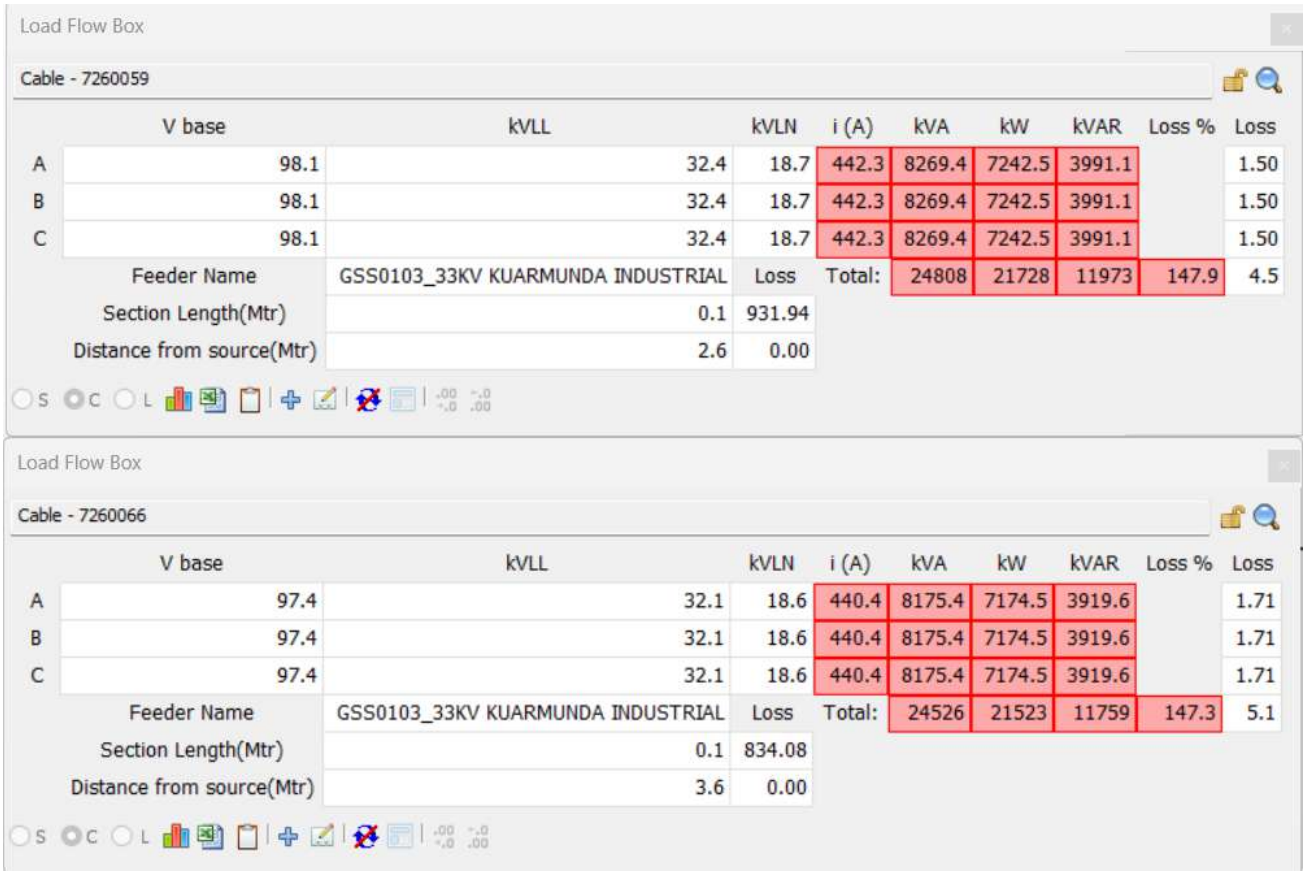


Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Part-1 & Part-2



Load Flow Box

Cable - 7260059

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	98.1	32.4	18.7	442.3	8269.4	7242.5	3991.1		1.50
B	98.1	32.4	18.7	442.3	8269.4	7242.5	3991.1		1.50
C	98.1	32.4	18.7	442.3	8269.4	7242.5	3991.1		1.50
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	24808	21728	11973	147.9	4.5
	Section Length(Mtr)	0.1	931.94						
	Distance from source(Mtr)	2.6	0.00						

Load Flow Box

Cable - 7260066

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	97.4	32.1	18.6	440.4	8175.4	7174.5	3919.6		1.71
B	97.4	32.1	18.6	440.4	8175.4	7174.5	3919.6		1.71
C	97.4	32.1	18.6	440.4	8175.4	7174.5	3919.6		1.71
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	24526	21523	11759	147.3	5.1
	Section Length(Mtr)	0.1	834.08						
	Distance from source(Mtr)	3.6	0.00						

Proposed Scenario:

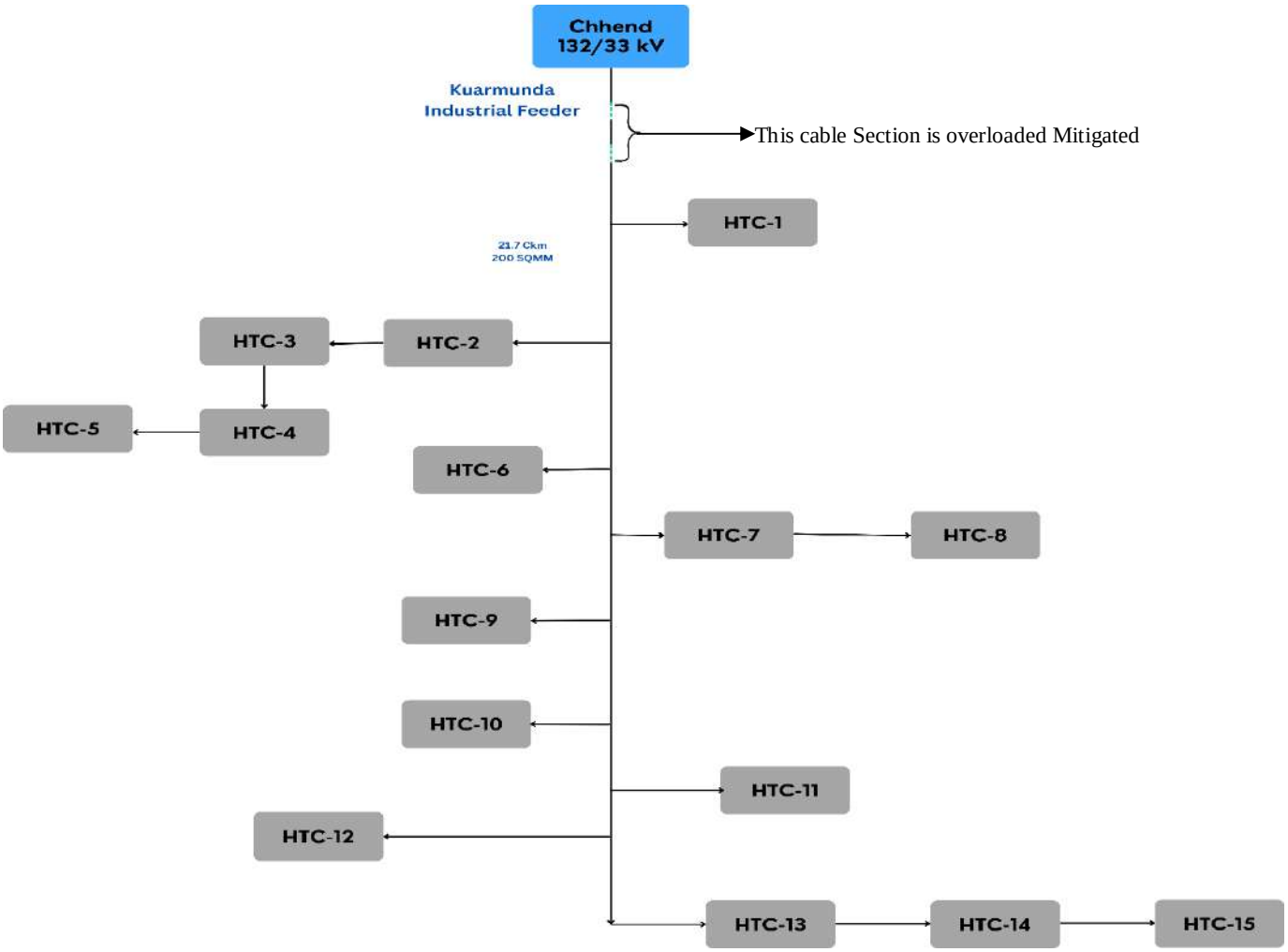
- Double Run of 400 Sqmm XLPE is proposed for Railways and Bridge crossings.
- The length of Part-1 Cable is 0.15 KM (railways crossing near TISCO Hokey stadium) and Part-2 cable is 0.17 KM (Bridge crossing near Sai Valley World School Rourkela)

Proposed Loading at 33 kV Kuarmunda Industrial Feeder:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Kuarmunda Industrial	21970	22.22	1174	2 Cable section overloading Mitigated

- Overloading of 33kV Kuarmunda industrial will be mitigated after laying of new line at railways crossing near TISCO Hokey stadium and Bridge crossing near Sai Valley World School Rourkela.

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

Part-1

Load Flow Box

Cable - 7260059

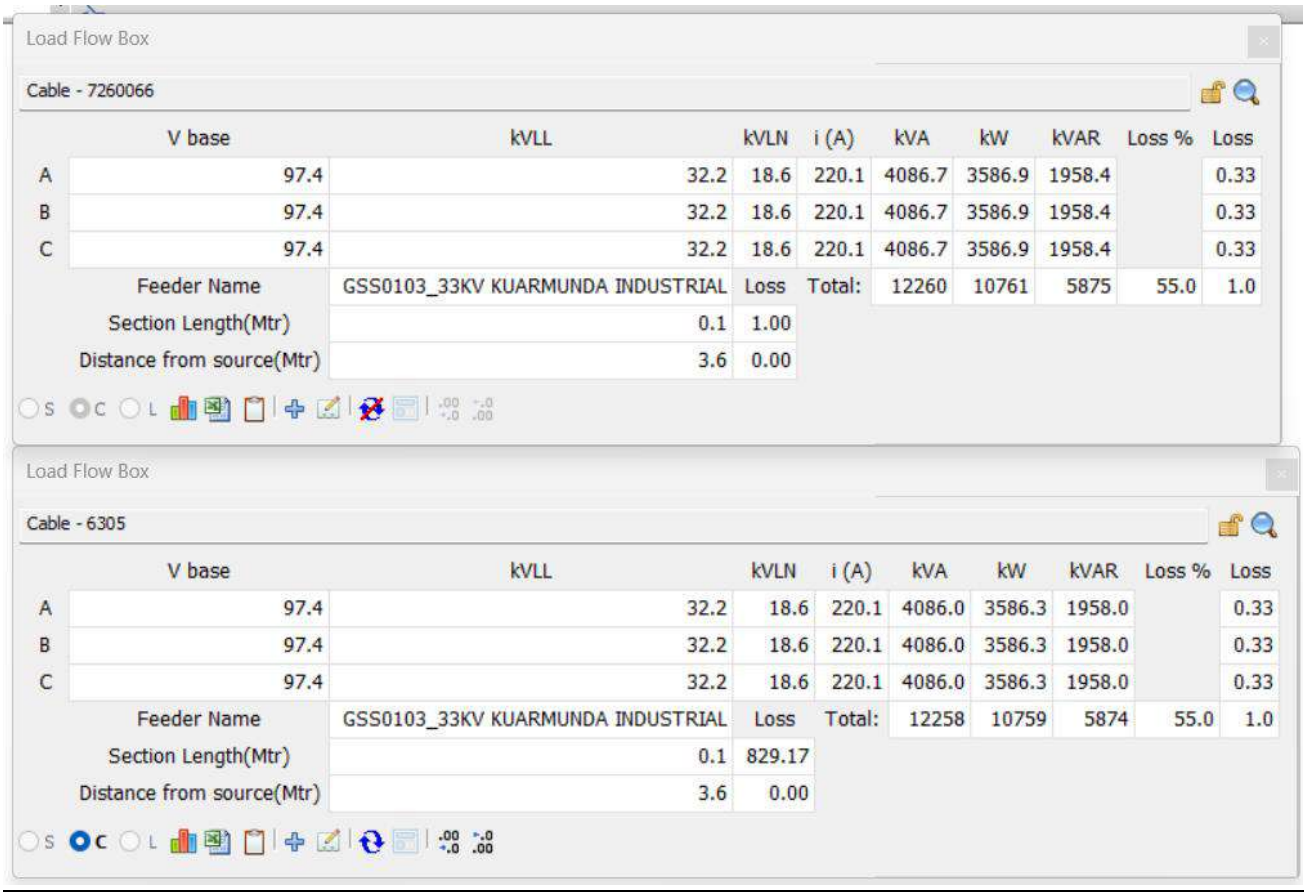
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	98.1	32.4	18.7	221.0	4132.3	3620.1	1992.7		0.29
B	98.1	32.4	18.7	221.0	4132.3	3620.1	1992.7		0.29
C	98.1	32.4	18.7	221.0	4132.3	3620.1	1992.7		0.29
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	12397	10860	5978	55.2	0.9
	Section Length(Mtr)	0.1	0.88						
	Distance from source(Mtr)	2.6	0.00						

Load Flow Box

Cable - 6304

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	98.1	32.4	18.7	221.0	4132.4	3620.2	1992.7		0.29
B	98.1	32.4	18.7	221.0	4132.4	3620.2	1992.7		0.29
C	98.1	32.4	18.7	221.0	4132.4	3620.2	1992.7		0.29
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	12397	10861	5978	55.3	0.9
	Section Length(Mtr)	0.1	924.31						
	Distance from source(Mtr)	2.6	0.00						

Part-2



Load Flow Box

Cable - 7260066

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	97.4	32.2	18.6	220.1	4086.7	3586.9	1958.4		0.33
B	97.4	32.2	18.6	220.1	4086.7	3586.9	1958.4		0.33
C	97.4	32.2	18.6	220.1	4086.7	3586.9	1958.4		0.33
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	12260	10761	5875	55.0	1.0
	Section Length(Mtr)	0.1	1.00						
	Distance from source(Mtr)	3.6	0.00						

Load Flow Box

Cable - 6305

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	97.4	32.2	18.6	220.1	4086.0	3586.3	1958.0		0.33
B	97.4	32.2	18.6	220.1	4086.0	3586.3	1958.0		0.33
C	97.4	32.2	18.6	220.1	4086.0	3586.3	1958.0		0.33
	Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	12258	10759	5874	55.0	1.0
	Section Length(Mtr)	0.1	829.17						
	Distance from source(Mtr)	3.6	0.00						

Scope of Work:

- New line at railways & Bridge crossing of 33kV Kuarmunda industrial feeder.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RED-Rajgangpur**	
Name of the Work :-	Proposal for New line to mitigate the overloading of cable section of 33kVKuarmunda industrial feeder (railways crossing near TISCO Hockey stadium) and Bridge crossing near Sai Valley World School Rourkela)	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	PART A: UG 400sqmm XLPE Cable for Railways crossing near TISCO Hockey stadium-0.3KM (Refer Annexure-162)	0.27
2	PART-B: UG 400sqmm XLPE Cable for Bridge crossing near Sai Valley World School Rourkela - 0.35KM (Refer Annexure-162)	0.31
	Total Amount (In Cr.)	**0.58**
Total estimated cost is Rs.0.58 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.58 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	Chhend	Kuarmunda Industrial	21977	1181	3.35	29355.64	1.21	Cable Section of 150 Meter got Overloaded near TISCO Hockey stadium Railways crossing
After Proposal	Chhend	Kuarmunda Industrial	21970	1174				Overloading Mitigated

Revenue Return Sheet				
Sr. No.	Description	Formula	Value	UoM
A	Total cost of scheme	-	58.27	Rs. Lac
B	Load due to load growth	-	2295.65	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2009	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	11947815	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	170.26	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	1.21	Rs. Lac
J	Net Revenue Collected	H+I	171.47	Rs. Lac
K	% revenue return	(J/A)*100	294.3	%
L	Pay Back Period	100/K	0.34	Years

Benefit to the system and consumers:

- Overloading mitigation of existing 33KV Kuarmunda Industrial feeder.
- Reliability will be improved for commercial consumers by strengthening the line of 33kV Kuarmunda Industrial feeder.
- As providing double run cable at railways and bridge crossing, 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

Scheme Name: 33kV New Line(LILO) from Gobira Padha Ghar to Gobira (ODSSP-IV) PSS

Proposal

33kV LILO arrangement from Gobira(ODSSP-IV) PSS to Gobira Padha to mitigate low voltage issue and improve the N-1 reliability of 33kV Kuarmunda industrial area.

Background

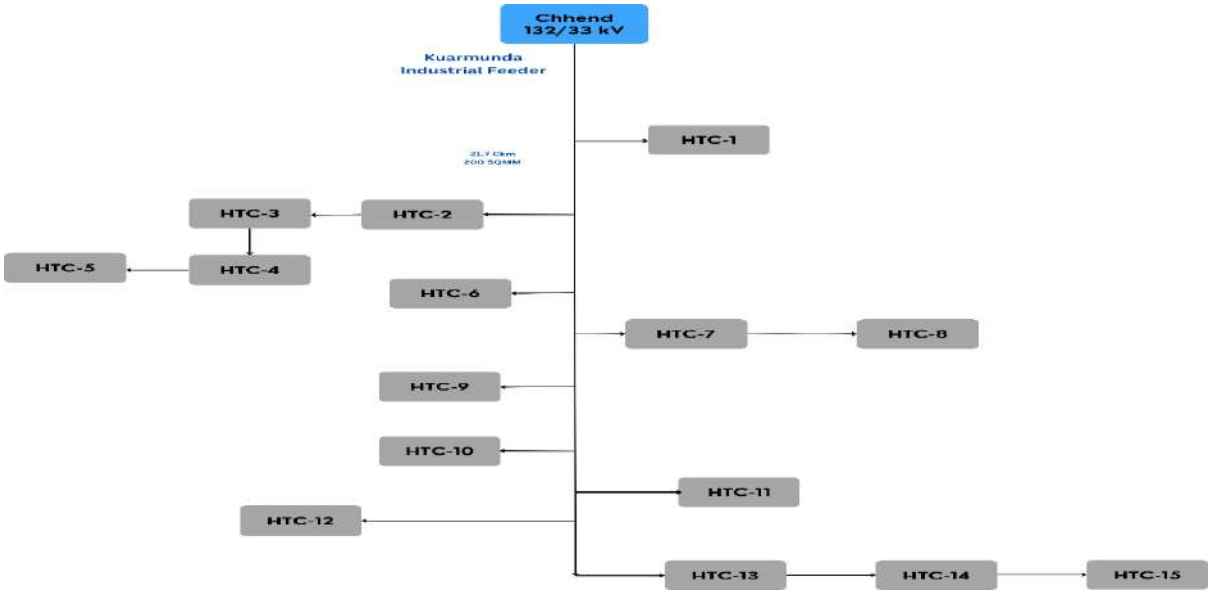
- 33kV Kuarmunda Industrial feeder emanates from Chhend GSS.Peak Loading of Kuarmunda industrial feeder is 442 Amp , conductor size is 200 ACSR and circuit length is approx. 21.72 Ckm.
- This feeder is feeds 15 Nos of 33kV consumer and this feeder is also in the category of High revenue.

Existing Condition					
Name of the GSS	33kV feeder Name	Feeder Peak Summer'25 (KW)	Feeder Length (CKM)	Loss (KW)	Remarks
Chhend	Kuarmunda Industrial	21977	21.72	1181	29.8kV Tail end
Kuarmunda	Gobira	3544	5.1	44	32.7 at Gobira PSS
			Total Loss	**1225**	

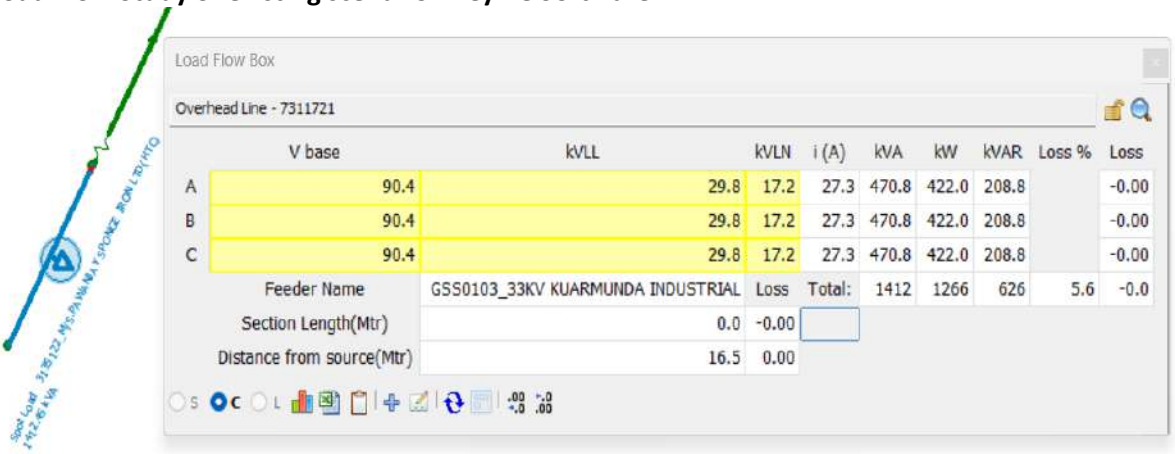
- ***Requirement/ Need of the Proposal***

The 33kV Kuarmunda industrial feeder, currently operating with a peak load of 442 Amps, is experiencing low voltage at the tail end at 29.8kV at M/s Pawanjay Sponge Iron Ltd (HT consumer). This feeder lacks an N-1 supply arrangement, meaning that in the event of a fault, all connected 33kV HT consumers would be affected due to the absence of a backfeeding source.
Following the implementation of a new LILO (Line-In Line-Out) arrangement, the voltage at M/s Pawanjay Sponge Iron Ltd improved to 31.8kV. This clearly indicates the need for an N-1 supply to mitigate low voltage issues, enhance reliability, and improve overall power quality for the HRF feeder.

Existing SLD:-



Load Flow Study of existing scenario in Cyme Software:

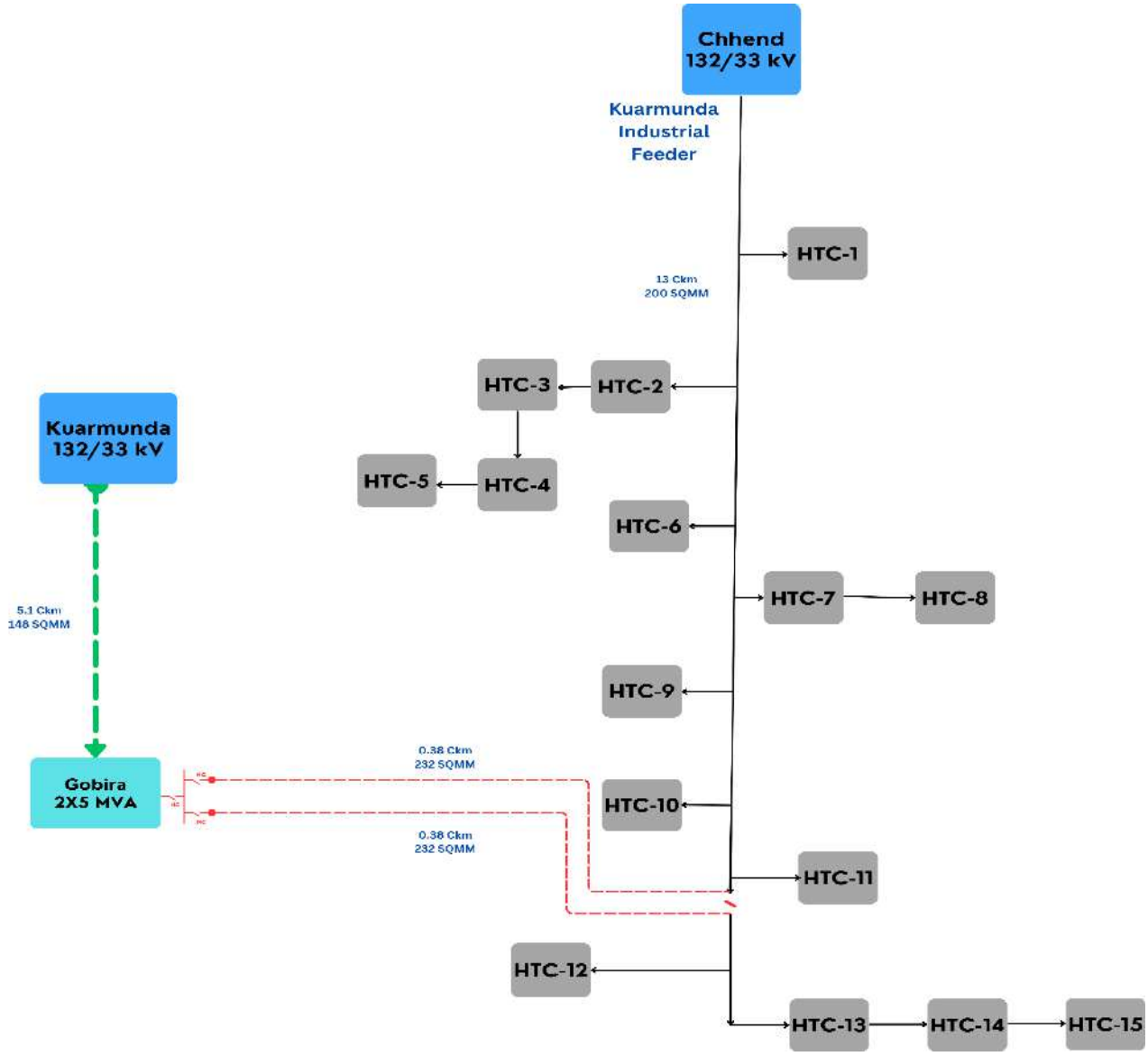


Load Flow Box

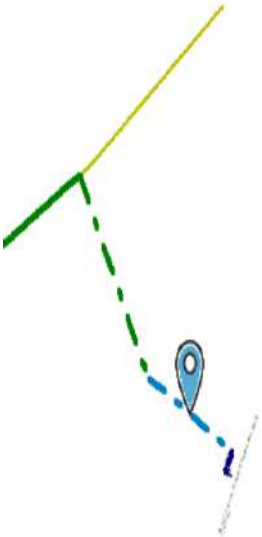
Overhead Line - 7311721

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	90.4	29.8	17.2	27.3	470.8	422.0	208.8		-0.00
B	90.4	29.8	17.2	27.3	470.8	422.0	208.8		-0.00
C	90.4	29.8	17.2	27.3	470.8	422.0	208.8		-0.00
Feeder Name	GSS0103_33KV KUARMUNDA INDUSTRIAL	Loss	Total:	1412	1266	626	5.6	-0.0	
Section Length(Mtr)	0.0	-0.00							
Distance from source(Mtr)	16.5	0.00							

Proposed SLD



Load Flow Study of proposed scenario in Cyme Software:



Load Flow Box

Cable - 7260204

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	96.3	31.8	18.4	25.6	470.7	422.0	208.6		0.00
B	96.3	31.8	18.4	25.6	470.7	422.0	208.6		0.00
C	96.3	31.8	18.4	25.6	470.7	422.0	208.6		0.00
Feeder Name		GSS4803_33KV GOBIRA	Loss	Total:	1412	1266	626	7.3	0.0
Section Length(Mtr)		0.0	0.00						
Distance from source(Mtr)		8.2	0.00						

Construction of 33 kV New Line
Annexure: 38.17

Proposed Condition					
Name of the GSS	33kV feeder Name	Feeder Peak Summer'26 (KW)	Feeder Length (CKM)	Loss (KW)	Remarks
Chhend	Kuarmunda Industrial	11918	18.15	302	31.6 kV Tail end
Kuarmunda	Gobira	13027	9.55	364	31.8 kV at Tail end
Existing Total Loss(kW)	**1225**		**Proposed Total Loss (kW)**	**667**	**Loss Saving-558 kW**

- ***Scope of Work***

Part A-33kV LILO arrangement from Gobira Padha Ghar to Gobira (ODSSP-IV) PSS-0.76 Ckm
Part B-4-way RMU at Gobira (ODSSP-IV)-1 Nos
Part C-4 pole with 2 nos of isolator-1 nos

- ***Proposed Cost with Estimate Break-up***

Sl. No.	Part	Description	Amount (Cr.)
1	A	33kV New Line with 232Sqmm AAAC conductor-0.76Ckm (Refer Annexure-111)	0.2415
2	B	4-way RMU at Gobira (ODSSP-IV) (Refer Annexure-99)	0.5656
3	C	4-pole with 2 nos of isolator (Refer Annexure-169)	0.1141
		Total Amount (In Cr)	**0.92**
Total estimated cost is Rs. 0.92 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 0.92 Cr.

- ***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	**Chhend**	Kuarmunda Industrial	21977	1181	**262**	**2298139**	**94.3**	29.8kV at M/s Pawanjay Sponge Iron Ltd (HT consumer) tail end
	Kuarmunda	Gobira	3544	44				32.7 kV-At Gobira PSS
After Proposal	**Chhend**	Kuarmunda Industrial	11917	302				Load Shifting of Kuarmunda Industrial feeder by establishing Link line for voltage improvement.31.6kV at Tail end

	Kuarmunda	Gobira	13365	364				31.8 kV-At M/s Pawanjay Sponge Iron Ltd (HT consumer) tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	92.12	Rs. Lac
B	Load due to load growth	-	239.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	209	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1243884	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	17.73	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	94.30	Rs. Lac
J	Net Revenue Collected	H+I	112.03	Rs. Lac
K	% revenue return	(J/A)*100	121.6	%
L	Pay Back Period	100/K	0.82	Years

- ***Benefit to the System and Consumers***

  - Undervoltage mitigation of 33kV Kuarmunda Industrial feeder.
  - Strengthening of 33kV Kuarmunda industrial feeder to improve reliability of the network.
  - Improved N-1 connectivity with 33kV Kuarmunda feeder (Chhend GSS) and HT Consumers.
  - Ensuring reliable power supply of the Urban Area.

N-1 reliability of 33kV Feeder

Proposal for N-1 Reliability improvement between 33kV Pilot project feeder and 33kV Lathikata feeder:

Proposal:

33kV New link line between 33kV Pilot project feeder and 33kV Lathikata feeder to improvement of reliability of Lathikata feeder

Requirement/ Need of the proposal:

Objective: Though 33kV Lathikata and Bonai Industrial feeder are N-1 to each other but they receive supply from same GSS(Rourkela GSS). Therefore, in case of failure of GSS supply is affected. Therefore, supply can be extended through link line connectivity from Basanti feeder (Chhend GSS)

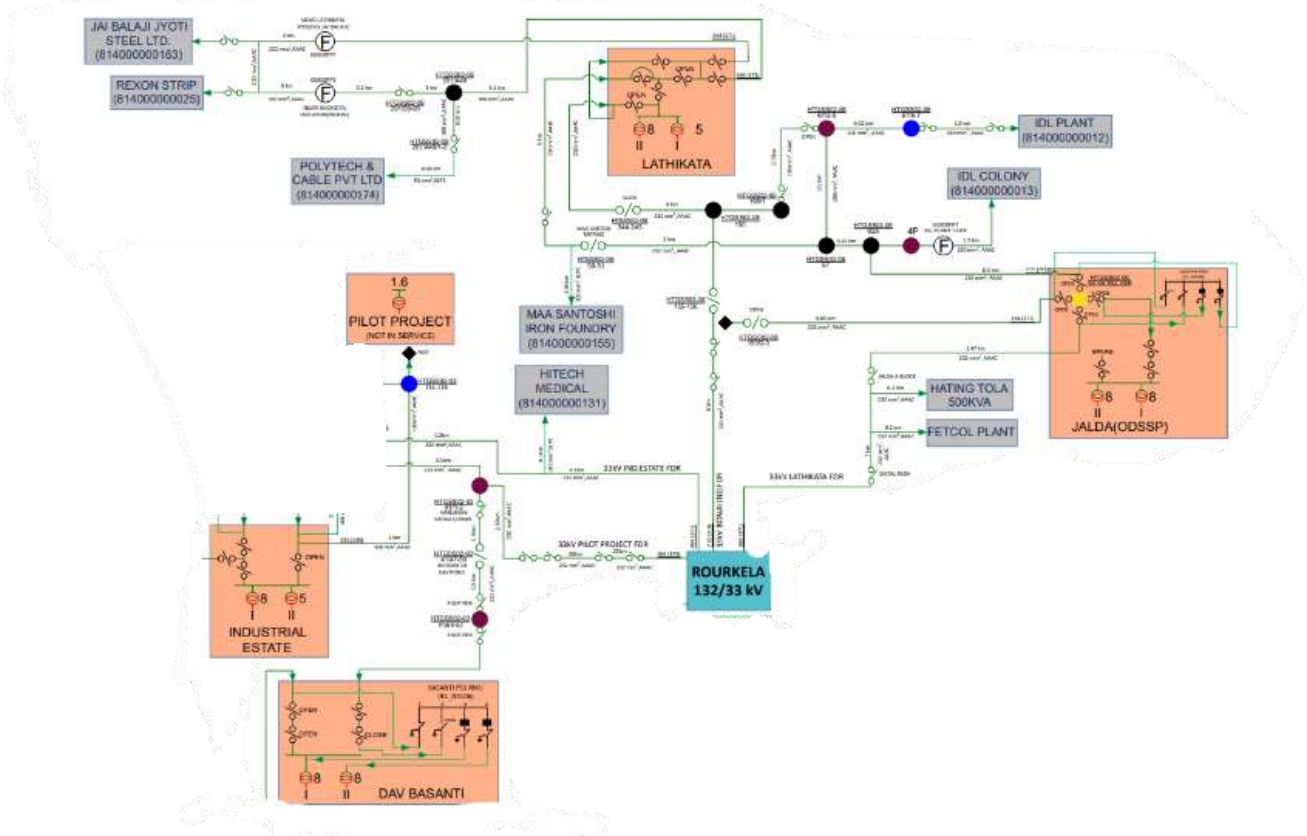
Existing Scenario:

- Though 33kV Lathikata and Bonai Industrial feeder are N-1 to each other but they receive supply from same GSS(Rourkela GSS). In case of Rourkela got faulty then there is complete black out in the Lathikata Area
- The 33kV Lathikata feeder length is 16 KM and the peak load is 224 AMP.
- The 33kV Pilot project feeder length is 7.25 KM and the peak load is 88.4 AMP.
- The conductor size of 33kV Lathikata feeder emanating from Rourkela GSS is 232sq.mm AAAC.
- The conductor size of 33kV Pilot project feeder emanating from Chhend GSS is 232sq.mm AAAC.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector between 33kV IDC Industrial feeder and 33kV Kalunga feeder is proposed for improving reliability.

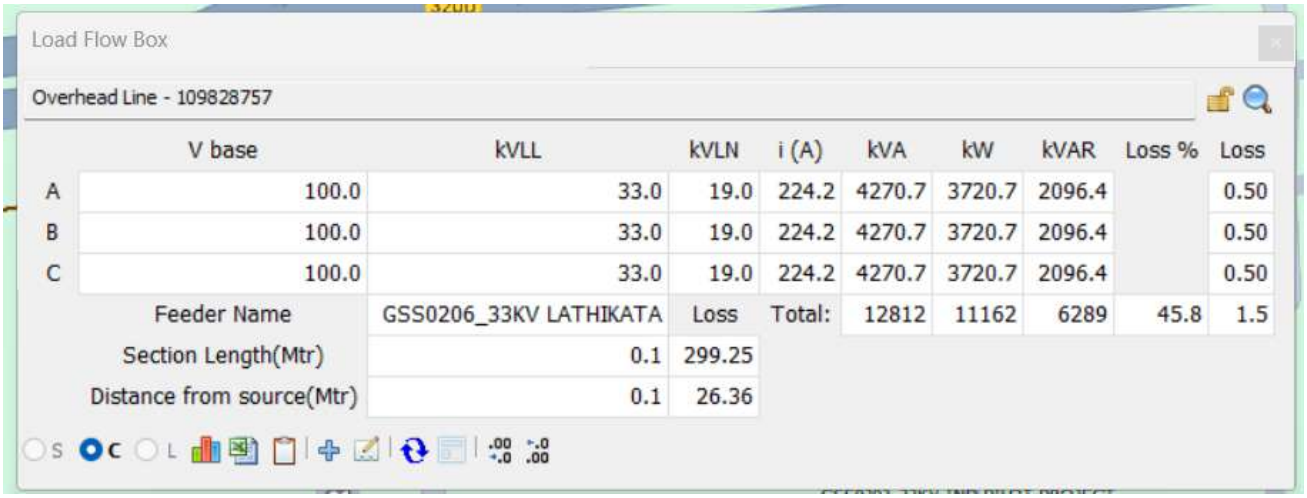
Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Lathikata	11162	16	299	
Chhend	Pilot Project	4412	7.25	37.15	

GIS Map:

Existing SLD:



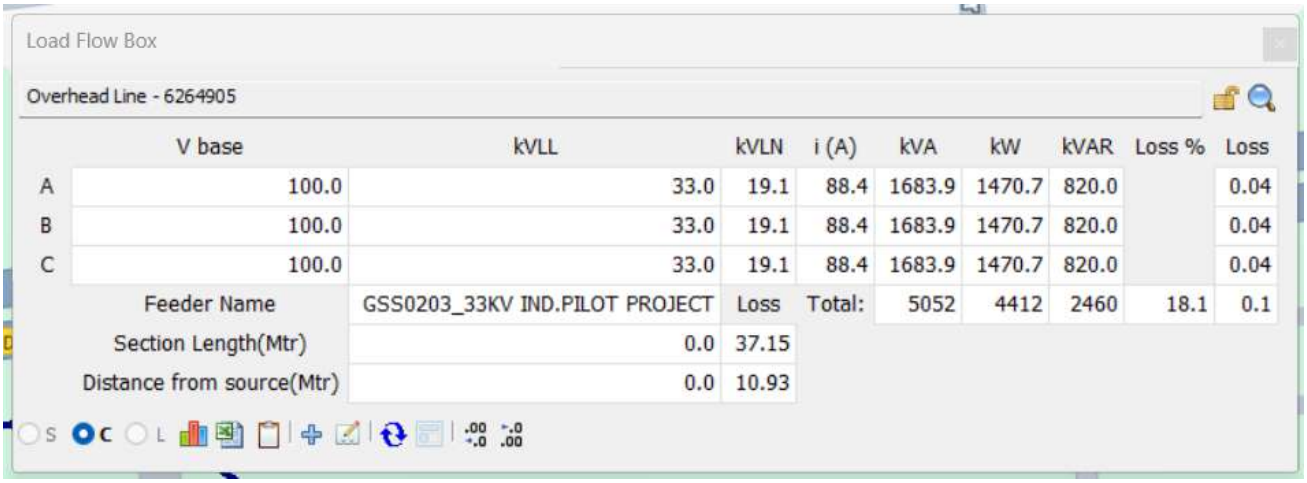
Load Flow Study of existing scenario in Cyme Software



Load Flow Box

Overhead Line - 109828757

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	224.2	4270.7	3720.7	2096.4		0.50
B	100.0	33.0	19.0	224.2	4270.7	3720.7	2096.4		0.50
C	100.0	33.0	19.0	224.2	4270.7	3720.7	2096.4		0.50
Feeder Name		GSS0206_33KV LATHIKATA	Loss	Total:	12812	11162	6289	45.8	1.5
Section Length(Mtr)		0.1	299.25						
Distance from source(Mtr)		0.1	26.36						



Load Flow Box

Overhead Line - 6264905

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	88.4	1683.9	1470.7	820.0		0.04
B	100.0	33.0	19.1	88.4	1683.9	1470.7	820.0		0.04
C	100.0	33.0	19.1	88.4	1683.9	1470.7	820.0		0.04
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:	5052	4412	2460	18.1	0.1
Section Length(Mtr)		0.0	37.15						
Distance from source(Mtr)		0.0	10.93						

Proposed Scenario:

- 33kV interconnector between Pilot project feeder to Lathikata feeder at Near by Maa Vaishno Devi Mandir-

Proposed Loading after 1 Yrs Load Growth:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Lathikata	12136	16	353.24	
Chhend	Pilot Project	4817	7.25	42.38	

Load Flow Box

Source - 4502237

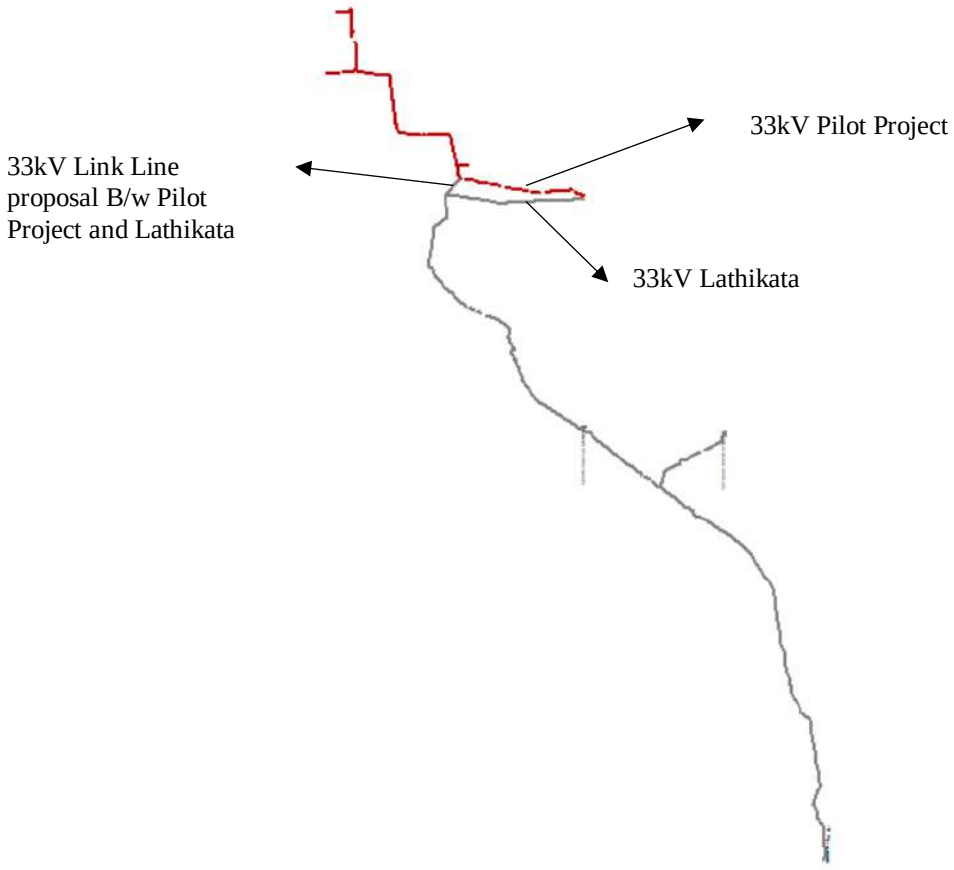
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	96.7	1843.2	1605.8	904.9		0.00
B	100.0	33.0	19.1	96.7	1843.2	1605.8	904.9		0.00
C	100.0	33.0	19.1	96.7	1843.2	1605.8	904.9		0.00
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:	5529	4817	2715	86.4	0.0
Section Length(Mtr)		0.0	42.38						
Distance from source(Mtr)		0.0	10.92						

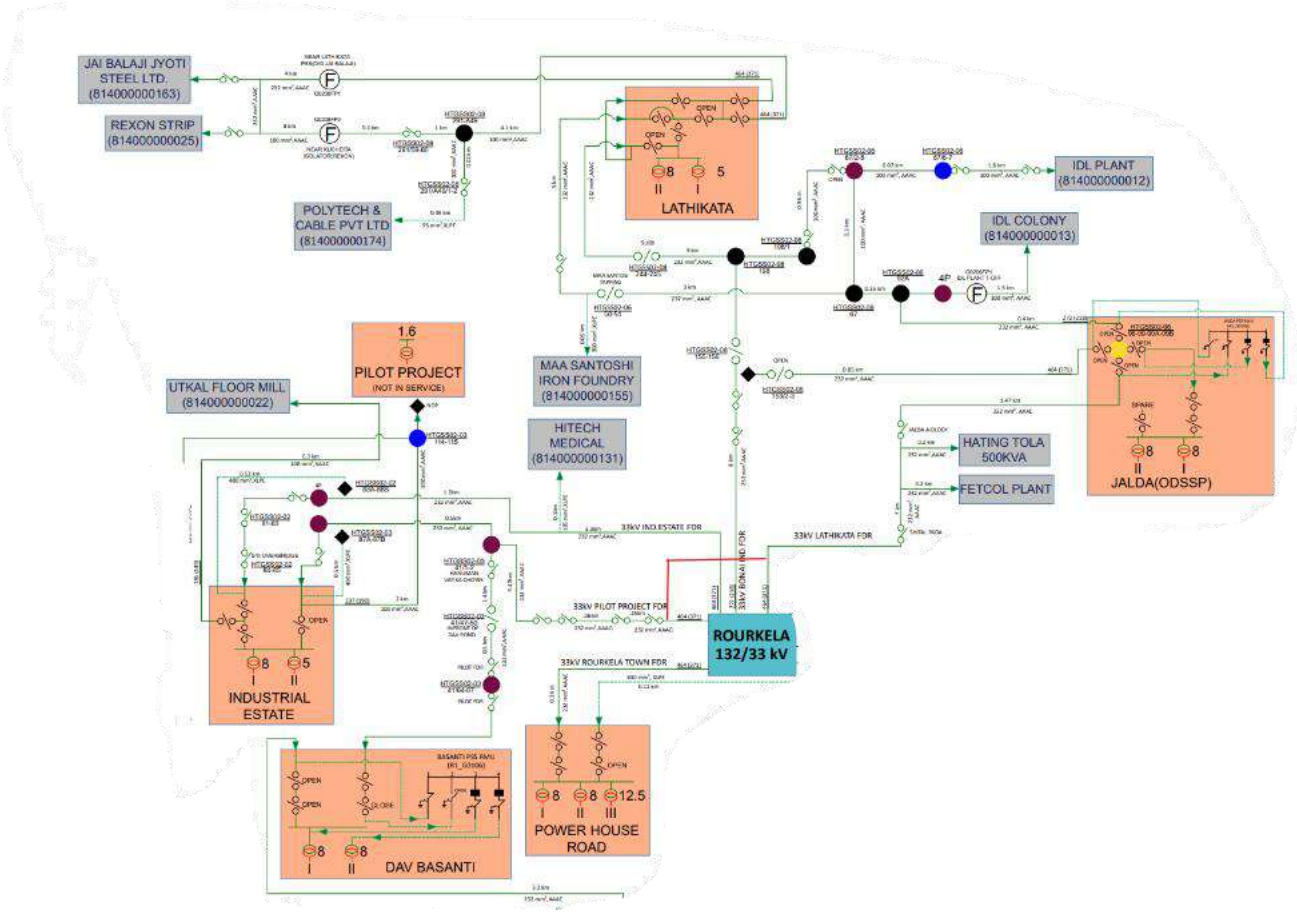
Load Flow Box

Overhead Line - 109828756

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	245.1	4668.9	4054.3	2315.4		0.18
B	100.0	33.0	19.1	245.1	4668.9	4054.3	2315.4		0.18
C	100.0	33.0	19.1	245.1	4668.9	4054.3	2315.4		0.18
Feeder Name		GSS0206_33KV LATHIKATA	Loss	Total:	14007	12163	6946	50.1	0.6
Section Length(Mtr)		0.0	353.24						
Distance from source(Mtr)		0.0	26.18						

Proposed SLD:





Proposed Loading after 1 Yrs Load Growth with Proposal

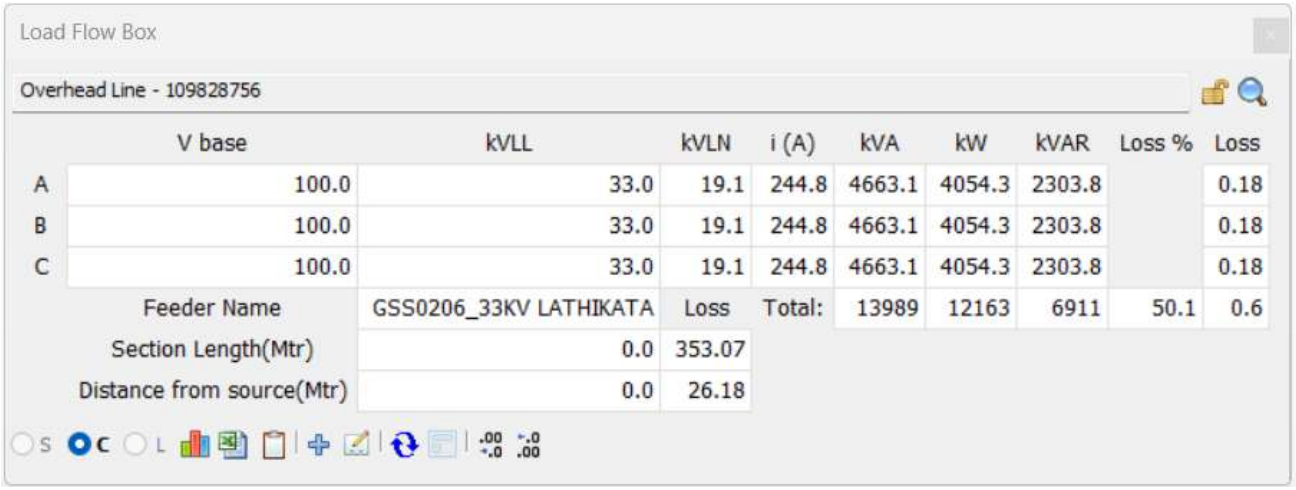
Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Lathikata	12136	16	353.24	
Chhend	Pilot Project	4817	7.25	42.38	

Load Flow Study after proposal scenario in Cyme Software:

Load Flow Box

Overhead Line - 3321211

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	96.7	1843.1	1605.7	904.8		0.08
B	100.0	33.0	19.0	96.7	1843.1	1605.7	904.8		0.08
C	100.0	33.0	19.0	96.7	1843.1	1605.7	904.8		0.08
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:	5529	4817	2714	19.8	0.2
Section Length(Mtr)		0.0	42.16						
Distance from source(Mtr)		0.1	10.92						



Load Flow Box

Overhead Line - 109828756

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	244.8	4663.1	4054.3	2303.8		0.18
B	100.0	33.0	19.1	244.8	4663.1	4054.3	2303.8		0.18
C	100.0	33.0	19.1	244.8	4663.1	4054.3	2303.8		0.18
	Feeder Name	GSS0206_33KV LATHIKATA	Loss	Total:	13989	12163	6911	50.1	0.6
	Section Length(Mtr)	0.0	353.07						
	Distance from source(Mtr)	0.0	26.18						

Scope of Work:

- 400Sqmm XLPE Cable -0.375KM new interconnector line between 33kV Pilot Project feeder to 33kV Lathikata feeder.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Work :-	33kV interconnector between Pilot project feeder to Lathikata feeder at Near by Maa Vaishno Devi Mandir-	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	400Sqmm XLPE Cable-0.75 KM (Refer Annexure-167)	1.80
	Total Amount (In Cr.)	**1.80**
Total estimated cost is Rs.1.80 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.80 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

- Rourkela GSS acts as a critical node; any fault here leads to complete blackout of both feeders.
- No alternate source or interconnection exists to maintain supply continuity.
- Lathikata & Bonai Industrial feeder supplies key industrial loads—any outage leads to production loss, revenue impact, and customer dissatisfaction.
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.
- Planned maintenance at Rourkela GSS becomes difficult due to lack of alternate supply.

- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching.

Benefit to the system and consumers:

- Reliability improvement of 33kV Lathikata feeder through new inter connector line from Pilot project feeder.
- Reliability will be improved for commercial consumers by strengthening the interconnector line feeder between Lathikata feeder and pilot project feeder.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

N-1 reliability of 33kV Feeder

1.0 Proposal for Reliability improvement of 33/11kV PANPOSH PSS:

Proposal:

33kV New link line to Panposh PSS from District agricultural office for reliability improvement.

Requirement/ Need of the proposal:

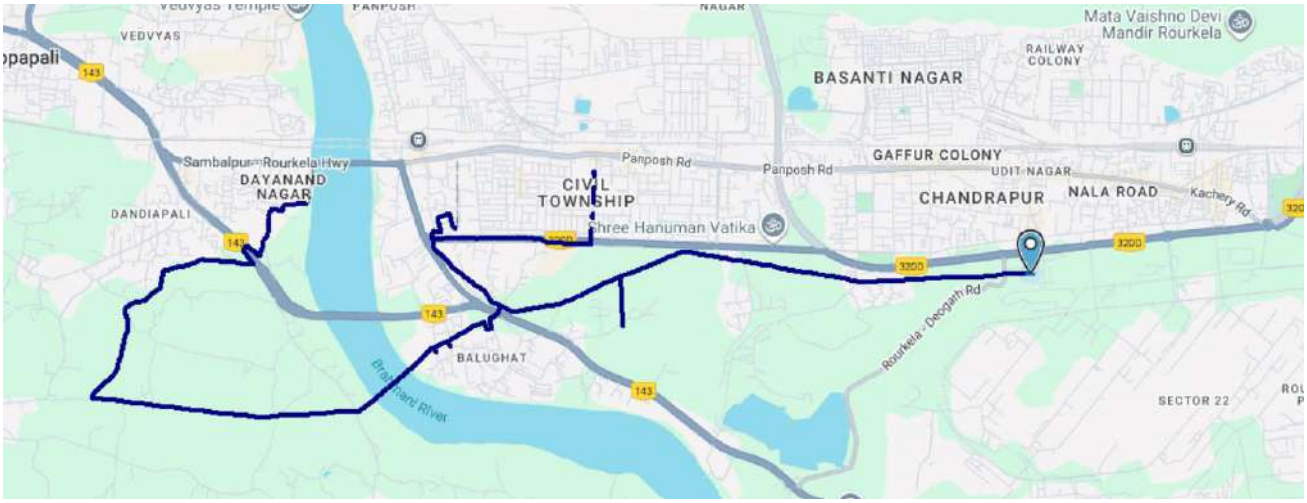
Objective: To improve the reliability of Panposh PSS from District agriculture office

Existing Scenario:

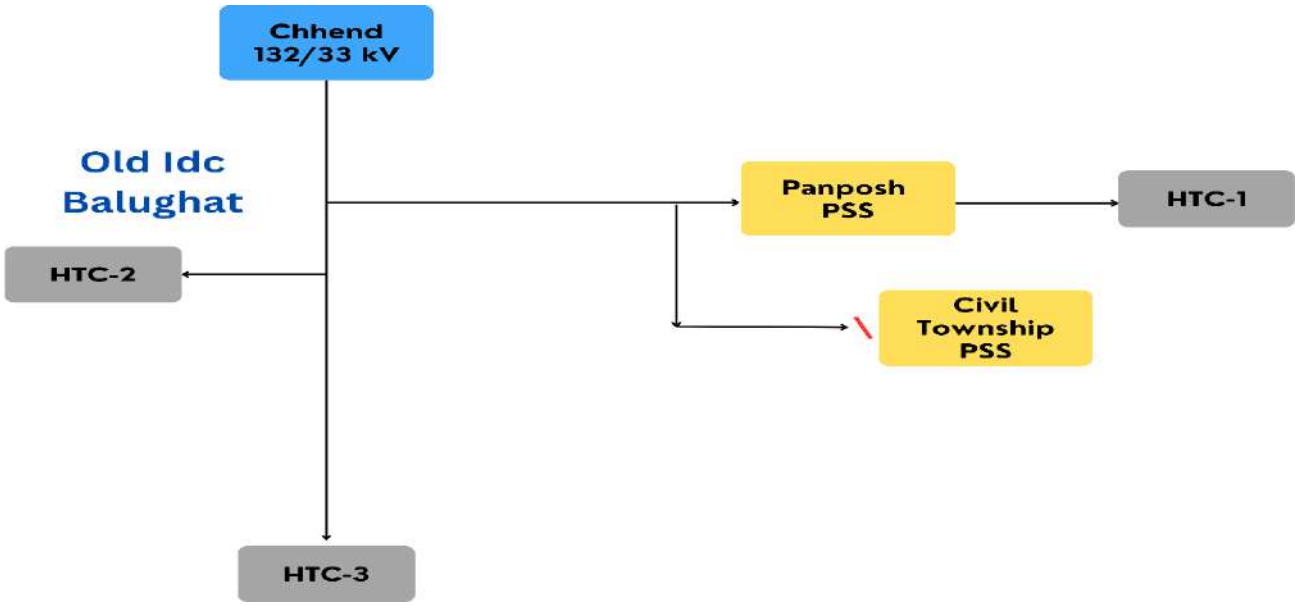
- In Present condition Panposh PSS getting supply through T-off arrangement near District agricultural office
- This feeder feeds Panposh PSS & 3 nos of 33kV Consumer.
- This feeder also feed feeds civil township PSS in N-1 condition.
- The 33kV OLD IDC Balughat feeder length is 15 KM and the peak load is 150 AMP.
- The conductor size of 33kV OLD IDC Balughat feeder emanating from Chhend GSS is 232sq.mm AAAC.
- If t-off section got interrupted then PHD Panposh PSS and M/S. GM OPERATION ROURKELA SMART CITY(HTC) will be black out.And this feeder comes under High revenue area of Rourkela City
- So interconnector from District agricultural office to Panposh PSS is required to insure reliable poer to PHD Panposh area as well as one no. of HT consumer.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.

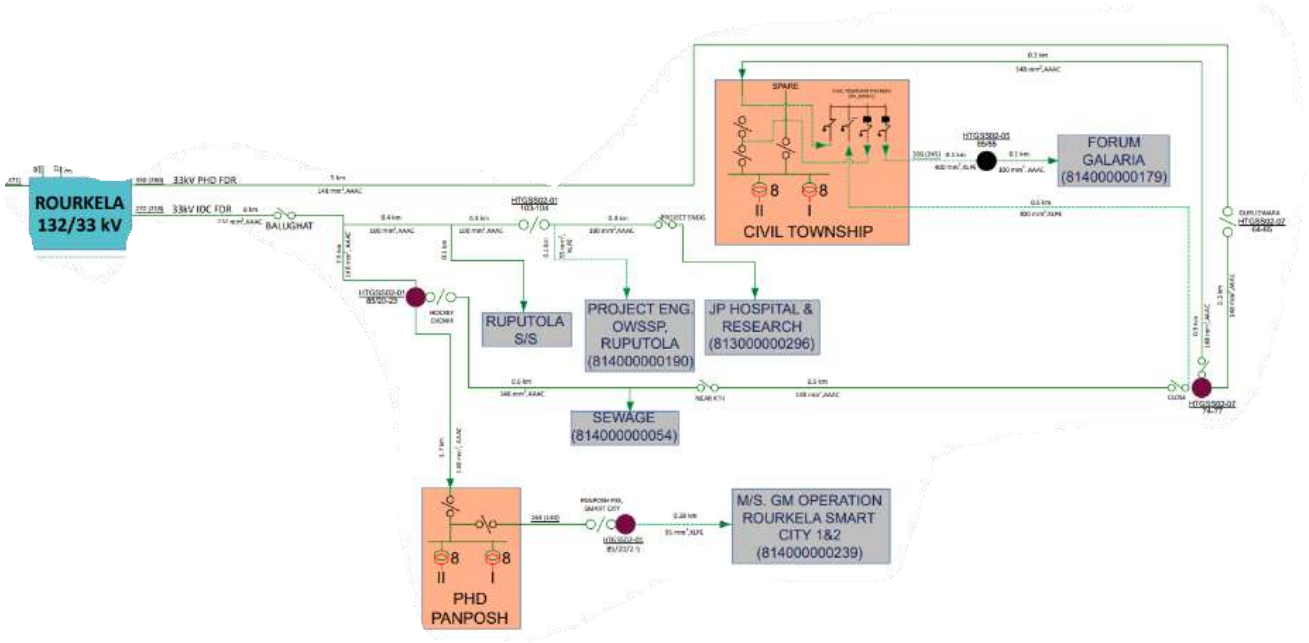
Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	OLD IDC Balughat	7546	15	76.18	

GIS Map:



Existing SLD:





Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 130391629

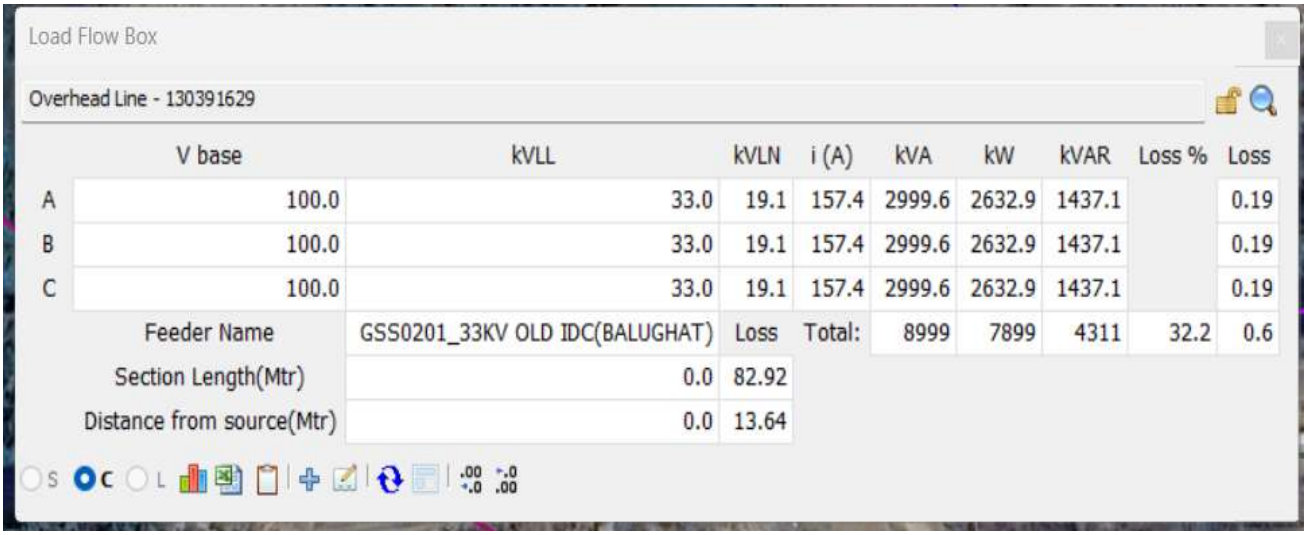
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	150.2	2861.4	2515.4	1364.0		0.18
B	100.0	33.0	19.1	150.2	2861.4	2515.4	1364.0		0.18
C	100.0	33.0	19.1	150.2	2861.4	2515.4	1364.0		0.18
Feeder Name		GSS0201_33KV OLD IDC(BALUGHAT)	Loss	Total:	8584	7546	4092	30.7	0.5
Section Length(Mtr)		0.0	76.18						
Distance from source(Mtr)		0.0	13.66						

Proposed Scenario:

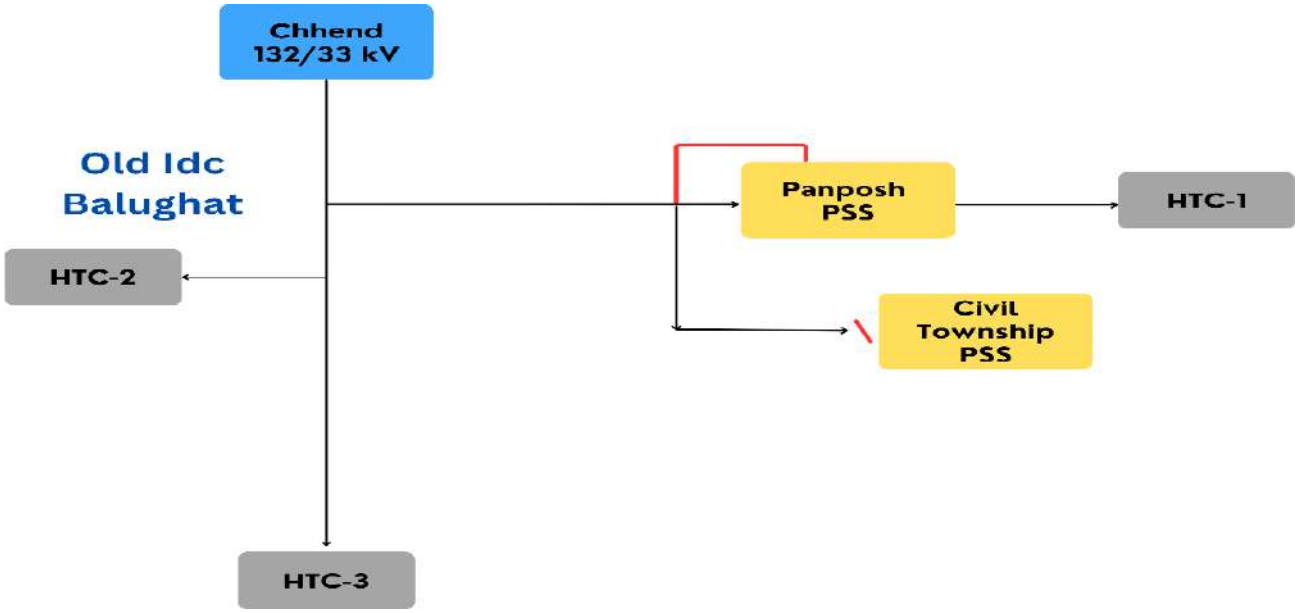
- 400sqmm XLPE Cable-0.3 Ckm from District agricultural office to Panposh PSS

Proposed Loading after 1 Yrs Load Growth:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	OLD IDC Balughat	7899	15	82.92	



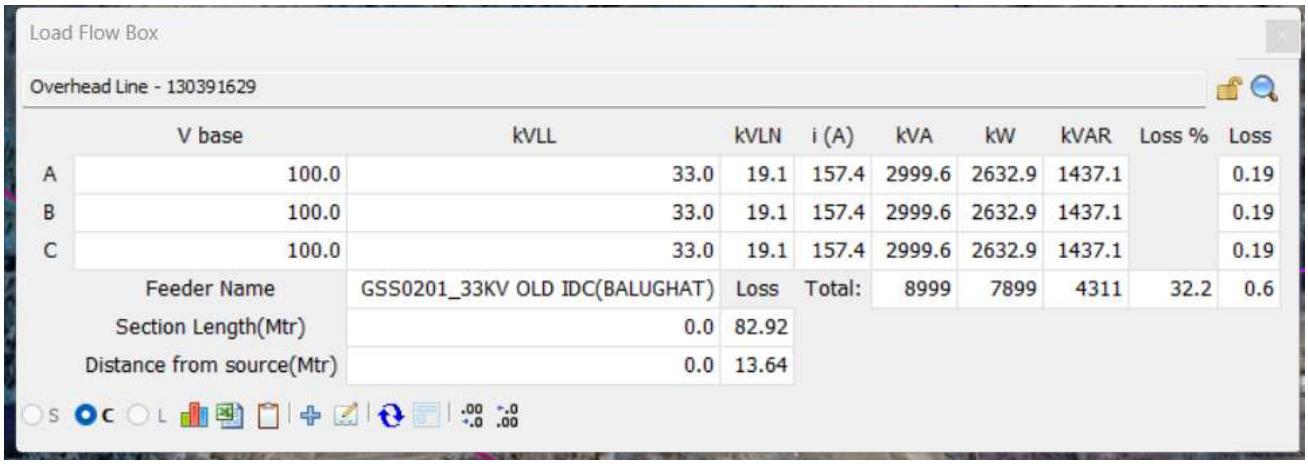
Proposed SLD:



Proposed Loading after 1 Yrs Load Growth with Proposal

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	OLD IDC Balughat	7899	15	82.92	

Load Flow Study after proposal scenario in Cyme Software:


Load Flow Box

Overhead Line - 130391629

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
B	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
C	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
Feeder Name		GSS0201_33KV OLD IDC(BALUGHAT)	Loss	Total:	8999	7899	4311	32.2	0.6
Section Length(Mtr)		0.0	82.92						
Distance from source(Mtr)		0.0	13.64						

Scope of Work:

- 400Sqmm XLPE Cable -0.3 KM new interconnector line between 33kV from District agriculture office to Panposh PSS

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RSED**	
Name of the Work :-	33kV interconnector between Pilot project feeder to Lathikata feeder at Near by Maa Vaishno Devi Mandir-	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	400Sqmm XLPE Cable-0.75 KM (Refer Annexure-167)	0.83
	Total Amount (In Cr.)	**0.83**
Total estimated cost is Rs.0.83 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.83 Cr. (For detailed BoQ refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

- Panposh PSS acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Panposh Area.
- This proposal improves the reliability of Panposh PSS and improves the reliability of M/S. GM OPERATION ROURKELA SMART CITY(HTC).
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- Reliability improvement of 33/11kV Panposh PSS feeder through new inter connector line from District agriculture office to Panposh PSS.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

N-1 reliability of 33kV Feeder

Proposal for N-1 Reliability improvement between 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder:

Proposal:

33kV New link line 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder for reliability improvement.

Requirement/ Need of the proposal:

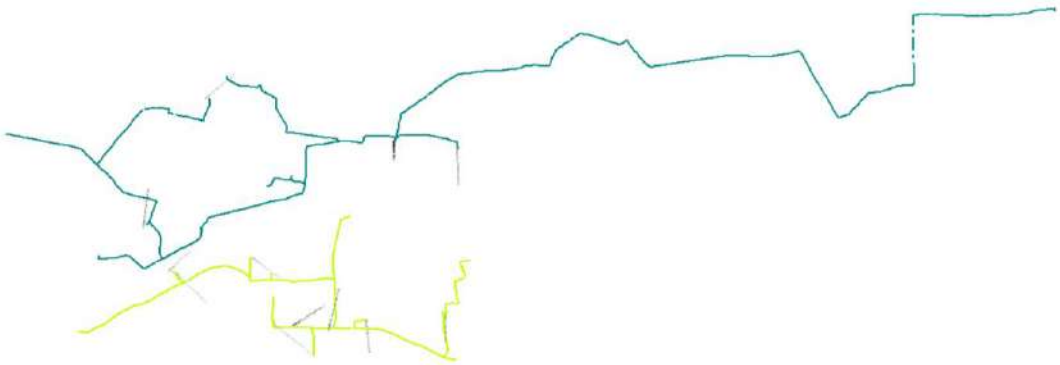
Objective: To improve the the reliability of 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder through connecting interconnector line

Existing Scenario:

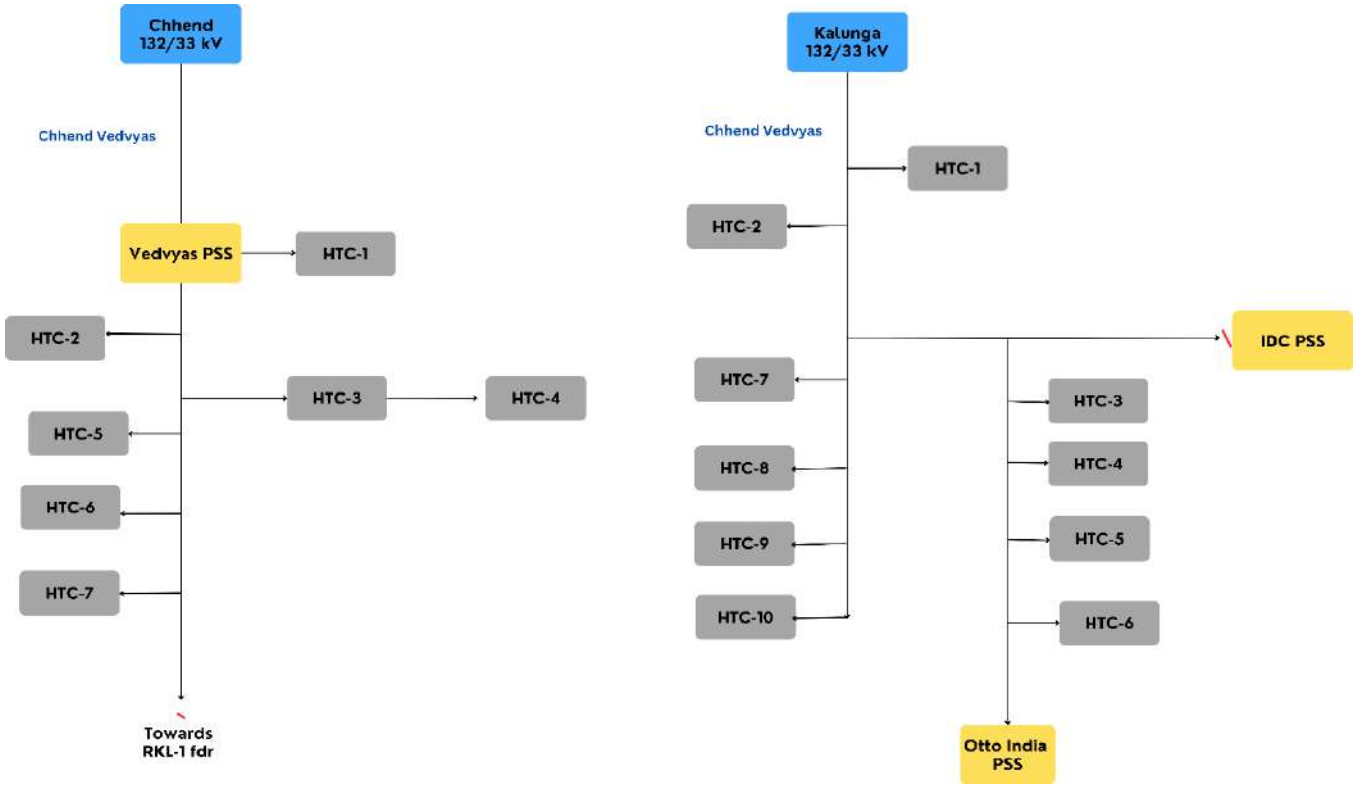
- At present, 33kV Idc Industrial feeder is emanating from Chhend GSS. The total length of this feeder is 8.34 KM and the peak load is 270 AMP.
- At present, 33kV Chhend Vedvyas feeder is emanating from Chhend GSS. The total length of this feeder is 18 KM and the peak load is 331 AMP.
- The conductor size of 33kV IDC Industrial feeder emanating from Chhend GSS is 200sq.mm ACSR.
- The conductor size of 33kV Chhend Vedvyas feeder emanating from Chhend GSS is 200sq.mm ACSR.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector between 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder is proposed for improving reliability.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Klaunga	IDC Industrial	13501	8.34	98.15	
Chhend	Chhend Vedvyas	16588	18.9	550.39	

GIS Map:



Existing SLD:

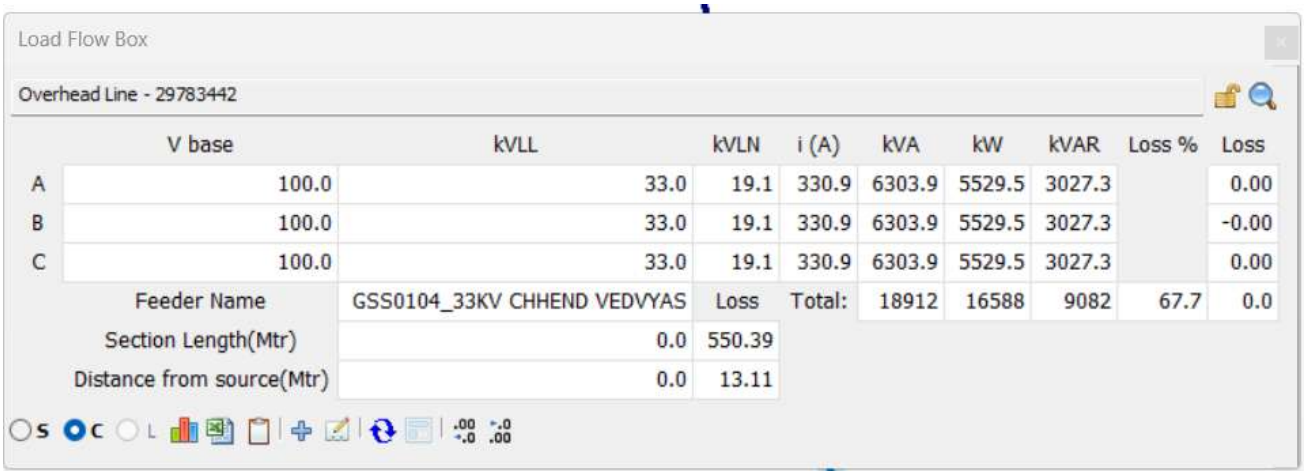


Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Cable - 15244913

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	269.7	5139.2	4500.2	2481.8		0.39
B	100.0	33.0	19.1	269.7	5139.2	4500.2	2481.8		0.39
C	100.0	33.0	19.1	269.7	5139.2	4500.2	2481.8		0.39
Feeder Name		GSS0401_33KV IDC INDUSTRIAL	Loss	Total:	15418	13501	7446	90.2	1.2
Section Length(Mtr)		0.0	98.15						
Distance from source(Mtr)		0.0	5.36						


Load Flow Box

Overhead Line - 29783442

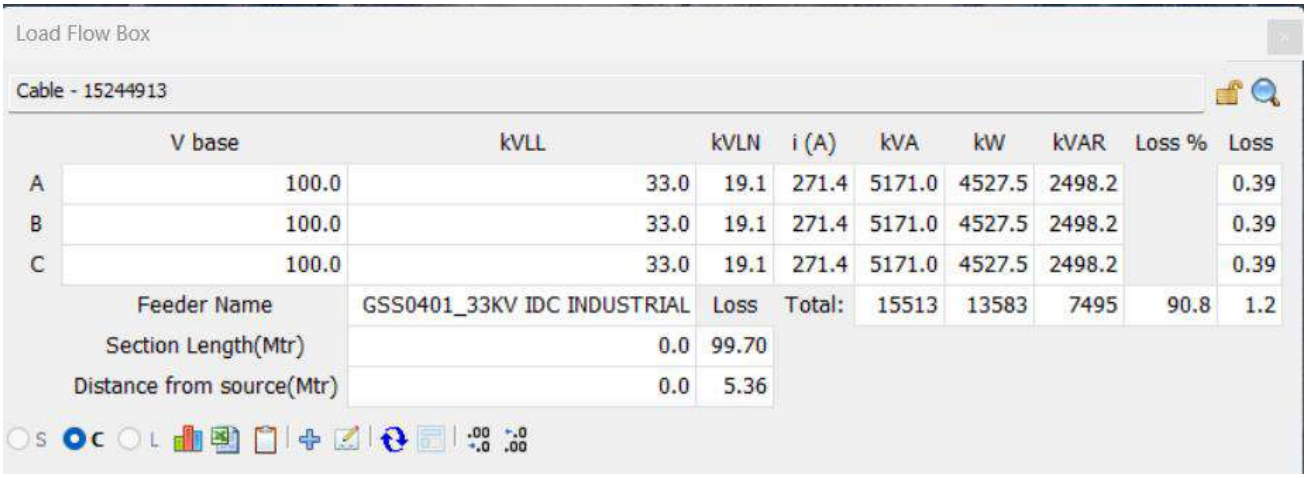
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	330.9	6303.9	5529.5	3027.3		0.00
B	100.0	33.0	19.1	330.9	6303.9	5529.5	3027.3		-0.00
C	100.0	33.0	19.1	330.9	6303.9	5529.5	3027.3		0.00
	Feeder Name	GSS0104_33KV CHHEND VEDVYAS	Loss	Total:	18912	16588	9082	67.7	0.0
	Section Length(Mtr)	0.0	550.39						
	Distance from source(Mtr)	0.0	13.11						

Proposed Scenario:

- 232sqmm AAAC conductor-0.5Ckm from MARANG PIDI to ARRORA EGENCY FOUR POLE.

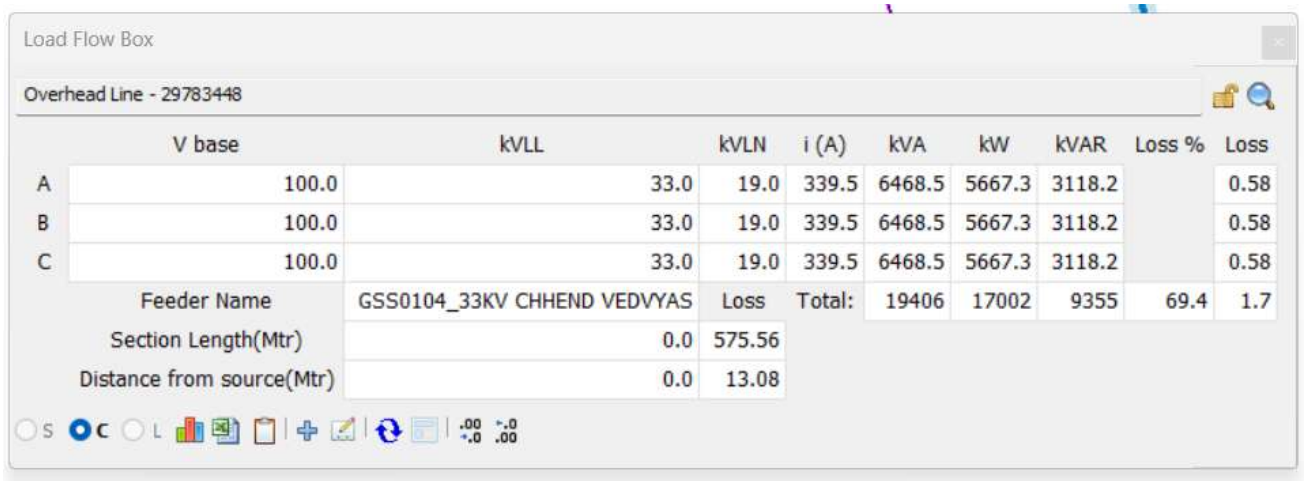
Proposed Loading after 1 Yrs Load Growth:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kalunga	IDC Industrial	13583	8.34	99.7	
Chhend	Chhend Vedvyas	17001	18.9	575.56	


Load Flow Box

Cable - 15244913

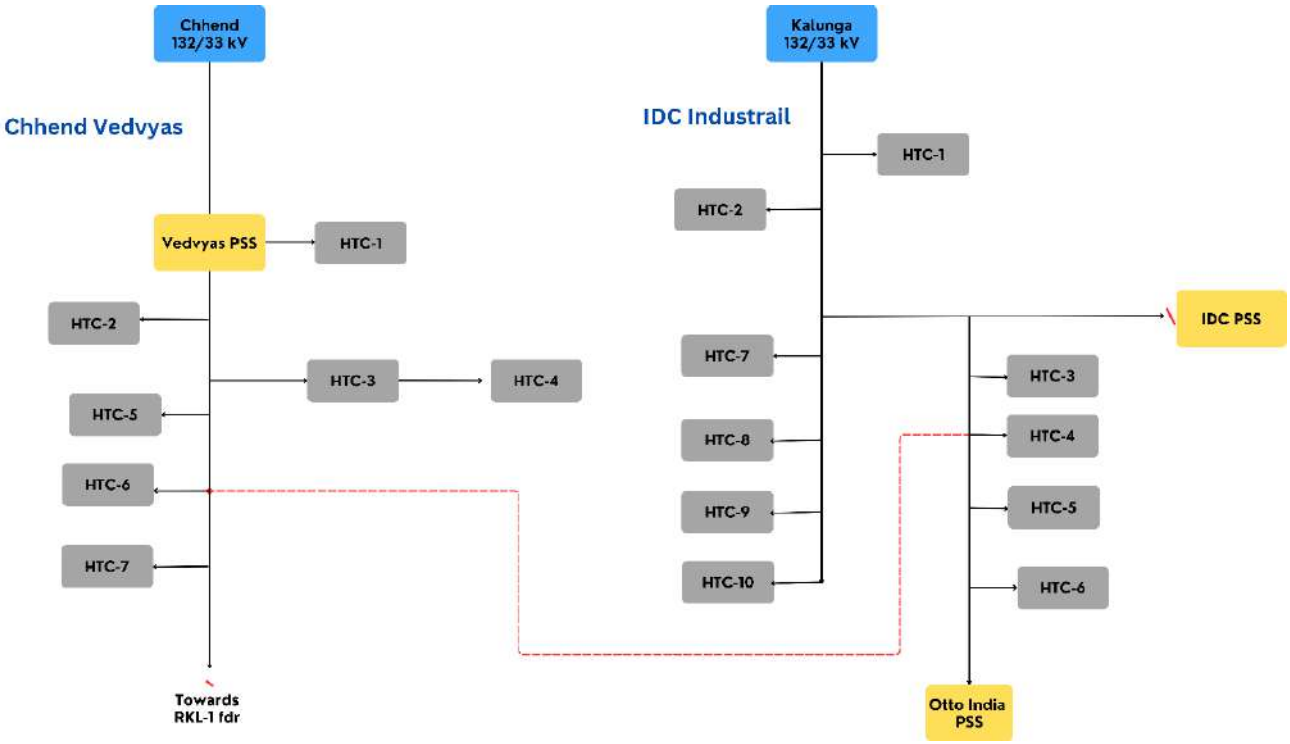
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
B	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
C	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
	Feeder Name	GSS0401_33KV IDC INDUSTRIAL	Loss	Total:	15513	13583	7495	90.8	1.2
	Section Length(Mtr)	0.0	99.70						
	Distance from source(Mtr)	0.0	5.36						


Load Flow Box

Overhead Line - 29783448

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	339.5	6468.5	5667.3	3118.2		0.58
B	100.0	33.0	19.0	339.5	6468.5	5667.3	3118.2		0.58
C	100.0	33.0	19.0	339.5	6468.5	5667.3	3118.2		0.58
	Feeder Name	GSS0104_33KV CHHEND VEDVYAS	Loss	Total:	19406	17002	9355	69.4	1.7
	Section Length(Mtr)	0.0	575.56						
	Distance from source(Mtr)	0.0	13.08						

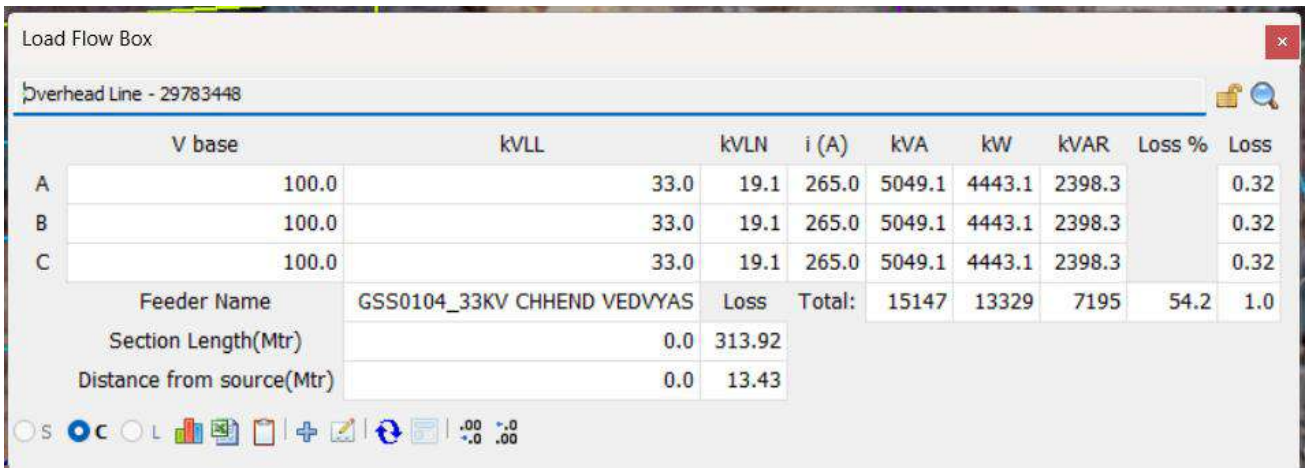
Proposed SLD:



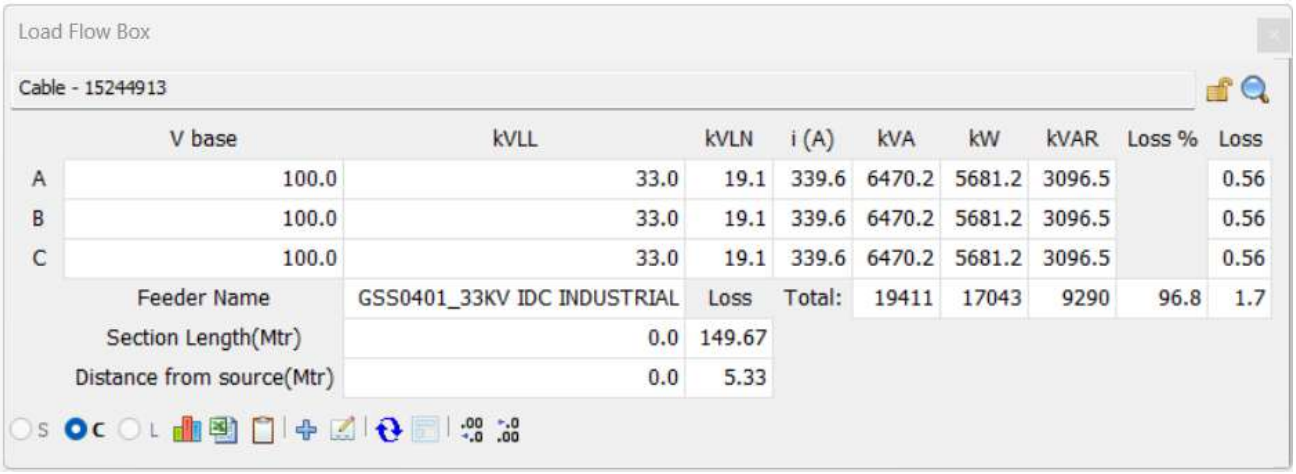
Proposed Loading after 1 Yrs Load Growth with Proposal

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kalunga	IDC Industrial	17043	8.34	149.67	
Chhend	Chhend Vedvyas	13329	18.9	313.92	

Load Flow Study after proposal scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	265.0	5049.1	4443.1	2398.3		0.32
B	100.0	33.0	19.1	265.0	5049.1	4443.1	2398.3		0.32
C	100.0	33.0	19.1	265.0	5049.1	4443.1	2398.3		0.32
Feeder Name	GSS0104_33KV CHHEND VEDVYAS	Loss	Total:	15147	13329	7195	54.2	1.0	
Section Length(Mtr)	0.0	313.92							
Distance from source(Mtr)	0.0	13.43							



Load Flow Box

Cable - 15244913

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	339.6	6470.2	5681.2	3096.5		0.56
B	100.0	33.0	19.1	339.6	6470.2	5681.2	3096.5		0.56
C	100.0	33.0	19.1	339.6	6470.2	5681.2	3096.5		0.56
Feeder Name		GSS0401_33KV IDC INDUSTRIAL	Loss	Total:	19411	17043	9290	96.8	1.7
Section Length(Mtr)		0.0	149.67						
Distance from source(Mtr)		0.0	5.33						

Scope of Work:

- 0.5 Ckm new interconnector line from MARANG PIDI to ARRORA EGENCY FOUR POLE.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**RED-Rajgangpur**	
Name of the Work :-	Proposal for 33kV New interconnector link line 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	PART A: 232Sqmm AAAC conductor -0.5CKM (Refer Annexure-111)	0.15885
	Total Amount (In Cr.)	**0.15885**
Total estimated cost is Rs.0.16 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.16 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)
Before Proposal	**Kalunga**	IDC Industrial	13583	100	**99.48**	**871487.72**	**35.77**
	Chhend	Chhend Vedvyas	17001	576			
After Proposal	**Kalunga**	IDC Industrial	17043	150			
	Chhend	Chhend Vedvyas	13329	314			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	15.89	Rs. Lac
B	Load due to load growth	-	495.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	433	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2576245	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	36.71	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	35.77	Rs. Lac
J	Net Revenue Collected	H+I	72.48	Rs. Lac
K	% revenue return	(J/A)*100	456.3	%
L	Pay Back Period	100/K	0.22	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV IDC industrial feeder and Chhend Vedvyas feeder.
- Reliability will be improved for commercial consumers by strengthening the inteconnector line feeder between IDC industrial feeder and Chhend Vedvyas feeder.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

N-1 reliability of 33kV Feeder

Proposal for N-1 Reliability improvement between 33kV IDC Industrial feeder and 33kV Kalunga feeder:

Proposal:

33kV New link line 33kV IDC Industrial feeder and 33kV Kalunga feeder for reliability improvement

Requirement/ Need of the proposal:

Objective: To improve the reliability of 33kV IDC Industrial feeder and 33kV Kalunga feeder through connecting interconnector line from CANAL CHOWK BALANDA to Otto India PSS

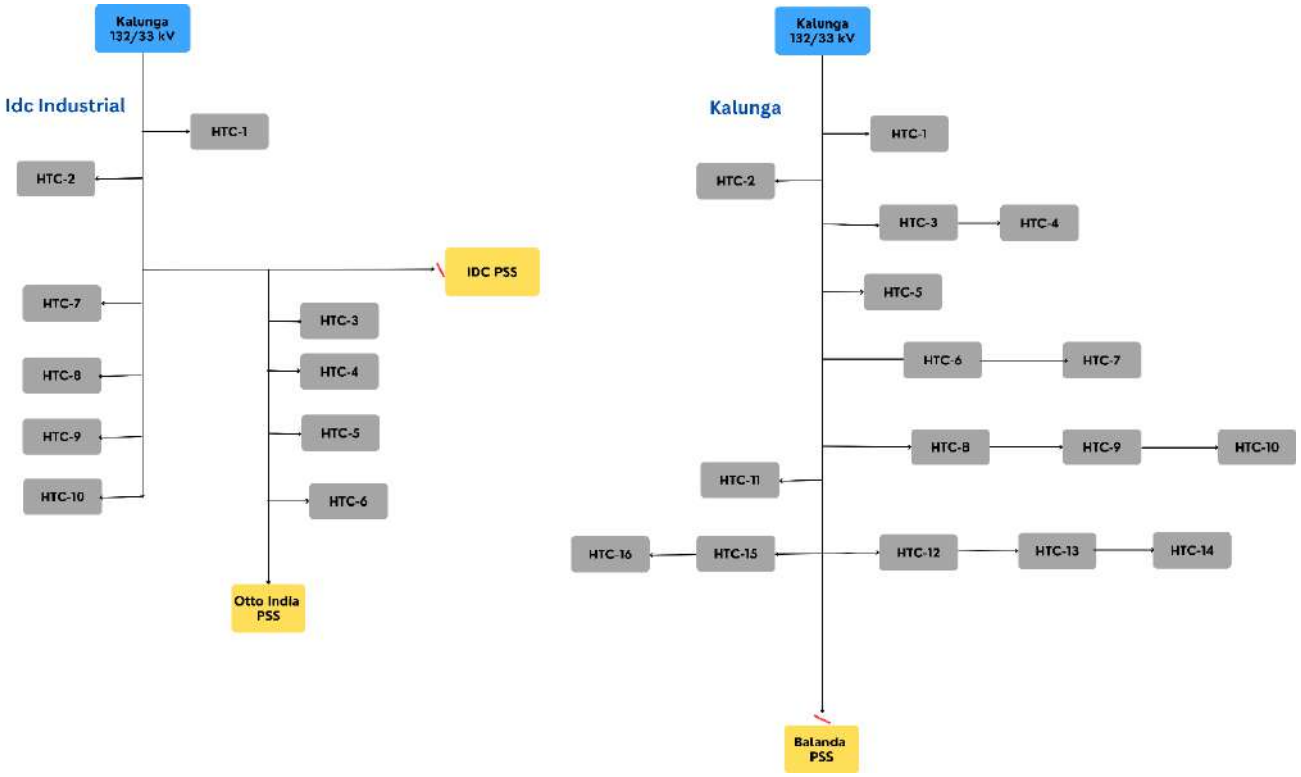
Existing Scenario:

- At present, 33kV Idc Industrial feeder is emanating from Kalunga GSS. The total length of this feeder is 8.34 KM and the peak load is 270 AMP.
- At present, 33kV Kalunga feeder is emanating from Kalunga GSS. The total length of this feeder is 13 KM and the peak load is 337 AMP.
- The conductor size of 33kV IDC Industrial feeder emanating from Kalunga GSS is 200sq.mm ACSR.
- The conductor size of 33kV Chhend Vedvyas feeder emanating from Kalunga GSS is 200sq.mm ACSR.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector between 33kV IDC Industrial feeder and 33kV Kalunga feeder is proposed for improving reliability.

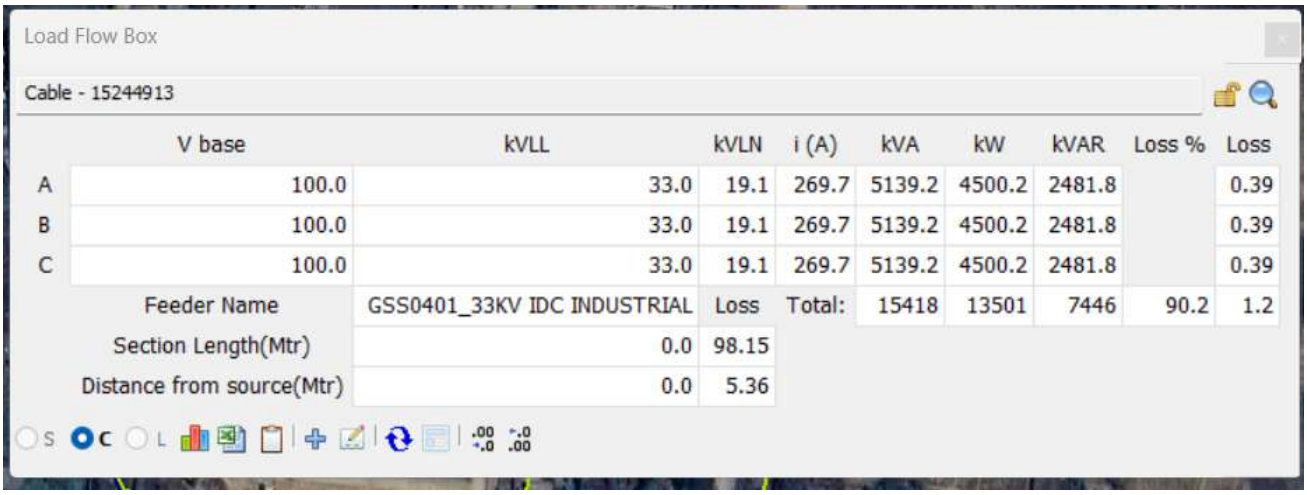
Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kalunga	IDC Industrial	13501	8.34	98.15	
Kalunga	Kalunga	16870	13.33	251	

GIS Map:

Existing SLD:

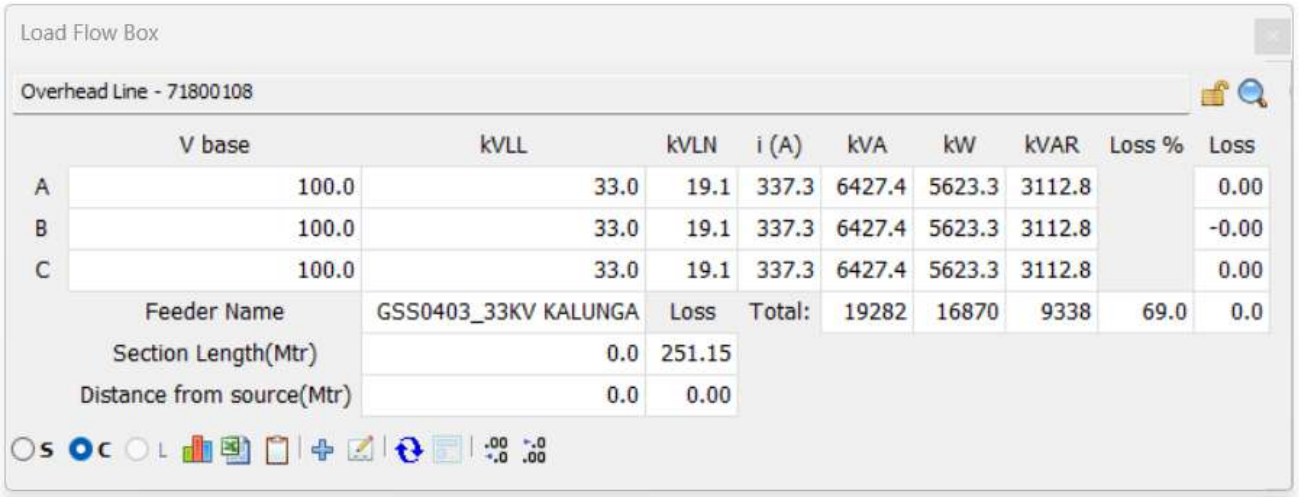


Load Flow Study of existing scenario in Cyme Software


Load Flow Box

Cable - 15244913

	V base	kVLL		kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0		19.1	269.7	5139.2	4500.2	2481.8		0.39
B	100.0	33.0		19.1	269.7	5139.2	4500.2	2481.8		0.39
C	100.0	33.0		19.1	269.7	5139.2	4500.2	2481.8		0.39
	Feeder Name	GSS0401_33KV IDC INDUSTRIAL		Loss	Total:	15418	13501	7446	90.2	1.2
	Section Length(Mtr)	0.0		98.15						
	Distance from source(Mtr)	0.0		5.36						


Load Flow Box

Overhead Line - 71800108

	V base	kVLL		kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0		19.1	337.3	6427.4	5623.3	3112.8		0.00
B	100.0	33.0		19.1	337.3	6427.4	5623.3	3112.8		-0.00
C	100.0	33.0		19.1	337.3	6427.4	5623.3	3112.8		0.00
	Feeder Name	GSS0403_33KV KALUNGA		Loss	Total:	19282	16870	9338	69.0	0.0
	Section Length(Mtr)	0.0		251.15						
	Distance from source(Mtr)	0.0		0.00						

Proposed Scenario:

- 232sqmm AAAC conductor-4 Ckm from CANAL CHOWK BALANDA to OTTO INDIA PSS.

Proposed Loading after 1 Yrs Load Growth:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kalunga	IDC Industrial	13583	8.34	99.7	
Kalunga	Kalunga	16870	13.33	251	

Load Flow Box

Cable - 15244913

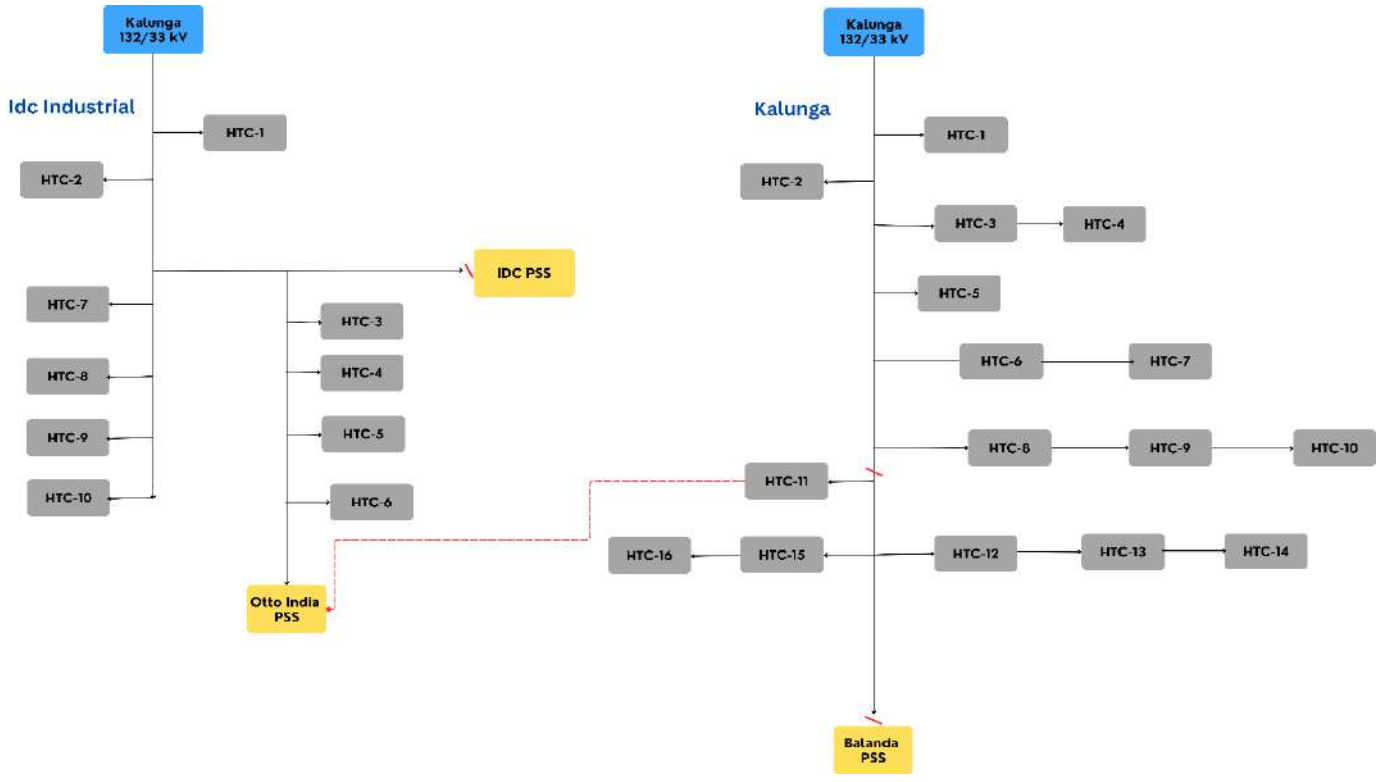
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
B	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
C	100.0	33.0	19.1	271.4	5171.0	4527.5	2498.2		0.39
Feeder Name		GSS0401_33KV IDC INDUSTRIAL	Loss	Total:	15513	13583	7495	90.8	1.2
Section Length(Mtr)		0.0	99.70						
Distance from source(Mtr)		0.0	5.36						

Load Flow Box

Overhead Line - 7260899

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	337.3	6427.2	5623.2	3112.6		0.10
B	100.0	33.0	19.1	337.3	6427.2	5623.2	3112.6		0.10
C	100.0	33.0	19.1	337.3	6427.2	5623.2	3112.6		0.10
Feeder Name		GSS0403_33KV KALUNGA	Loss	Total:	19282	16870	9338	69.0	0.3
Section Length(Mtr)		0.0	250.92						
Distance from source(Mtr)		0.0	0.00						

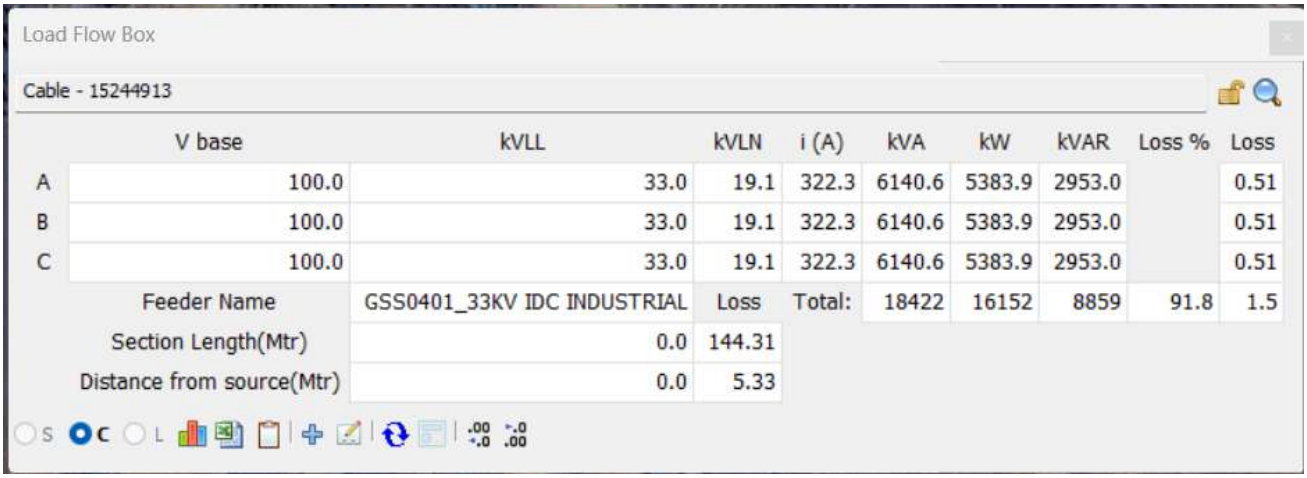
Proposed SLD:



Proposed Loading after 1 Yrs Load Growth with Proposal

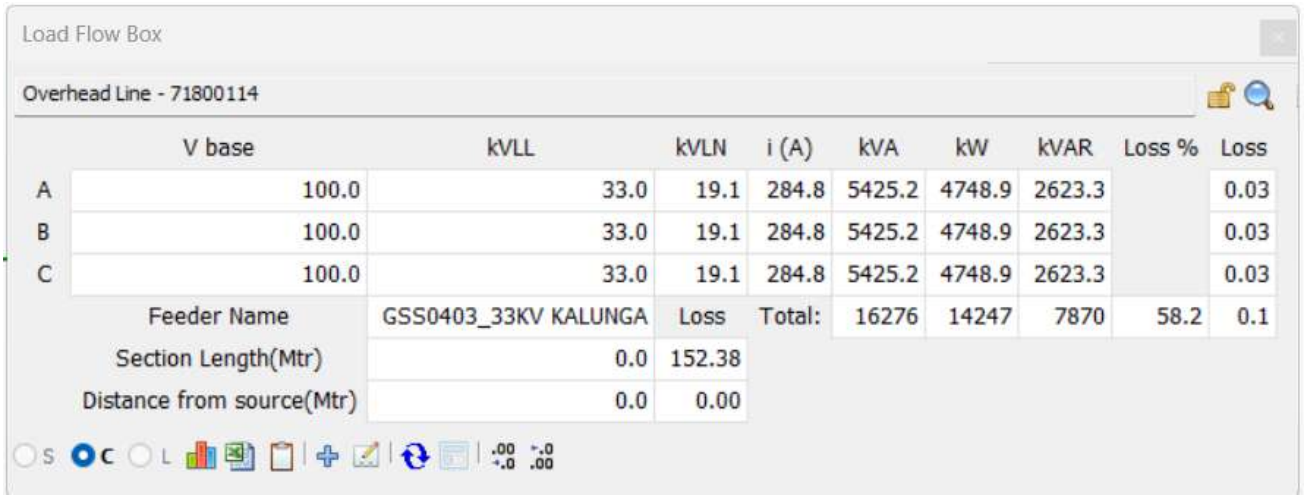
Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kalunga	IDC Industrial	16152	17.25	144.31	
Kalunga	Kalunga	14247	8.92	152.38	

Load Flow Study after proposal scenario in Cyme Software:


Load Flow Box

Cable - 15244913

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	322.3	6140.6	5383.9	2953.0		0.51
B	100.0	33.0	19.1	322.3	6140.6	5383.9	2953.0		0.51
C	100.0	33.0	19.1	322.3	6140.6	5383.9	2953.0		0.51
Feeder Name	GSS0401_33KV IDC INDUSTRIAL	Loss	Total:	18422	16152	8859	91.8	1.5	
Section Length(Mtr)	0.0	144.31							
Distance from source(Mtr)	0.0	5.33							


Load Flow Box

Overhead Line - 71800114

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	284.8	5425.2	4748.9	2623.3		0.03
B	100.0	33.0	19.1	284.8	5425.2	4748.9	2623.3		0.03
C	100.0	33.0	19.1	284.8	5425.2	4748.9	2623.3		0.03
Feeder Name	GSS0403_33KV KALUNGA	Loss	Total:	16276	14247	7870	58.2	0.1	
Section Length(Mtr)	0.0	152.38							
Distance from source(Mtr)	0.0	0.00							

Scope of Work:

- 4 Ckm new interconnector line from CANAL CHOWK BALANDA to OTTO india PSS.

Proposed Cost with Estimate Break-up:

ANNEXURE	
TP WESTERN ODISHA DISTRIBUTION LIMITED	
Name of the Division :-	**RED-Rajgangpur**
Name of the Work :-	Proposal for 33kV New interconnector link line 33kV IDC Industrial feeder and 33kV Kalunga feeder from CANAL CHOWK BALANDA to OTTO india PSS
Names of Schemes: -	TPWODL CAPEX (FY 26-27)
ABSTRACT OF ESTIMATE	

Sl. No.	Description	Amount(Cr.)
1	PART A: 232Sqmm AAAC conductor -4 CKM (Refer Annexure-111)	1.52
	Total Amount (In Cr.)	**1.52**
Total estimated cost is Rs.1.52 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.52 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)
Before Proposal	**Kalunga**	IDC Industrial	13583	100	**25.38**	**222369.97**	**9.13**
	Kalunga	Kalunga	16870	251			
After Proposal	**Kalunga**	IDC Industrial	16152	144			
	Kalunga	Kalunga	14247	152			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	152.16	Rs. Lac
B	Load due to load growth	-	82.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	72	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	426772	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	6.08	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	9.13	Rs. Lac
J	Net Revenue Collected	H+I	15.21	Rs. Lac
K	% revenue return	(J/A)*100	10.0	%
L	Pay Back Period	100/K	10.00	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV IDC industrial feeder and Kalunga feeder through new inter connector line from otto india to Canel chowk .
- Reliability will be improved for commercial consumers by strengthening the inteconnector line feeder between IDC industrial feeder and Kalunga feeder.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Scheme Name: 33kV New Link Line from Lindra PSS to Jareikela Megalift

Proposal

33kV New Link Line from Lindra PSS to Jareikela Megalift to mitigate low voltage issue and improve the N-1 reliability of 33kV Jariekela PSS and Jareikela PSS area.

Background

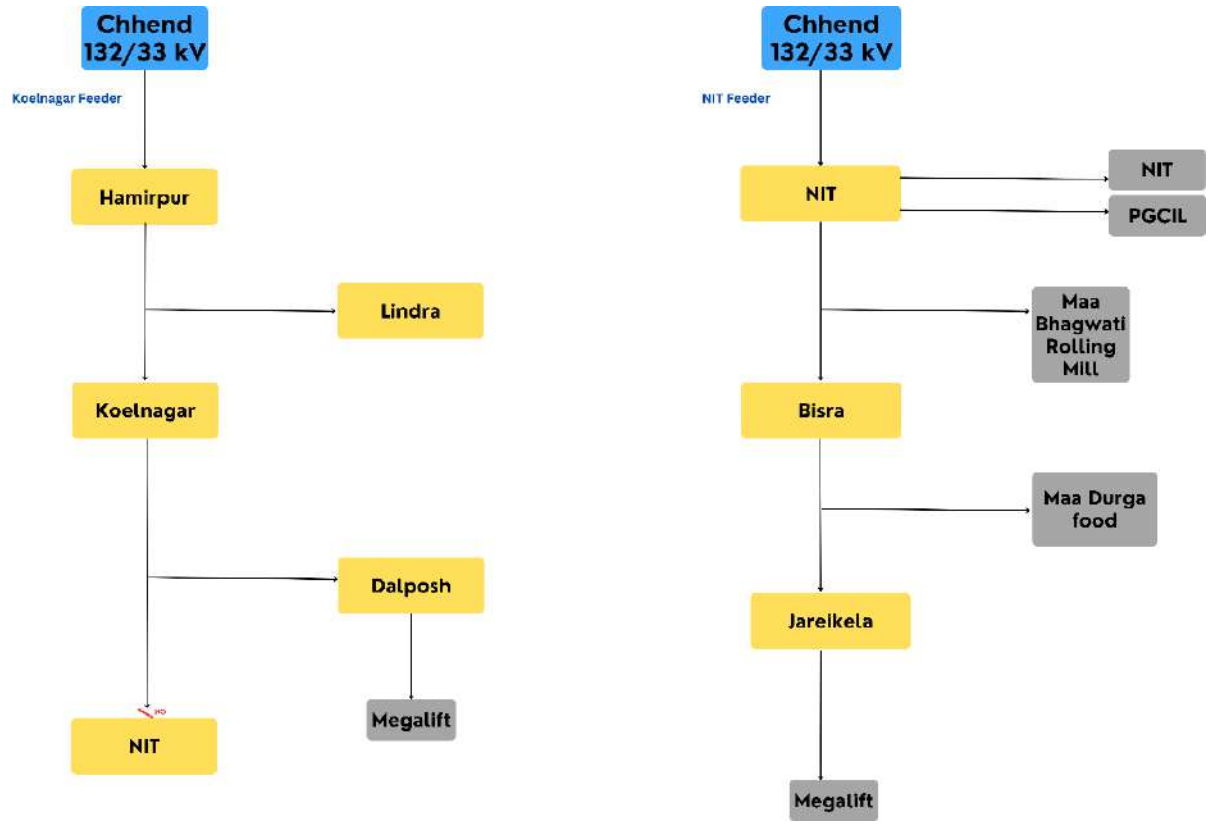
- 33kV NIT feeder emanates from Chhend GSS.Peak Loading of NIT feeder is 260.4 Amp , conductor size is 232 AAAC and circuit length is approx. 56.85 Ckm.
- This feeder is feeds 3nos of PSS and 5 Nos of 33kV consumer. This feeder is also in the category of High revenue.
- More interruption occurs between Bisra PSS to Jareikala PSS due to forest area. NIT feeder experience low voltage issue at 29.9kV Jarikela Megalift.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak FY25-26 (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chhend	Koelnagar	12534	25.75	386	31.3 kV at Dalposh Megalift Point tail end
Chhend	NIT	12969	56.85	594	29.9 kV-At Jareikela Megalift
			Total Loss	**981**	

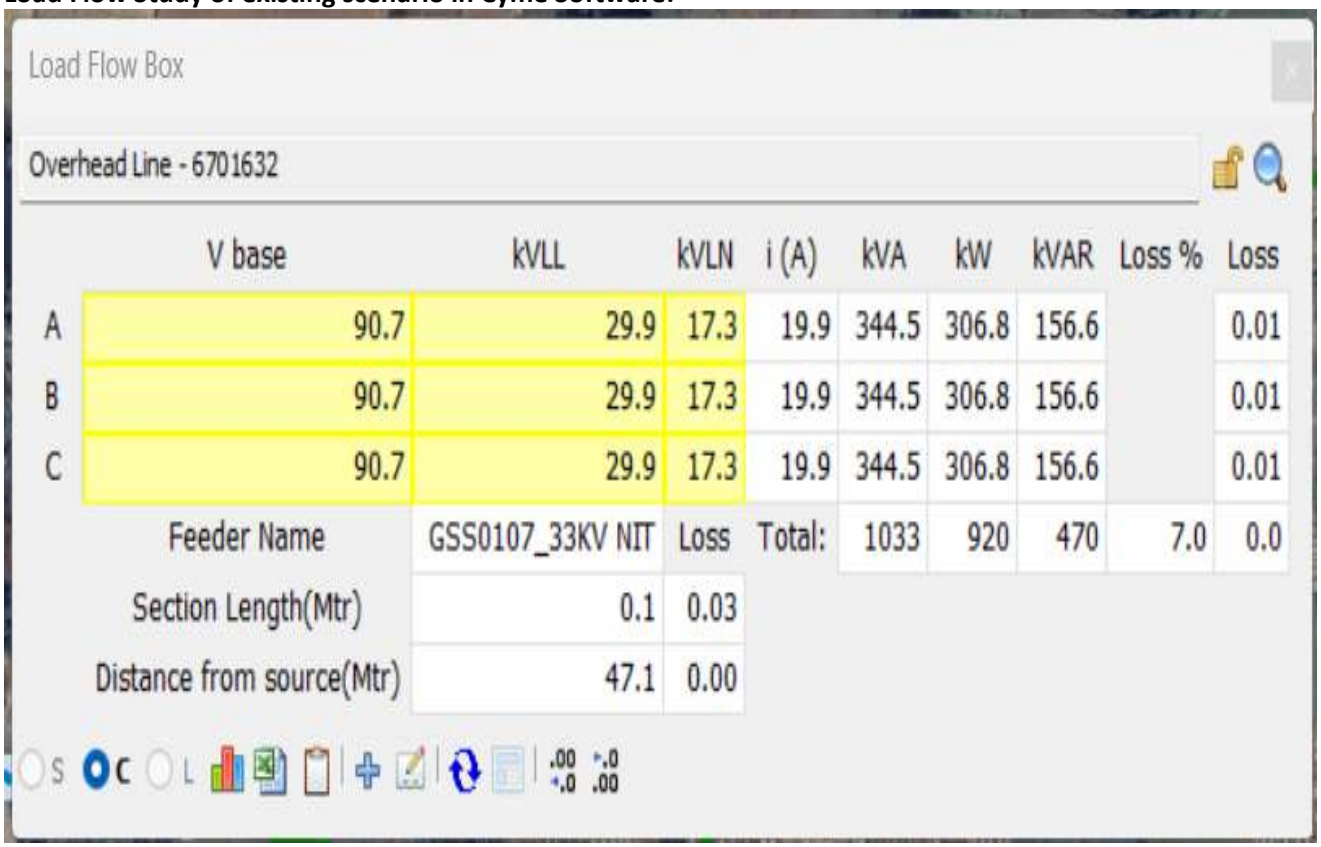
Requirement/ Need of the Proposal

- 33kV NIT feeder emanates from Chhend GSS.Peak Loading of NIT feeder is 260.4 Amp, conductor size is 232 AAAC and circuit length is approx. 56.85 Ckm.
- This feeder feeds 3nos of PSS and 5 Nos of 33kV consumer.
- This feeder is also in the category of High revenue.
- More interruption occurs between Bisra PSS to Jareikala PSS due to forest area. NIT feeder experience low voltage issue at 29.9kV Jarikela Megalift.
- This feeder lacks an N-1 supply arrangement, meaning that in the event of a fault, all connected 33kV HT consumers would be affected due to the absence of a backfeeding source.
- Following the implementation of a new33kV Link Line from Lindra PSS to Jareikela PSS, the voltage at improved to 31.1 kV at Jareikela PSS.
- This clearly indicates the need for an N-1 supply to mitigate low voltage issues, enhance reliability, and improve overall power quality for the HRF feeder as well as rural feeder.

Existing SLD:-



Load Flow Study of existing scenario in Cyme Software:

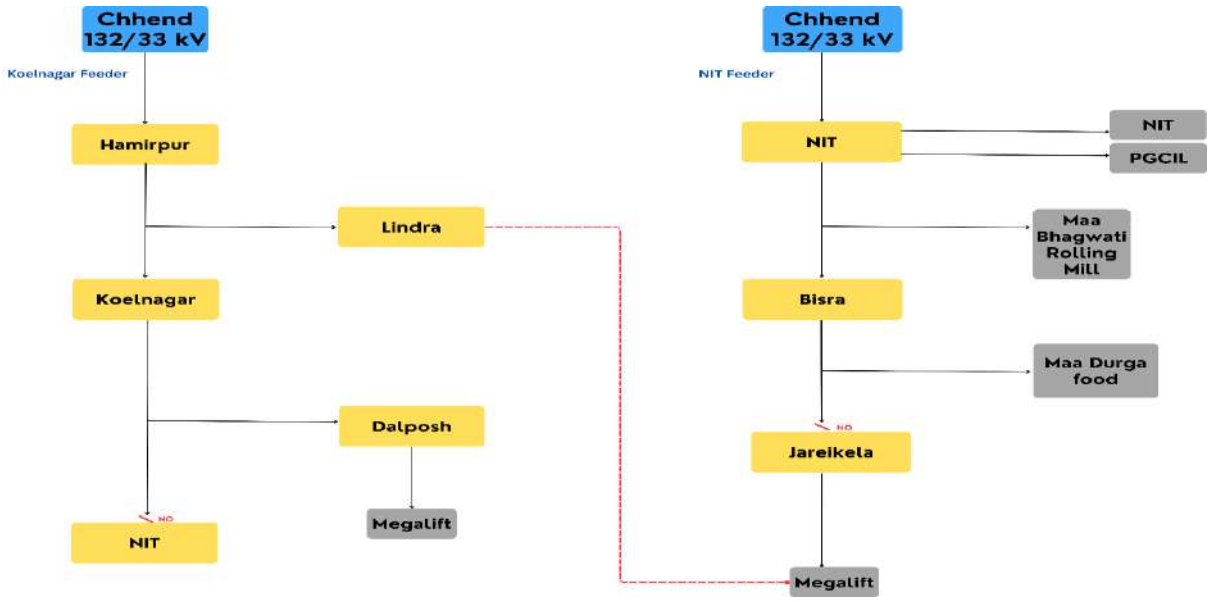


Load Flow Box

Overhead Line - 6701632

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	90.7	29.9	17.3	19.9	344.5	306.8	156.6		0.01
B	90.7	29.9	17.3	19.9	344.5	306.8	156.6		0.01
C	90.7	29.9	17.3	19.9	344.5	306.8	156.6		0.01
	Feeder Name	GSS0107_33KV NIT	Loss	Total:	1033	920	470	7.0	0.0
	Section Length(Mtr)	0.1	0.03						
	Distance from source(Mtr)	47.1	0.00						

Proposed SLD



Load Flow Study of before proposal scenario in Cyme Software:

Load Flow Box

Overhead Line - 6707408

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	90.1	29.7	17.2	20.1	344.5	306.8	156.6		0.00
B	90.1	29.7	17.2	20.1	344.5	306.8	156.6		0.00
C	90.1	29.7	17.2	20.1	344.5	306.8	156.6		0.00
	Feeder Name	GSS0107_33KV NIT	Loss	Total:	1033	920	470	7.0	0.0
	Section Length(Mtr)	0.0	0.00						
	Distance from source(Mtr)	47.1	0.00						

Load Flow Study of after proposal scenario in Cyme Software:

Load Flow Box

Overhead Line - 8982717

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	93.9	31.0	17.9	9.3	166.5	148.2	75.8		0.00
B	93.9	31.0	17.9	9.3	166.5	148.2	75.8		-0.00
C	93.9	31.0	17.9	9.3	166.5	148.2	75.8		-0.00
	Feeder Name	GSS0108_33KV KOELNAGAR	Loss	Total:	499	445	227	1.9	-0.0
	Section Length(Mtr)	0.0	5.20						
	Distance from source(Mtr)	37.5	4.85						

Loading After 1 Yrs LG					
Name of the GSS	33kV feeder Name	Feeder Peak FY-26 (KW)	Feeder Length (CKM)	Loss (KW)	Remarks
Chhend	Koelnagar	13449	25.75	438	31.8kV at Lindra PSS
Chhend	NIT	13778	56.85	669	29.7kV At Jareikela Megalift
			Total Loss Before proposal	**1107 kW**	

Proposed Condition					
Name of the GSS	33kV feeder Name	Feeder Peak FY-27(KW)	Feeder Length (CKM)	Loss (KW)	Remarks
Chhend	Koelnagar	15453	45.58	569	Load Shifting of NIT feeder by establishing Link line for voltage improvement.31.1 kV at Jareikela PSS
Chhend	NIT	11673	47.47	438	31 kV-At M/S.SHREE MAA DURGA FOOD PRODUCTS PVT(HTC)
Total Loss Before proposal	**1107 kW**	**Total Loss after Proposal**	**1007 kW**	**Total Loss saving**	**100.42 kW**

- ***Scope of Work***

Part A-33kV New Link Line from Lindra PSS to Jareikela Megalift-10 Ckm
Part B-33kV UG for River crossing-0.45 KM
Part C-O/D VCB-1 nos
Part D-DP with 1 nos of isolator-1 nos
Part E-4 pole with 2 nos of isolator-1 nos

- ***Proposed Cost with Estimate Break-up***

Sl. No.	Part	Description	Amount (Cr.)
1	A	33kV New Line with 232Sqmm AAAC conductor-10 Ckm (Refer Annexure-111)	3.177
2	B	33kV 400Sqmm XLPE Cable-0.45 Km (Refer Annexure-167)	0.4034
3	C	O/D VCB-1 Nos (Refer Annexure-162)	0.2961
4	D	DP with Isolator-1 Nos (Refer Annexure-96)	0.058
5	E	4 Pole with 2 Nos of Isolators-1 Nos (Refer Annexure-169)	0.1141
		Total Amount (In Cr)	**4.05**
Total estimated cost is Rs. 4.05 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 4.05 Cr.

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	Chhend	Koelnagar	13449	438	47.20	413449.22	16.97	31.3 kV at Dalposh Megalift Point tail end
	Chhend	NIT	13778	669				29.7 kV-At Jareikela Megalift
After Proposal	Chhend	Koelnagar	15453	569				Load Shifting of NIT feeder by establishing Link line for voltage improvement.31.1 kV at Jareikela PSS
	Chhend	NIT	11673	438				31 kV-At M/S.SHREE MAA DURGA FOOD PRODUCTS PVT(HTC)

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	404.82	Rs. Lac
B	Load due to load growth	-	1724.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	1509	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	8972618	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	127.86	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	16.97	Rs. Lac
J	Net Revenue Collected	H+I	144.83	Rs. Lac
K	% revenue return	(J/A)*100	35.8	%
L	Pay Back Period	100/K	2.80	Years

- ***Benefit to the System and Consumers***
  - Undervoltage mitigation of 33kV NIT feeder.
  - Strengthening of 33kV NIT feeder to improve reliability of the network.
  - Ring formation of NIT and Koelnagar feeder.
  - Improved N-1 connectivity with 33kV NIT feeder (Chhend GSS) and HT Consumers.
  - Ensuring reliable power supply of the Urban Area.

Improving Reliability(N-1) of IDC(Balughat) & Balanda Feeder

1.0 Proposal for New Feeder from Chhend GSS to Civil Township PSS:

Proposal:

33kV New link between 33kV IDC (Balughat) feeder and Balanda feeder near Dandiapali PSS through JP Hospital T-off OG line.

Requirement/ Need of the proposal:

Objective: To ensure the reliable power(N-1) to Panposh & Dandiapali PSS. From Rourkela & Kalunga GSS

Existing Scenario:

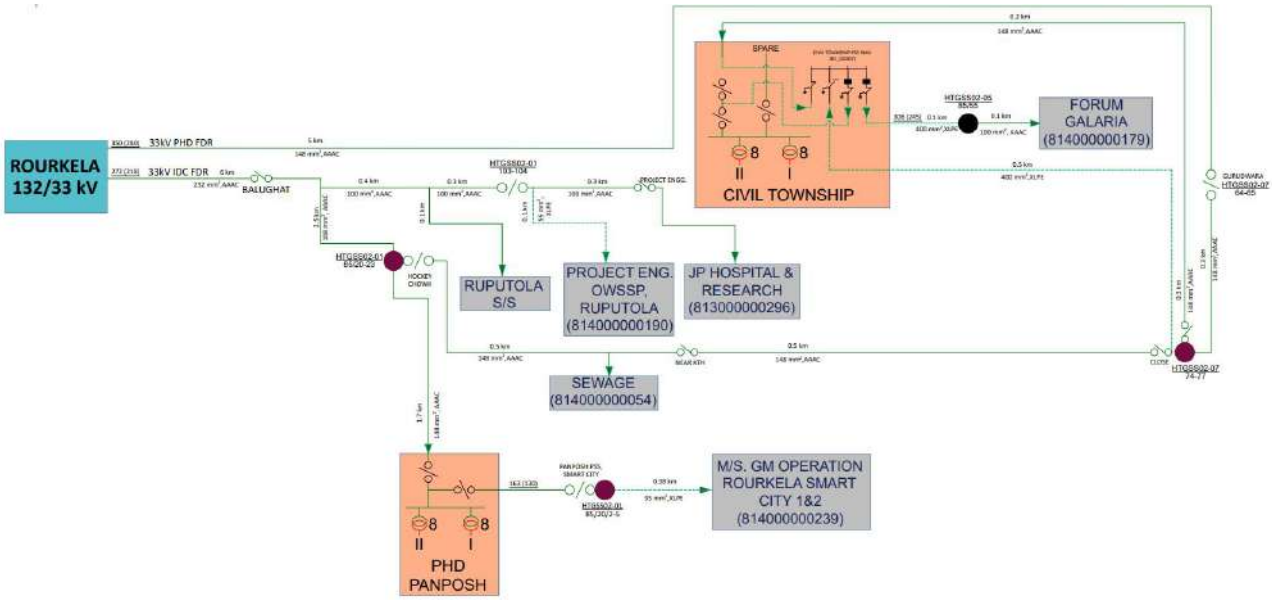
- 33kV IDC Balughat feeder emanates from Rourkela GSS, feeder length is 15 Ckm, Peak Loading is 150 Amp and conductor size is 232/100 Sqmm AAAC.
- 33kV IDC Balughat feeder feeds Panposh PSS and 4 Nos of HT Consumer (including JP Hospital).And Also feeds Civil Township as N-1 Source.
- 33kV Balanda feeder emanates from Kalunga GSS, feeder length is 17 Ckm, Peak Loading is 143 Amp and conductor size is 148 Sqmm AAAC.
- 33kV Balanda feeder feeds Balanda PSS and will feed Dandiapali (Capex) & Nakakhandi PSS(ODSSP-IV) PSS. And Also feeds 33kV Kalunga feeder as N-1 Source.
- The Panposh PSS & Dandiapali PSS is a critical load center in Rourkela City, catering to residential, commercial, and institutional consumers. Currently, it is dependent on sources from one GSS making it vulnerable to outages.
- The Rourkela GSS, which feeds several PSS including Panposh, has recently experienced multiple supply interruptions due to busbar faults, hot spots, pulling out incidents, and emergency shutdowns. These issues have led to complete power outages across multiple feeders, highlighting the urgent need for N-1 redundancy.
- To address this, a new interconnection is proposed between the 33 kV IDC (Balughat) feeder and the Balanda feeder, from Balughat to Dandiapali PSS routed through the JP Hospital T-off outgoing line.

Existing feeder peak (FY25-26) and projected load at 33kV IDC Balughat and Balanda Feeder:

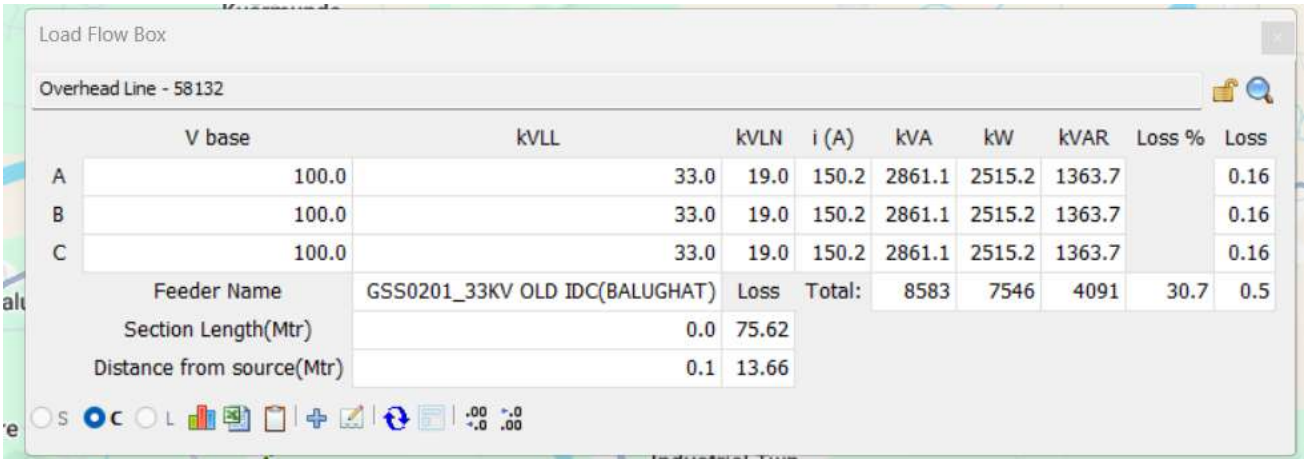
Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY25-26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Peak load 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Rourkela	IDC Balughat	26	8.6	33%	Ok	9	41%	Ok
Kalunga	Balanda	20	8.16	40%	OK	8.9	44.5%	OK

GIS MAP

SLD Map:



Load Flow Study of existing scenario in Cyme Software



Load Flow Box

Overhead Line - 58132

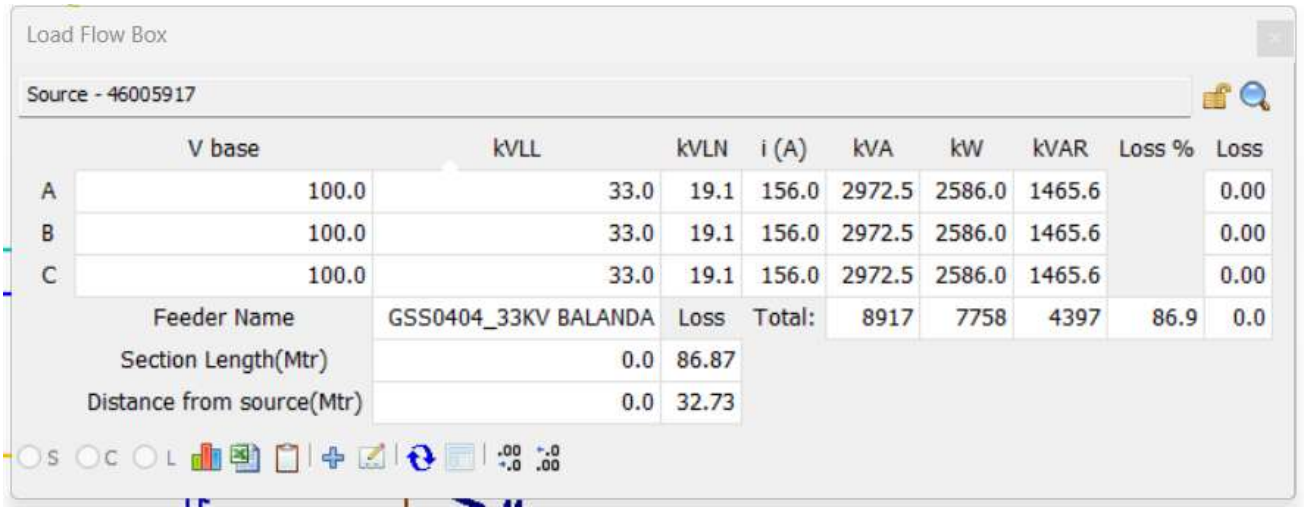
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	150.2	2861.1	2515.2	1363.7		0.16
B	100.0	33.0	19.0	150.2	2861.1	2515.2	1363.7		0.16
C	100.0	33.0	19.0	150.2	2861.1	2515.2	1363.7		0.16
Feeder Name		GSS0201_33KV OLD IDC(BALUGHAT)	Loss	Total:	8583	7546	4091	30.7	0.5
Section Length(Mtr)		0.0	75.62						
Distance from source(Mtr)		0.1	13.66						

Load Flow Box

Overhead Line - 15243801

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	142.7	2718.7	2369.0	1333.8		0.12
B	100.0	33.0	19.1	142.7	2718.7	2369.0	1333.8		0.12
C	100.0	33.0	19.1	142.7	2718.7	2369.0	1333.8		0.12
	Feeder Name	GSS0404_33KV BALANDA	Loss	Total:	8156	7107	4002	29.2	0.4
	Section Length(Mtr)	0.0	78.06						
	Distance from source(Mtr)	0.0	32.78						

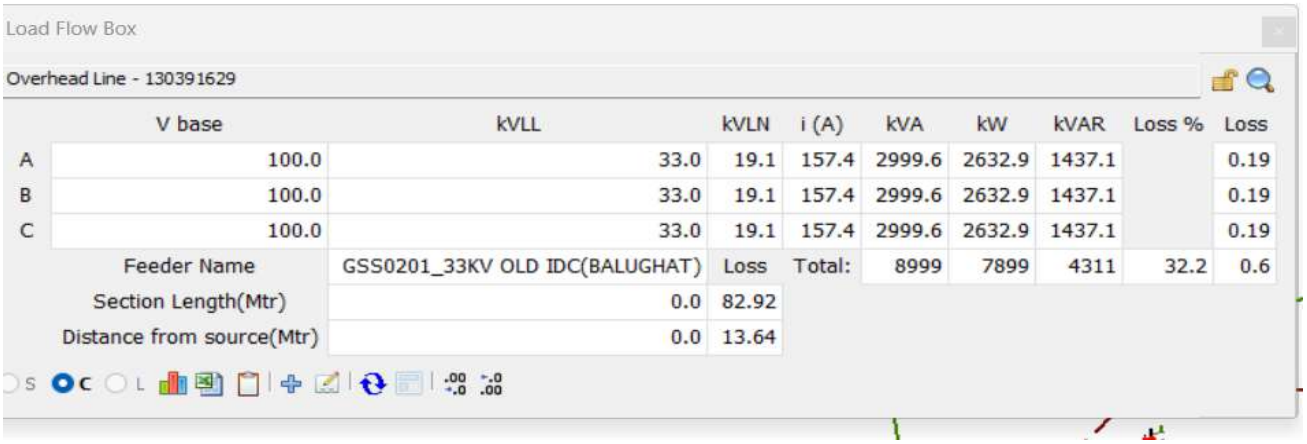
Load Flow Study of 1 Yr load growth scenario in Cyme Software



Load Flow Box

Source - 46005917

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
B	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
C	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
	Feeder Name	GSS0404_33KV BALANDA	Loss	Total:	8917	7758	4397	86.9	0.0
	Section Length(Mtr)	0.0	86.87						
	Distance from source(Mtr)	0.0	32.73						



Load Flow Box

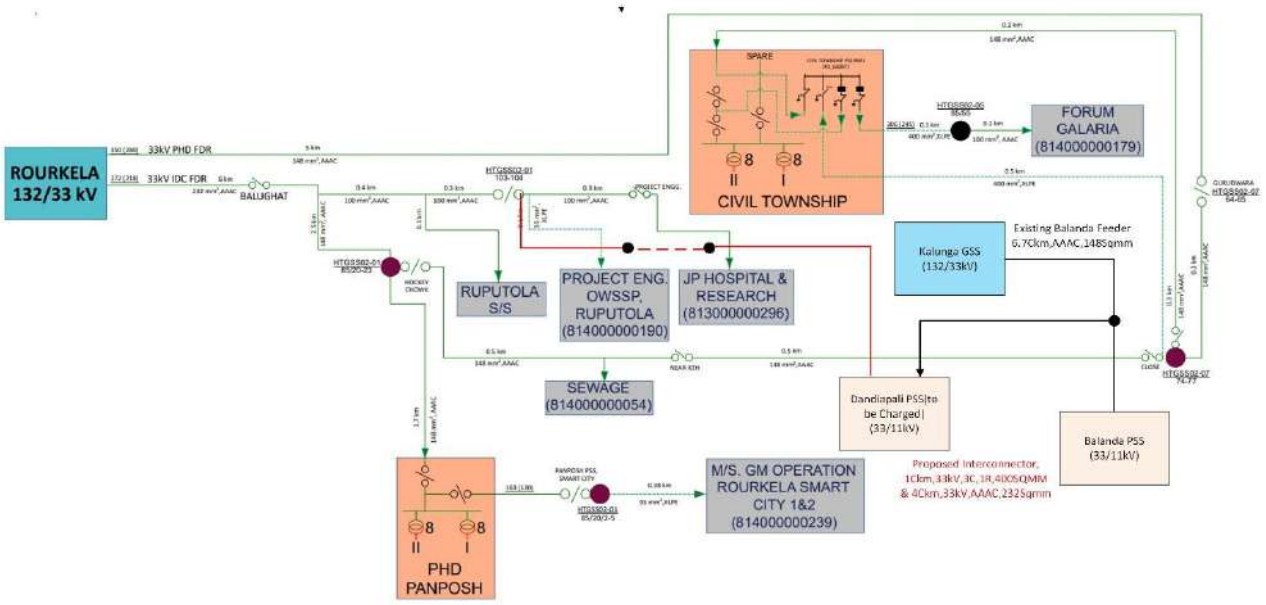
Overhead Line - 130391629

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
B	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
C	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
	Feeder Name	GSS0201_33KV OLD IDC(BALUGHAT)	Loss	Total:	8999	7899	4311	32.2	0.6
	Section Length(Mtr)	0.0	82.92						
	Distance from source(Mtr)	0.0	13.64						

Proposed Scenario:

- To address this, a new interconnection is proposed between the 33 kV IDC (Balughat) feeder and the Balanda feeder, from Balughat to Dandiapali PSS routed through the JP Hospital T-off outgoing line.
- By this both Panposh & Dandiapali having connectivity with Rourkela & Kalunga GSS. In Rourkela City.

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software

Load Flow Box

Source - 46005917

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
B	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
C	100.0	33.0	19.1	156.0	2972.5	2586.0	1465.6		0.00
Feeder Name		GSS0404_33KV BALANDA	Loss	Total:	8917	7758	4397	86.9	0.0
Section Length(Mtr)		0.0	86.87						
Distance from source(Mtr)		0.0	32.73						

Load Flow Box

Overhead Line - 130391629

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
B	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
C	100.0	33.0	19.1	157.4	2999.6	2632.9	1437.1		0.19
Feeder Name		GSS0201_33KV OLD IDC(BALUGHAT)	Loss	Total:	8999	7899	4311	32.2	0.6
Section Length(Mtr)		0.0	82.92						
Distance from source(Mtr)		0.0	13.64						

Scope of Work:

- New line ,33kV,1Ckm,3C,1R, XLPE,400Sqmm using HDD.
- New line,33kV,4Ckm, Insulated, AAAC,232Sqmm using 13Mtr. WPB Pole
- DP with isolators-4 Nos
- 4 way RMU-2 Nos
- 4 Pole with 2 nos of Isolators-1 Nos

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division:-	**RSED**	
Name of the Sub-Division: -	Panposh	
Name of Section:-	Panposh	
Name of the Work:-	New Interconnector between 33KV, IDC(Balughat) feeder and Balanda feeder at Dandiapali PSS through JP Hospital T-off O/G line	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A: 33kV 400Sqmm XLPE Cable-1KM (Refer Annexure-167)	0.896424
2	PART B: 33kV 232sqmm Cover conductor-4 Ckm (Refer Annexure-168)	1.6572
3	PART C: DP with Isolators-2 Nos (Refer Annexure-96)	0.23032
4	PART D: 4 way RMU -2 Nos (Refer Annexure-99)	1.1312
5	PART E: 4 Pole with 2 Nos of Isolator-1Nos (Refer Annexure-169)	0.1141
	Total Amount (In Cr.)	**4.029244**
	Total Amount (In Cr.)	**4.03**
Total estimated cost is Rs. 4.03 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: 4.03 Cr. (For detailed BoQ, refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

- PHD Panposh,Civil Township PSS acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Panposh Area.
- This proposal improves the reliability of PHD Panposh,Civil Township PSS and also improves the reliability of 33kV HT consumers
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.

- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- further Improving reliability(N-1) of the network. This proposal ensures improved operational flexibility, fault isolation, and compliance with N-1 planning standards for urban substations.
- Reliability will be improved for domestic as well as commercial consumers by source from two GSS 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 the upcoming potential consumers.

N-1 reliability of 33kV Feeder

1.0 Proposal for Overloading mitigation and N-1 Reliability improvement 33kV Cheuduapada feeder:

Proposal:

33kV New Line from Hirakud GSS to Badbazar PSS for N-1 reliability improvement of Bad Bazar PSS

Requirement/ Need of the proposal:

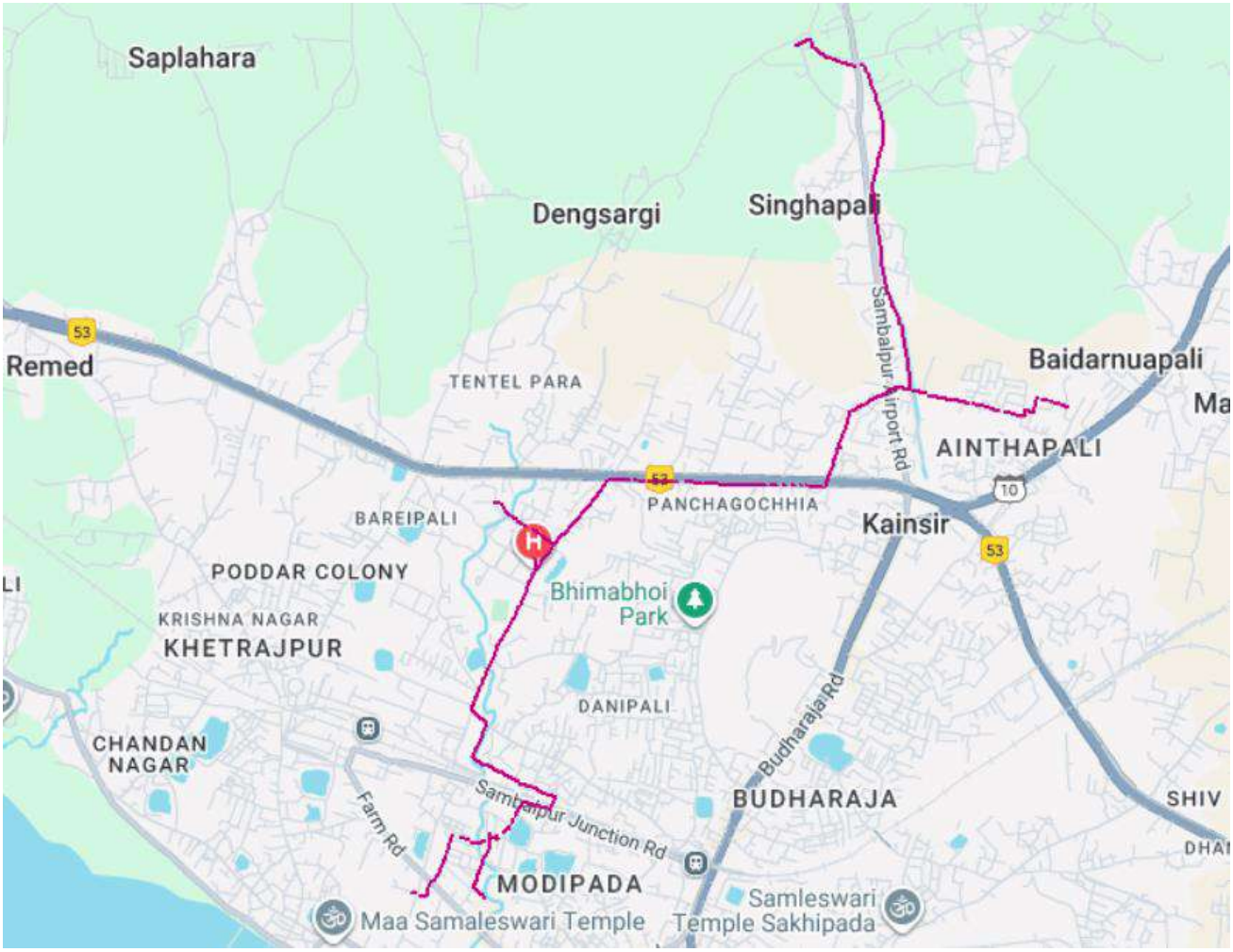
Objective: to mitigate the oveloading of 33kV Cherupada feeder and N-1 reliability improvement of 33kV Cheduapada

Existing Scenario:

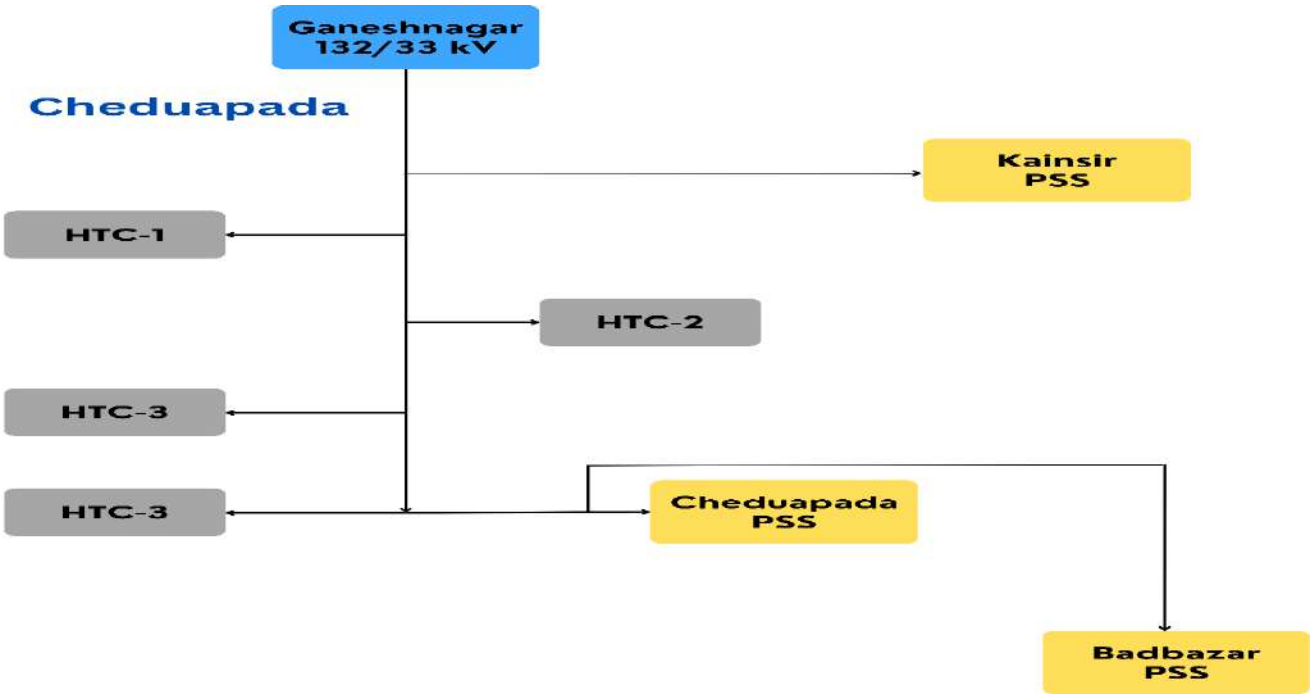
- At present, 33kV Cheduapada feeder is emanating from Ganeshnagar (Sambalpur) GSS. The total length of this feeder is 8.9 CKM and the peak load is 462 AMP.
- The conductor size of 33kV Cheduapada feeder is 232sq.mm AAAC.
- This feeder is radial in nature. And there is not any N-1 backup supply available if supply tripped.
- 80-85% Sambalpur city load feeds from 33kV Cheduapada feeder.
- After one year load growth this 33kV Cheduapada feeder will be overloaded.
- To mitigate the overloading and improve the reliability,New feeder is requird.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector From Hirakud GSS to Badbazar PSS is proposed to mitigate the overloading and improving reliability.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Ganeshnagar	Cheduapada	23066	8.9	528.18	

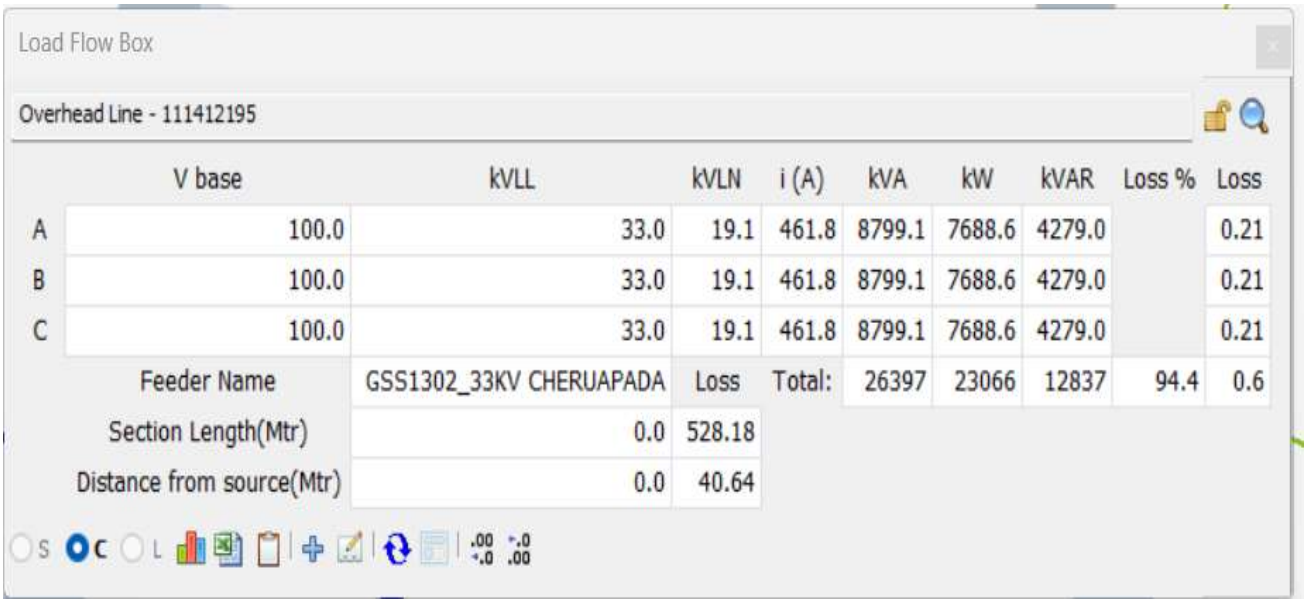
GIS Map:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software


Load Flow Box

Overhead Line - 111412195

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	461.8	8799.1	7688.6	4279.0		0.21
B	100.0	33.0	19.1	461.8	8799.1	7688.6	4279.0		0.21
C	100.0	33.0	19.1	461.8	8799.1	7688.6	4279.0		0.21
	Feeder Name	GSS1302_33KV CHERUAPADA	Loss	Total:	26397	23066	12837	94.4	0.6
	Section Length(Mtr)	0.0	528.18						
	Distance from source(Mtr)	0.0	40.64						

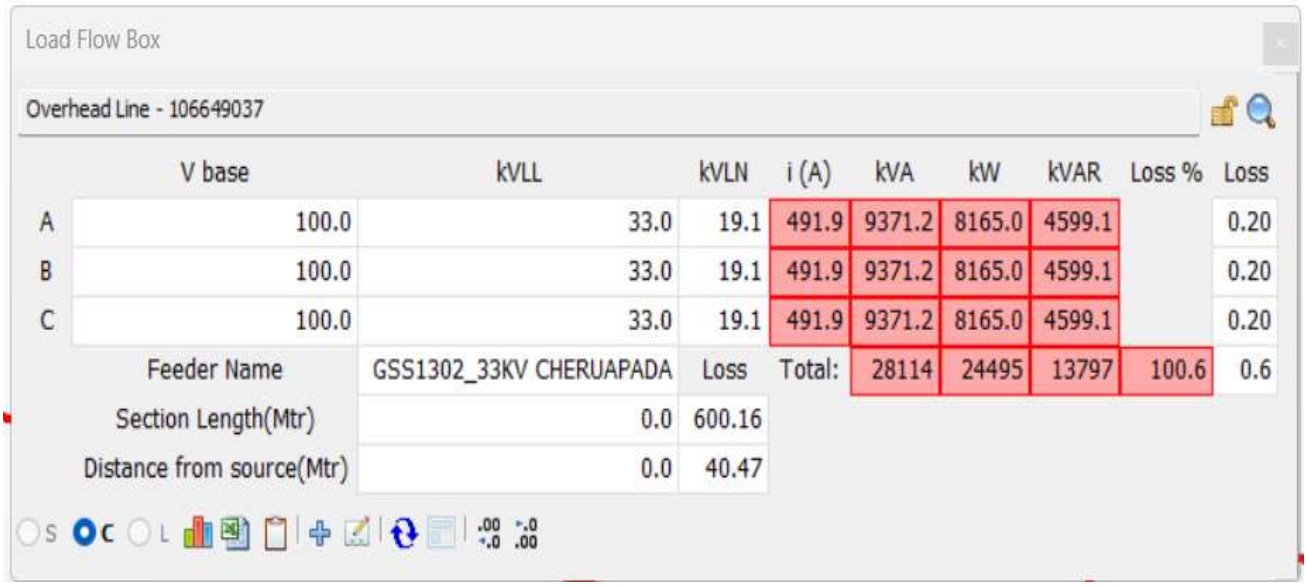
Proposed Scenario:

- 400Sqmm XLPE cable-16.5 km from Hirakud GSS to Badbazar PSS

Proposed Loading after 1 Yrs Load Growth:

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Ganeshnagar	Cheduapada	24495	8.9	600.16	

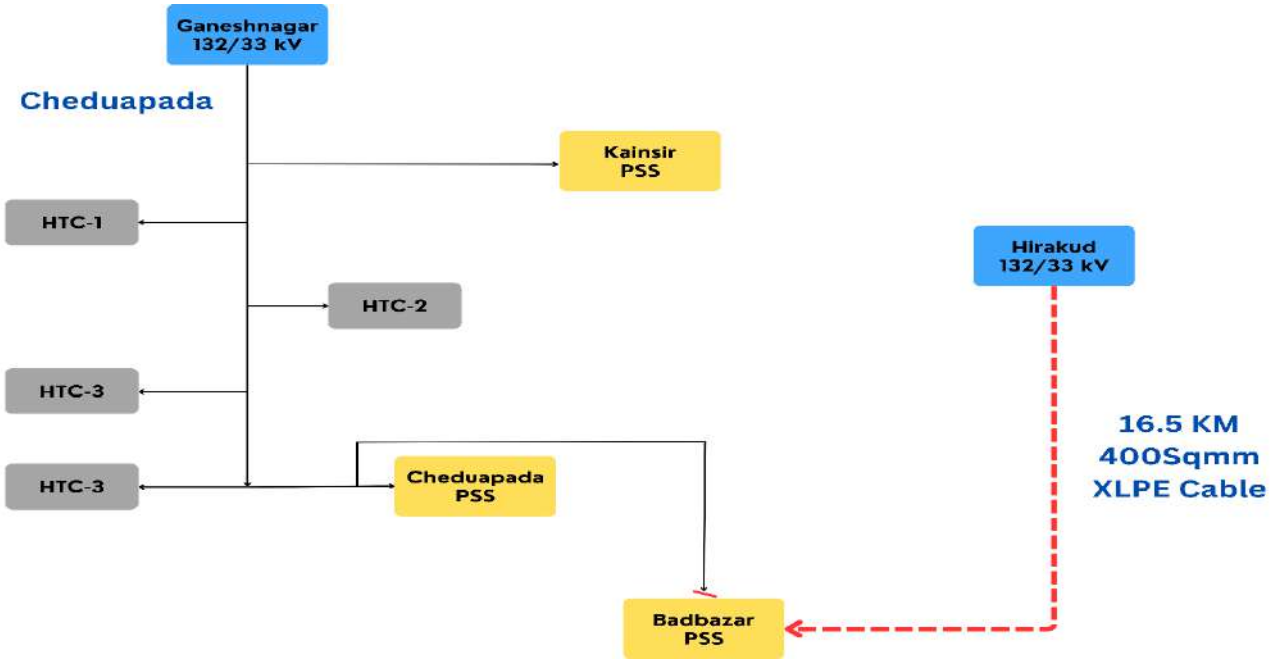
- After One Year Load growth 33kV Cheduapada feeder got Overloaded.


Load Flow Box

Overhead Line - 106649037

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	491.9	9371.2	8165.0	4599.1		0.20
B	100.0	33.0	19.1	491.9	9371.2	8165.0	4599.1		0.20
C	100.0	33.0	19.1	491.9	9371.2	8165.0	4599.1		0.20
	Feeder Name	GSS1302_33KV CHERUAPADA	Loss	Total:	28114	24495	13797	100.6	0.6
	Section Length(Mtr)	0.0	600.16						
	Distance from source(Mtr)	0.0	40.47						

Proposed SLD:



Proposed Loading after 1 Yrs Load Growth with Proposal

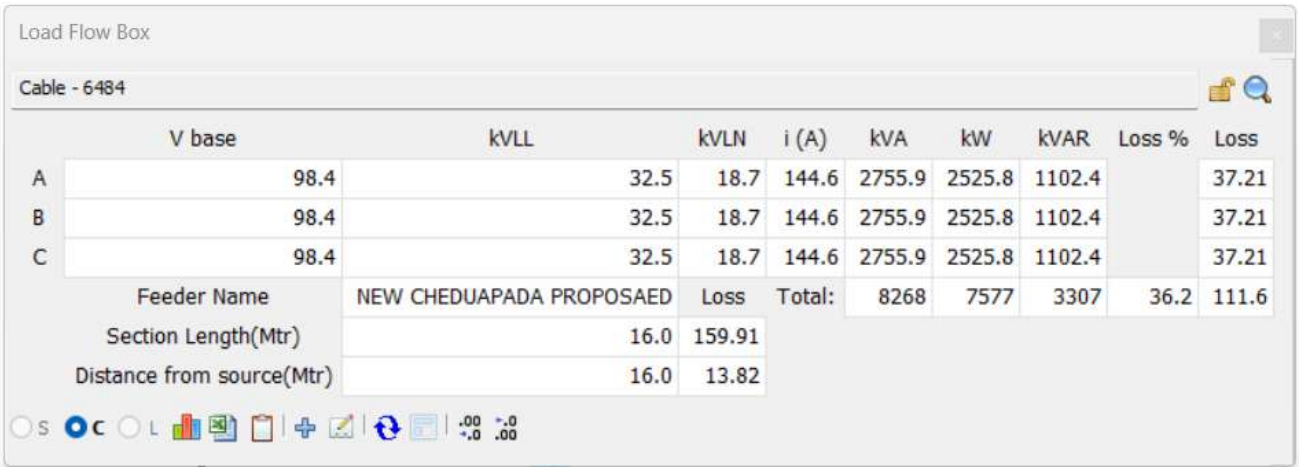
Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Ganeshnagar	Cheduapada	16720	8.9	242.40	
Ganeshnagar	New Cheduapada	7577	16	159.91	UG

Load Flow Study after proposal scenario in Cyme Software:

Load Flow Box

Overhead Line - 111412195

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	331.5	6315.3	5573.3	2970.1		0.11
B	100.0	33.0	19.1	331.5	6315.3	5573.3	2970.1		0.11
C	100.0	33.0	19.1	331.5	6315.3	5573.3	2970.1		0.11
Feeder Name		GSS1302_33KV CHERUAPADA	Loss	Total:	18946	16720	8910	67.8	0.3
Section Length(Mtr)		0.0	242.40						
Distance from source(Mtr)		0.0	27.77						



Load Flow Box

Cable - 6484

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	98.4	32.5	18.7	144.6	2755.9	2525.8	1102.4		37.21
B	98.4	32.5	18.7	144.6	2755.9	2525.8	1102.4		37.21
C	98.4	32.5	18.7	144.6	2755.9	2525.8	1102.4		37.21
Feeder Name		NEW CHEDUAPADA PROPOSAED	Loss	Total:	8268	7577	3307	36.2	111.6
Section Length(Mtr)		16.0	159.91						
Distance from source(Mtr)		16.0	13.82						

Scope of Work:

- 16.5 km new line from Hirakud GSS to Badbazar.
- 1 Nos of O/D VCB at Badbazar PSS
- 3 Nos of 4 way RMU

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**SED**	
Name of the Work :-	33kV New Line from Hirakud GSS to Badbazar PSS	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	PART A: 400Sqmm XLPE Cable -16.5 KM (Refer Annexure-167)	14.790996
2	PART B: O/D VCB-1Nos (Refer Annexure-162)	0.2961
3	PART C: 4 Way RMU-3 Nos (Refer Annexure-99)	1.6968
	Total Amount (In Cr.)	**16.783896**
Total estimated cost is Rs.16.78 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 16.78 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)

Before Proposal	**Ganeshnagar**	Cheduapada	24495	600	**92.99**	**814588.02**	**33.44**
After Proposal	**Ganeshnagar**	Cheduapada	16720	242			
		New Cheduapada	7577	160			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	1,678.39	Rs. Lac
B	Load due to load growth	-	1429.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	1250	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	7437281	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	105.98	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	33.44	Rs. Lac
J	Net Revenue Collected	H+I	139.42	Rs. Lac
K	% revenue return	(J/A)*100	8.3	%
L	Pay Back Period	100/K	12.04	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Cheduapada feeder.
- Reliability will be improved for commercial consumers by strengthening the New Line
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Improving Reliability(N-1) of Civil Township PSS

1.0 Proposal for New Feeder from Chhend GSS to Civil Township PSS:

Proposal:

33kV New feeder from Chhend GSS to Civil Township PSS.

Requirement/ Need of the proposal:

Objective: To ensure the safe and reliable power to Civil Township connectivity from Other GSS.

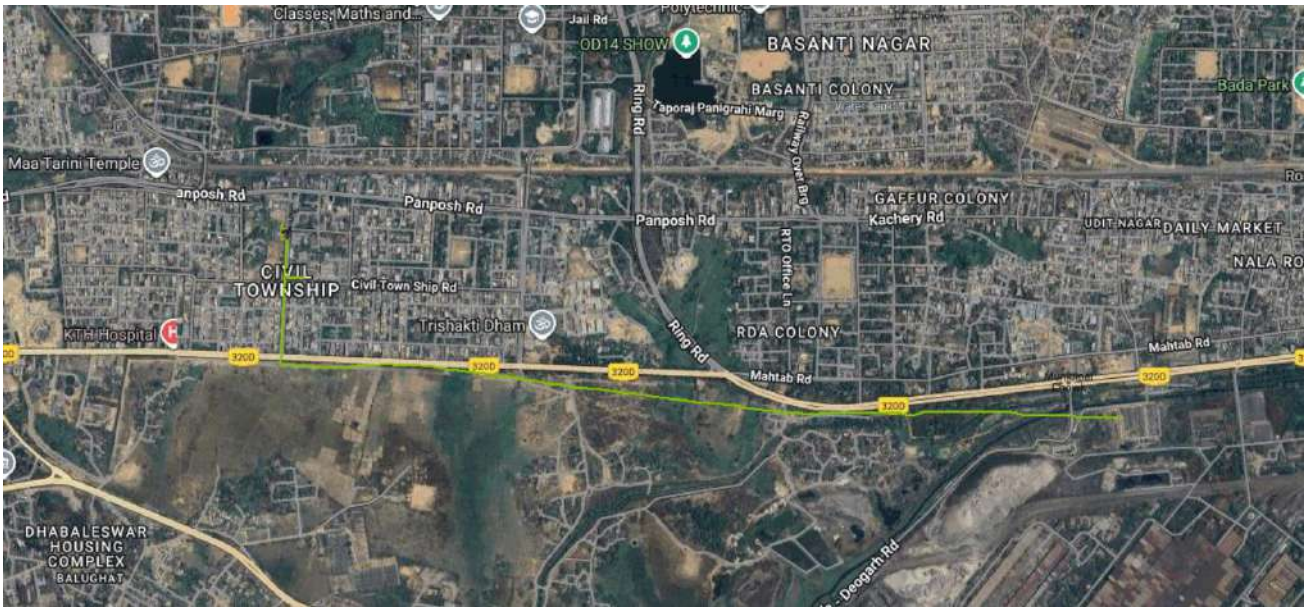
Existing Scenario:

- 33kV PHED feeder emanates from Rourkela GSS, feeder length is 4 Ckm, Peak Loading is 210.3 Amp and conductor size is 232Sqmm AAAC.
- 33kV PHED feeder feeds Civil Township PSS which comes under Rourkela City area.
- Civil Township is the commercial area of Rourkela city and therefore an uninterrupted power supply is necessary for this area occur.
- The Civil Township (PSS) serves a critical urban load center within the Civil Township area of Rourkela, encompassing residential, commercial, and institutional consumers. Currently, the PSS has Connectivity with two sources,both from the Rourkela GSS.
- The Rourkela Grid Substation (GSS) has recently faced multiple supply interruptions due to recurring faults and outages at the substation level. Incidents such as pulling out operations, the emergence of hot spots within the busbar system, and critical busbar faults have necessitated emergency shutdowns, severely disrupting the continuity of power supply.
- These technical challenges have resulted in complete power outages not only in the Civil Township area but also across other feeders emanating from Rourkela GSS.
- In light of these vulnerabilities, there is an urgent need to establish an additional reliable source from a separate GSS to ensure N-1 redundancy and maintain uninterrupted power supply to this vital urban region.

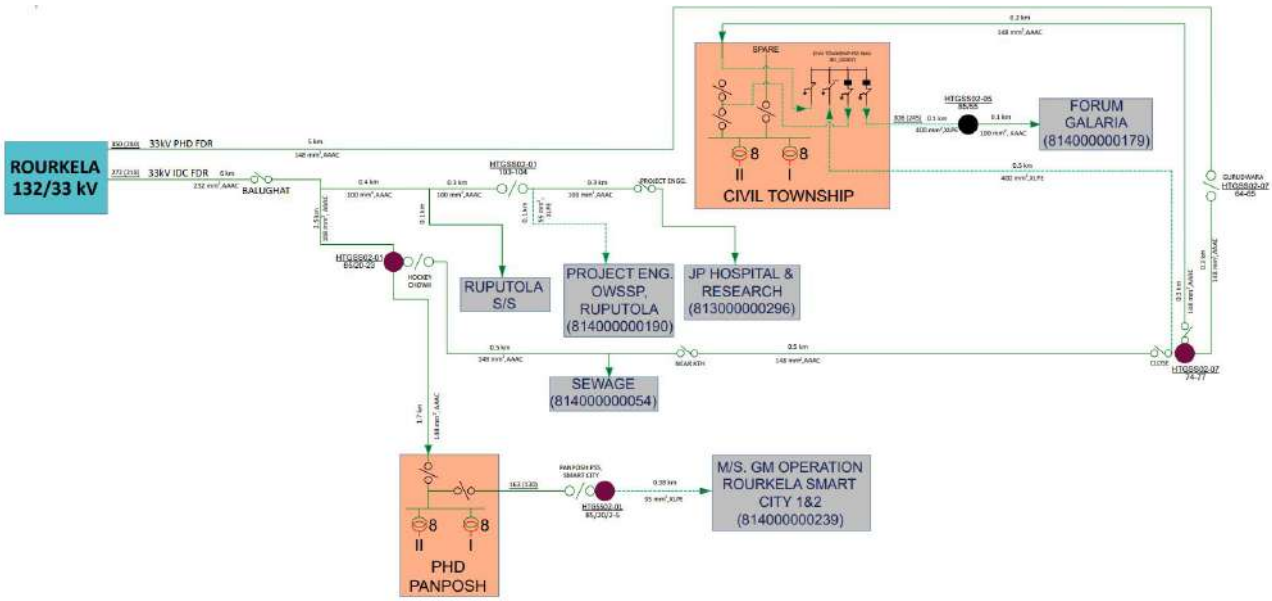
Existing Peak (FY25-26) Loading and projected load of PHED Feeder:

Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY25 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Rourkela	PHED	26	12	46%	Ok	13.12	51%	Ok

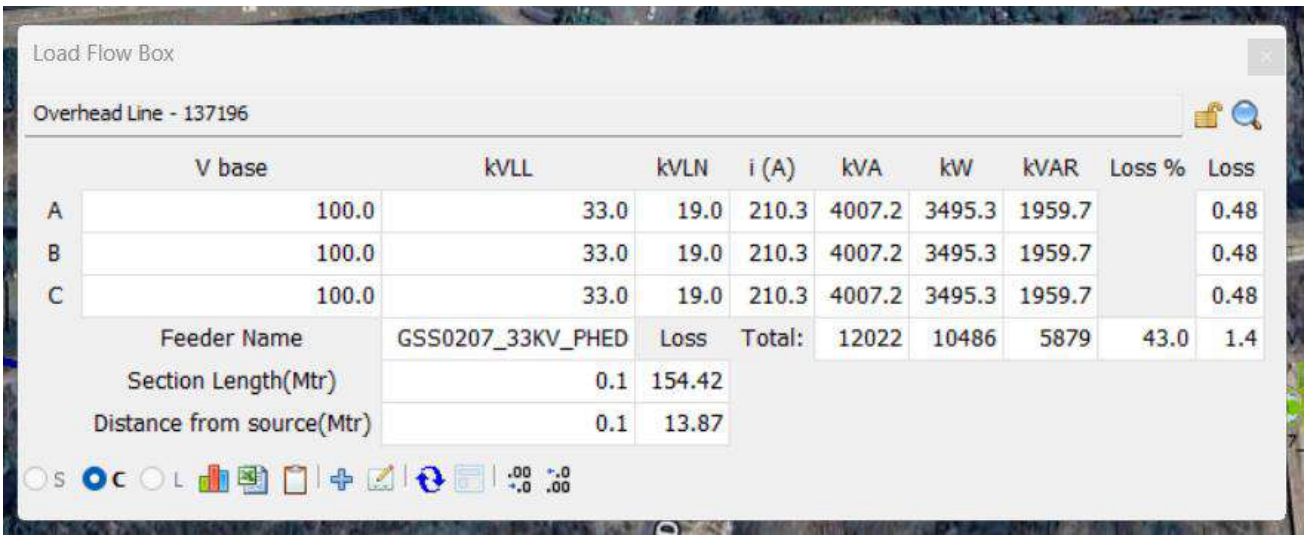
GIS MAP



SLD Map:



Load Flow Study of existing scenario in Cyme Software



Load Flow Box

Overhead Line - 137196

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	210.3	4007.2	3495.3	1959.7		0.48
B	100.0	33.0	19.0	210.3	4007.2	3495.3	1959.7		0.48
C	100.0	33.0	19.0	210.3	4007.2	3495.3	1959.7		0.48
Feeder Name		GSS0207_33KV_PHED	Loss	Total:	12022	10486	5879	43.0	1.4
Section Length(Mtr)		0.1	154.42						
Distance from source(Mtr)		0.1	13.87						

Load Flow Study of 1 Yr load growth scenario in Cyme Software

Load Flow Box

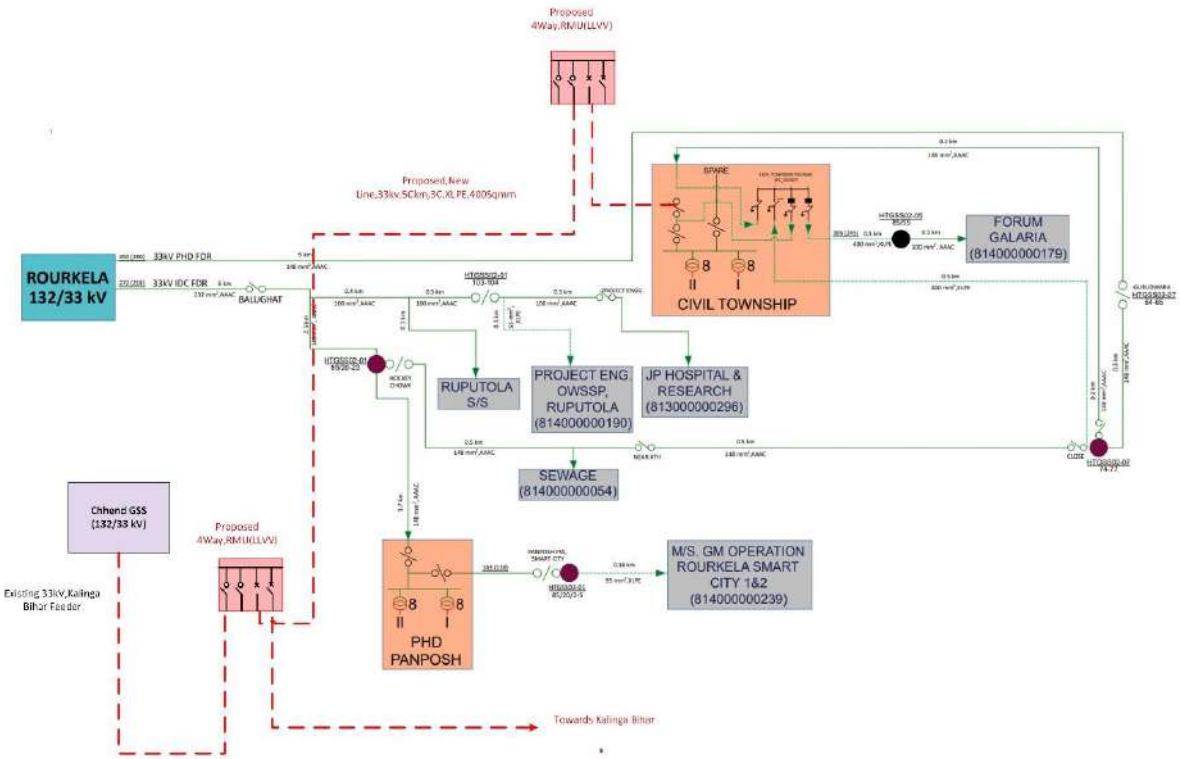
Overhead Line - 137196

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
B	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
C	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
	Feeder Name	GSS0207_33KV_PHED	Loss	Total:	13178	11459	6509	47.2	1.7
	Section Length(Mtr)	0.1	182.72						
	Distance from source(Mtr)	0.1	13.83						

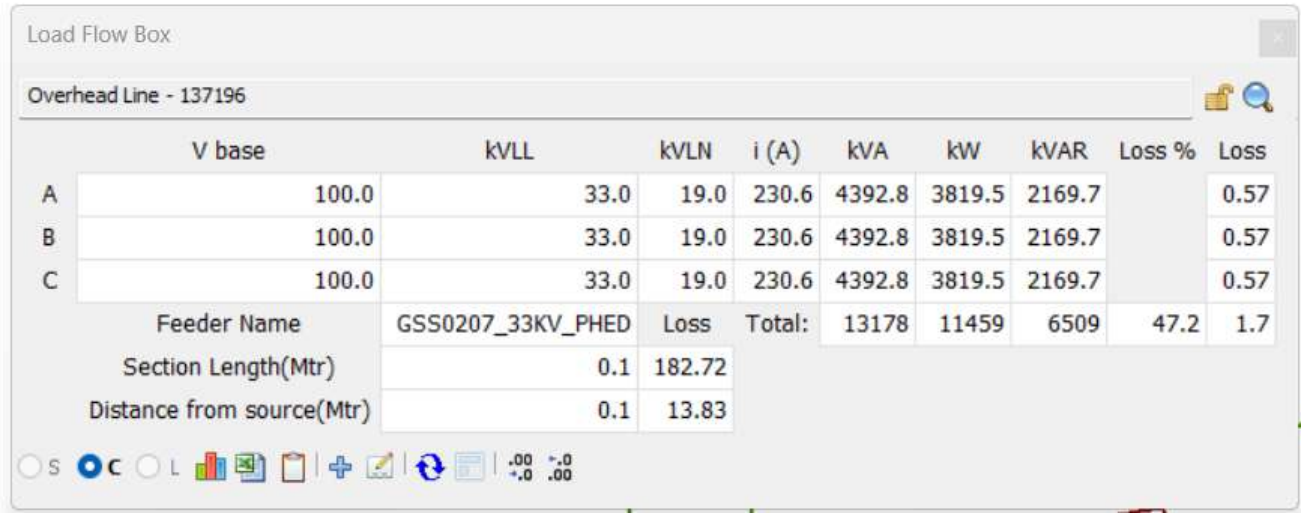
Proposed Scenario:

- A new 4.5Ckm line is proposed from Chhend GSS to Civil Township PSS for dedicated power evacuation. One 4-way RMU will be installed at Chhend GSS and another at Civil Township PSS where the line terminates, ensuring a reliable supply.

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 137196

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
B	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
C	100.0	33.0	19.0	230.6	4392.8	3819.5	2169.7		0.57
	Feeder Name	GSS0207_33KV_PHED	Loss	Total:	13178	11459	6509	47.2	1.7
	Section Length(Mtr)	0.1	182.72						
	Distance from source(Mtr)	0.1	13.83						

Scope of Work:

- New line ,33kV,5 km,3C,1R, XLPE,400Sqmm using HDD.
- Two No's of 33kV ,4Way RMU(LLVV).
- One of 4 Pole with 2 Nos of isolators

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:-	33kV New Line from Chhend GSS to Civil Township PSS	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A:400Sqmm XLPE Cable-5 KM ((Refer Annexure-167)	**4.48212**
2	PART B: 4 Ways RMU-2 Nos (Refer Annexure-99)	**1.1312**
3	PART C: 4 Pole with 2 Isolators-1 Nos (Refer Annexure-169)	**0.1141**
	Total Amount (in Cr.)	**5.72742**
	Total Amount (In Cr.)	**₹ 5.73**
Total estimated cost is Rs. 5.73 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 5.28 Cr. (For detailed BoQ, refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

- Civil Township PSS acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Civil Township Area.
- This proposal improves the reliability of Civil Township PSS and improves the reliability of HT consumers
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by source from two GSS 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 the upcoming potential consumers.

Improving Reliability(N-1) of POWERHOUSE PSS

1.0 Proposal for New Feeder from Chhend GSS to Power House PSS:

Proposal:

33kV New feeder from Chhend GSS to Power House PSS.

Requirement/ Need of the proposal:

Objective: To ensure the reliable power to Power House PSS Connectivity from two GSS.

Existing Scenario:

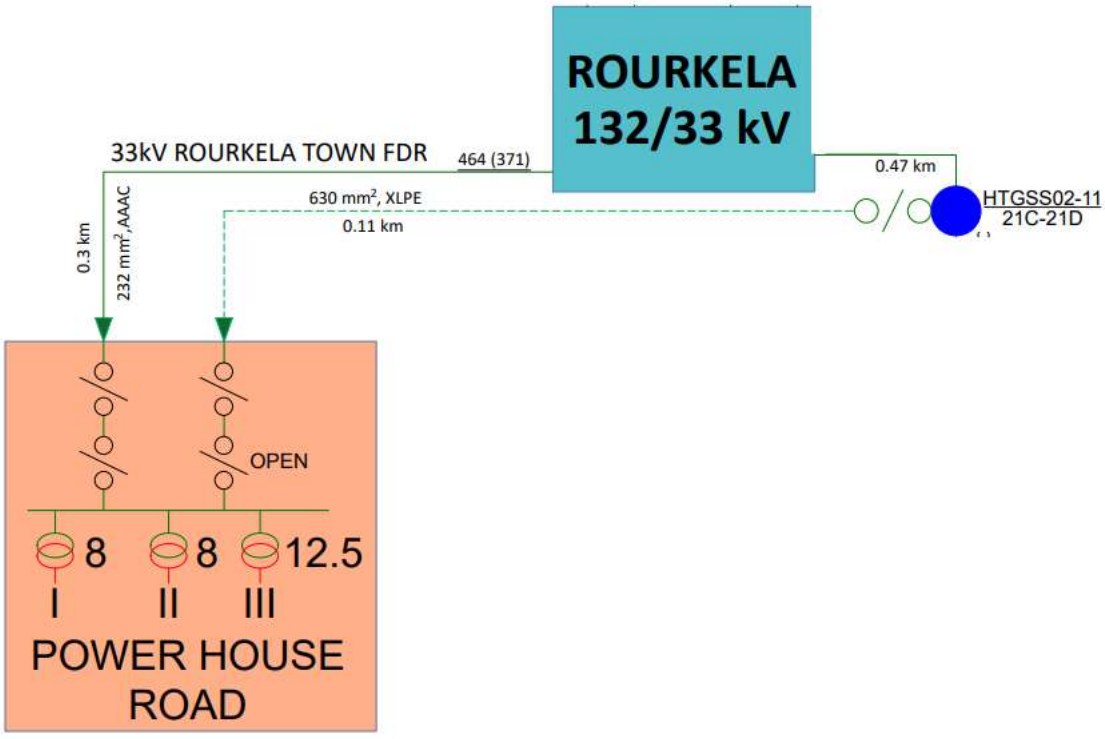
- 33kV Rourkela Town feeder emanates from Rourkela GSS, feeder length is 0.2 Ckm, Peak Loading is 304 Amp and conductor size is 232Sqmm AAAC.
- 33kV Rourkela Town feeder feeds Power House PSS which comes under Rourkela City area.
- Power House is the commercial area of Rourkela city and therefore an uninterrupted power supply is necessary for this area.
- The Power House (PSS) serves a critical urban load center within the Power House area of Rourkela, encompassing residential & Commercial, consumers. Currently, the PSS has Connectivity with two sources,both from the Rourkela GSS.
- The Rourkela Grid Substation (GSS) has recently faced multiple supply interruptions due to recurring faults and outages at the substation level. Incidents such as pulling out operations, the emergence of hot spots within the busbar system, and critical busbar faults have necessitated emergency shutdowns, severely disrupting the continuity of power supply.
- These technical challenges have resulted in complete power outages to Udit Nagar, Main Road & Plant side area which are fed by Power House PSS.
- In light of these vulnerabilities, there is an urgent need to establish an additional reliable source from a separate GSS to ensure N-1 redundancy and maintain uninterrupted power supply to this vital urban region.

Existing Peak (FY25-26) Loading and projected load of Rourkela Town Feeder:

Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY-25 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Projected load FY-27 (MVA)**	**% Loading**	**Feeder Under voltage Status**
Rourkela	Rourkela Town	26	17.4	67%	OK	19.008	73.1%	OK

GIS MAP

SLD Map:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Source - 43704336

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	303.7	5786.2	5033.2	2854.2		0.00
B	100.0	33.0	19.1	303.7	5786.2	5033.2	2854.2		0.00
C	100.0	33.0	19.1	303.7	5786.2	5033.2	2854.2		0.00
	Feeder Name	GSS0210_33KV ROURKELA TOWN	Loss	Total:	17358	15100	8563	16.5	0.0
	Section Length(Mtr)	0.0	102.84						
	Distance from source(Mtr)	0.0	23.94						

Load Flow Study of 1 Yr load growth scenario in Cyme Software

Load Flow Box

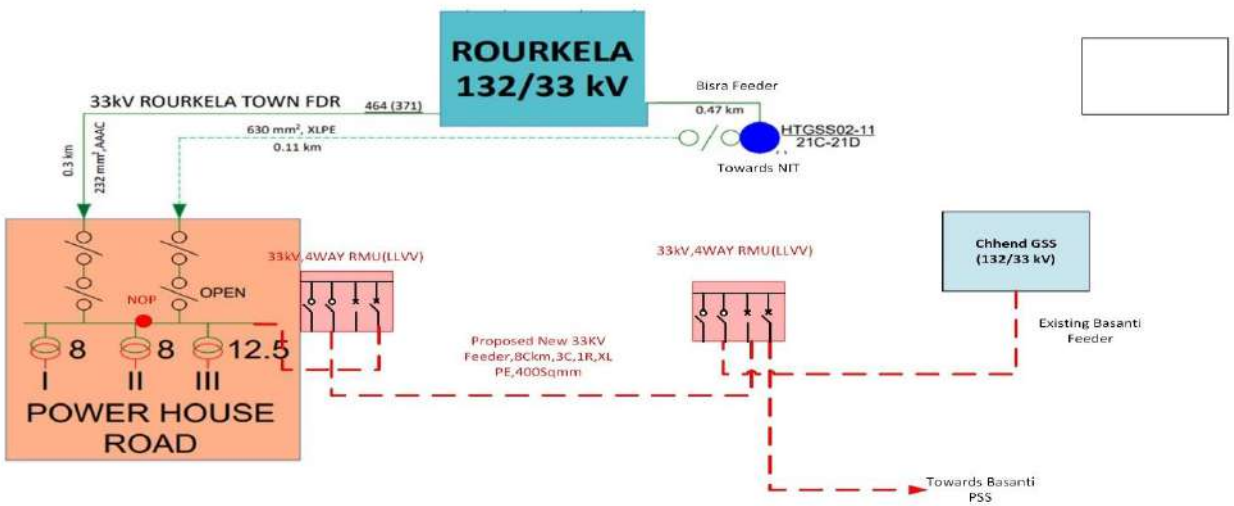
Overhead Line - 6336299

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
B	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
C	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
	Feeder Name	GSS0210_33KV ROURKELA TOWN	Loss	Total:	19008	16486	9461	68.0	0.9
	Section Length(Mtr)	0.0	118.54						
	Distance from source(Mtr)	0.0	23.93						

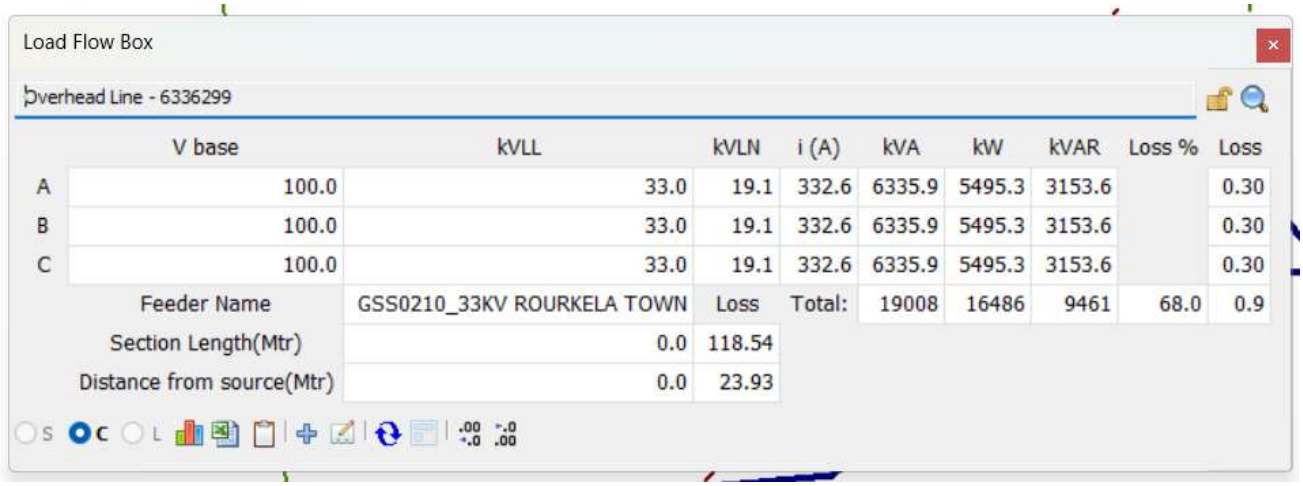
Proposed Scenario:

- A new 6.5 km line is proposed from Chhend GSS to Power House PSS for dedicated power evacuation. One 4-way RMU will be installed at Chhend GSS and another at Power House PSS where the line terminates, ensuring a reliable supply.
- By this, PTRs will segregate to both the existing and proposed feeder.

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 6336299

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
B	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
C	100.0	33.0	19.1	332.6	6335.9	5495.3	3153.6		0.30
	Feeder Name	GSS0210_33KV ROURKELA TOWN	Loss	Total:	19008	16486	9461	68.0	0.9
	Section Length(Mtr)	0.0	118.54						
	Distance from source(Mtr)	0.0	23.93						

Scope of Work:

- New line ,33kV,6.5 km,3C,1R, XLPE,400Sqmm using HDD.
- Three No's of 33kV ,4Way RMU(LLVV).
- One No of 4 Pole with 2 nos of Isolators

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division:-	**RED**	
Name of the Sub-Division: -	Udit Nagar	
Name of Section:-	Power House	
Name of the Work:-	33kV New Feeder from Chhend GSS to Power House PSS	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A:400Sqmm XLPE Cable -6.5 KM (Refer Annexure-167)	**5.826756**
2	PART B: 4 Way RMU-3 Nos (Refer Annexure-100)	**1.6968**
3	PART C:4 Pole with 2 Nos of Isolators-1 Nos (Refer Annexure-169)	**0.1141**
	Total Amount (In Cr.)	**7.637656**
	Total Amount (In Cr.)	**₹ 7.64**
Total estimated cost is Rs. 7.64 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 7.64 Cr. (For detailed BoQ, refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

- Power House acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Power House Area.
- This proposal improves the reliability of Power House PSS and improves the reliability of HT consumers
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- Reliability will be improved for domestic as well as commercial consumers by source from two GSS 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 the upcoming potential consumers.

N-1 reliability of 33kV Feeder

1.0 Proposal for N-1 Reliability improvement of Goshala PSS:

Proposal:

33kV New link from 33-11kV Goshala PSS and IIM Sambalpur.

Requirement/ Need of the proposal:

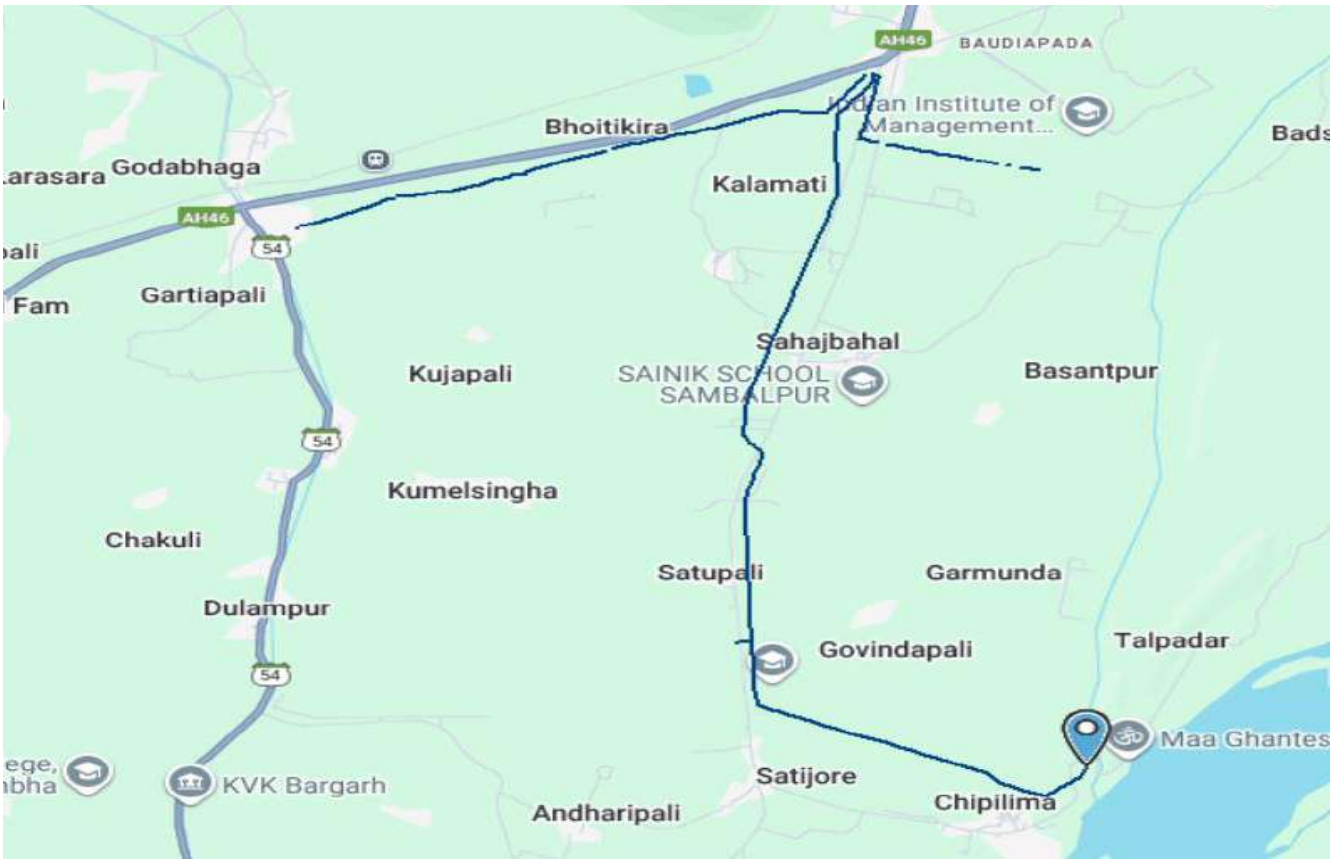
Objective: To improve the reliability of Goshala PSS and IIM Sambalpur through interconnector line

Existing Scenario:

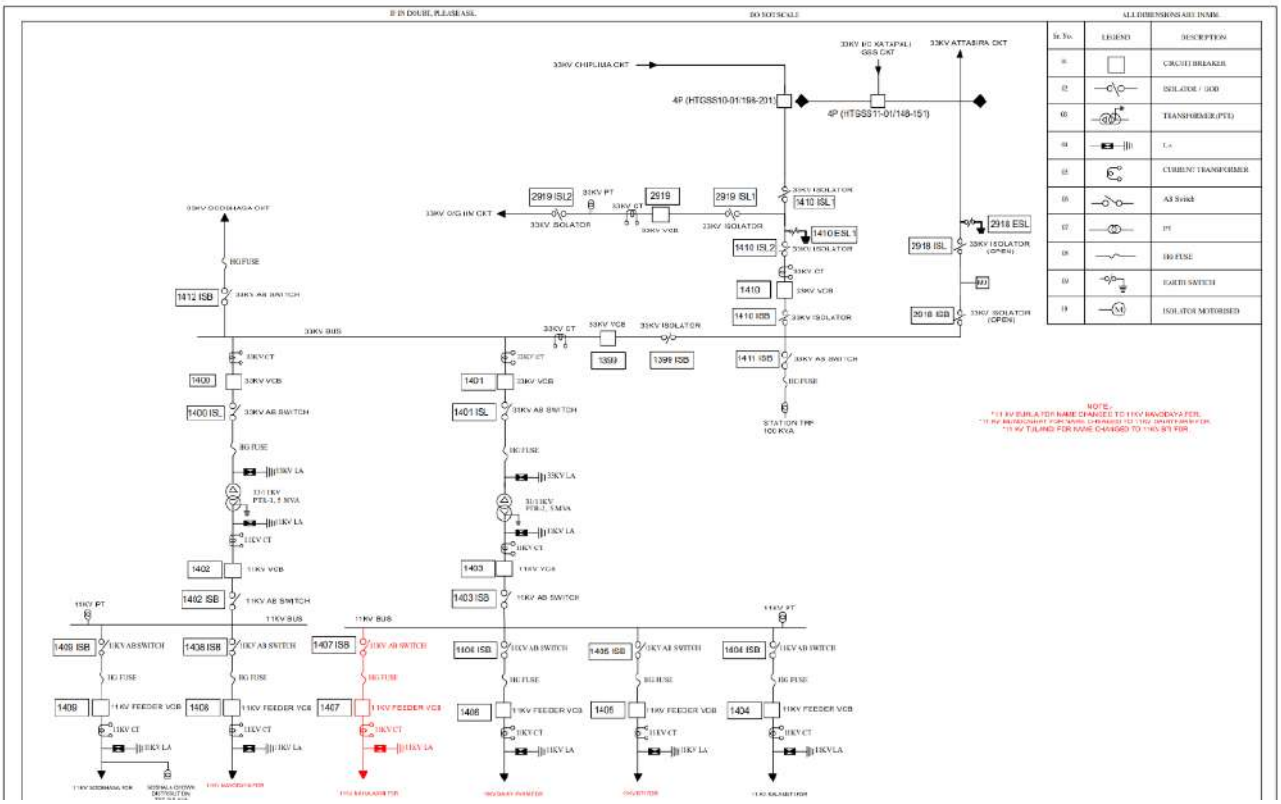
- 33/11 KV Goshala PSS is availing its 33 KV Power supply through 33 KV Goshala Feeder emanating from 132/33 KV Chiplima GSS.
- Another 33 KV line i.e., 33 KV Attabira Feeder emanating from 220/132/33 KV Kantapali GSS which is passing through Goshala GSS without any Switchgear protection.
- From the existing 33 KV Bus of 33/11 KV Goshala PSS providing power supply to-:
- Goshala PSS with O/D VCB & Indoor CRP Protection.
- IIM Sambalpur with O/D VCB & Indoor CRP Protection.
- Godbhaga PSS without any protection.
- Therefore, whenever Fault occurs in Godbhaga 33 KV line (O/G from Goshala 33 KV bus) the entire supply fails are connected with Goshala 33 KV Bus.
- Considering the importance of Goshala PSS, it provides power supply to HT Consumers, IIM Sambalpur, Agro Industries, Odisha State Open University it is being important to maintain reliable power supply at Goshala PSS.
- This feeder is proposed to ensure safe power supply to the commercial as well as domestic consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector between 33kV IDC Industrial feeder and 33kV Chhend Vedvyas feeder is proposed for improving reliability.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chipilima	Goshala	16626	19	913.46	

GIS Map:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software


Load Flow Box

Overhead Line - 112163580

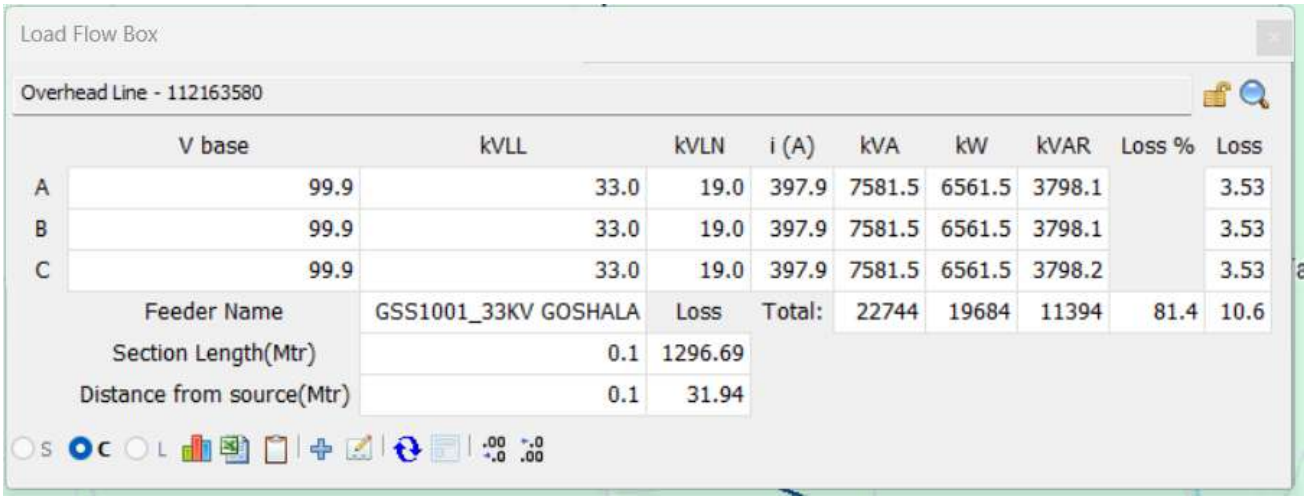
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	99.9	33.0	19.0	332.9	6342.1	5541.9	3083.9		2.47
B	99.9	33.0	19.0	332.9	6342.1	5541.9	3083.9		2.47
C	99.9	33.0	19.0	332.9	6342.2	5541.9	3083.9		2.47
Feeder Name		GSS1001_33KV GOSHALA	Loss	Total:	19026	16626	9252	68.1	7.4
Section Length(Mtr)		0.1	913.46						
Distance from source(Mtr)		0.1	32.74						

Proposed Scenario:

- 0.1 KM -400Sqmm XLPE Cable for reliability improvement of Goshala PSS with RMU and VCB arrangements.

Proposed Loading after 1 Yrs Load Growth:

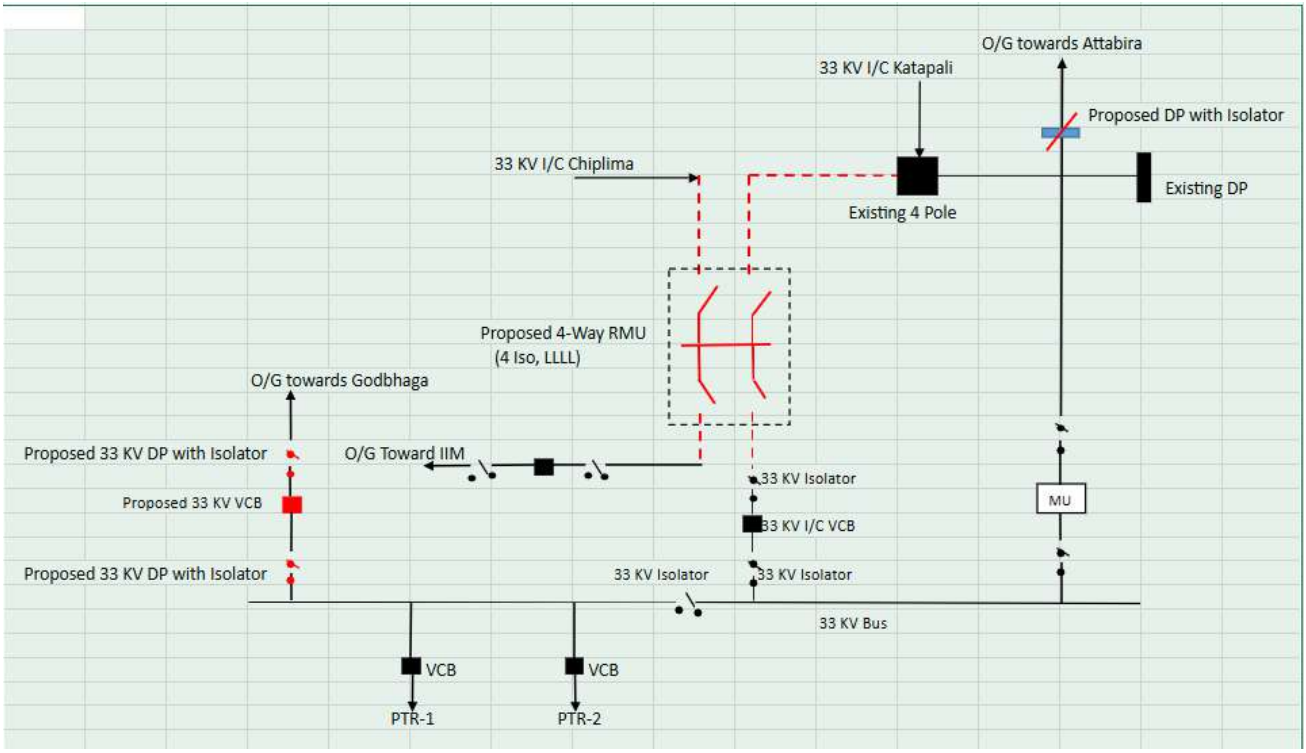
Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chipilima	Goshala	19684	19	1296.7	


Load Flow Box

Overhead Line - 112163580

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.1		3.53
B	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.1		3.53
C	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.2		3.53
Feeder Name		GSS1001_33KV GOSHALA	Loss	Total:	22744	19684	11394	81.4	10.6
Section Length(Mtr)		0.1	1296.69						
Distance from source(Mtr)		0.1	31.94						

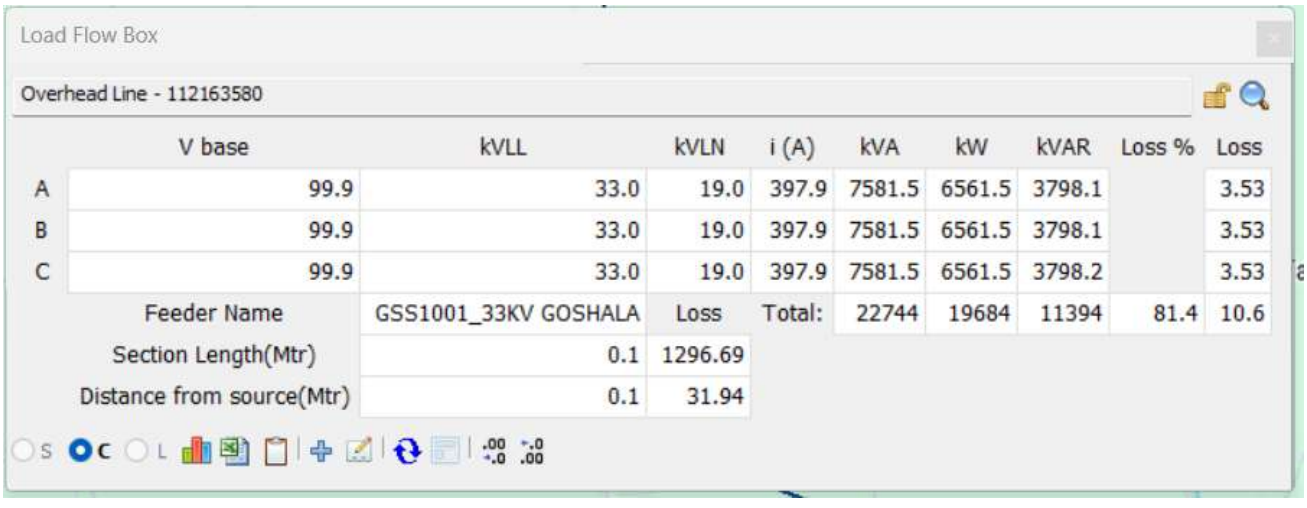
Proposed SLD:



Proposed Loading after 1 Yrs Load Growth with Proposal

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Chipilima	Goshala	19684	19	1296.7	

Load Flow Study after proposal scenario in Cyme Software:


Load Flow Box

Overhead Line - 112163580

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.1		3.53
B	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.1		3.53
C	99.9	33.0	19.0	397.9	7581.5	6561.5	3798.2		3.53
Feeder Name		GSS1001_33KV GOSHALA	Loss	Total:	22744	19684	11394	81.4	10.6
Section Length(Mtr)		0.1	1296.69						
Distance from source(Mtr)		0.1	31.94						

Scope of Work:

- 0.1 Ckm new interconnector line I/C Katapali 4 pole to Proposed RMU.

- 1 Nos of 4 Way RMU
- 1 Nos of O/D VCB
- 1 Nos of 4 pole with 2 Isolators

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**SED**	
Name of the Work :-	Proposal for 33kV New interconnector link line I/C Katapali 4 pole to Proposed RMU for reliability improvement of Goshala PSS	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	PART A: 400 Sqmm XLPE Cable -0.1 KM (Refer Annexure-167)	0.0896
2	PART B: 4 way RMU-1Nos (Refer Annexure-99)	0.5656
3	PART C: 4 Pole with 2 Nos of Isloators-1 Nos (Refer Annexure-169)	0.1141
4	PART D: O/D VCB-1 Nos (Refer Annexure-162)	0.2961
	Total Amount (In Cr.)	**1.0654**
Total estimated cost is Rs.1.07 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.07 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

- Goshala PSS acts as a High revenue PSS comes under Sambalpur Area; any fault here leads to complete blackout of Godbhaga,Goshala and IIM Sambalpur Area.
- This proposal improves the reliability of Goshala PSS and improves the reliability of IIM Sambalpur.
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- Reliability improvement of Goshala PSS and IIM Sambalpur feeder.
- Reliability will be improved for commercial consumers by strengthening the inteconnector line feeder between I/C Katapali feeder and Proposed RMU.

- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

N-1 reliability of 33kV Feeder

1.0 Proposal for N-1 Reliability improvement of HT consumer of Kolabira feeder:

Proposal:

33kV New Line from Kolabira PSS to Patrapali 4 Pole.

Requirement/ Need of the proposal:

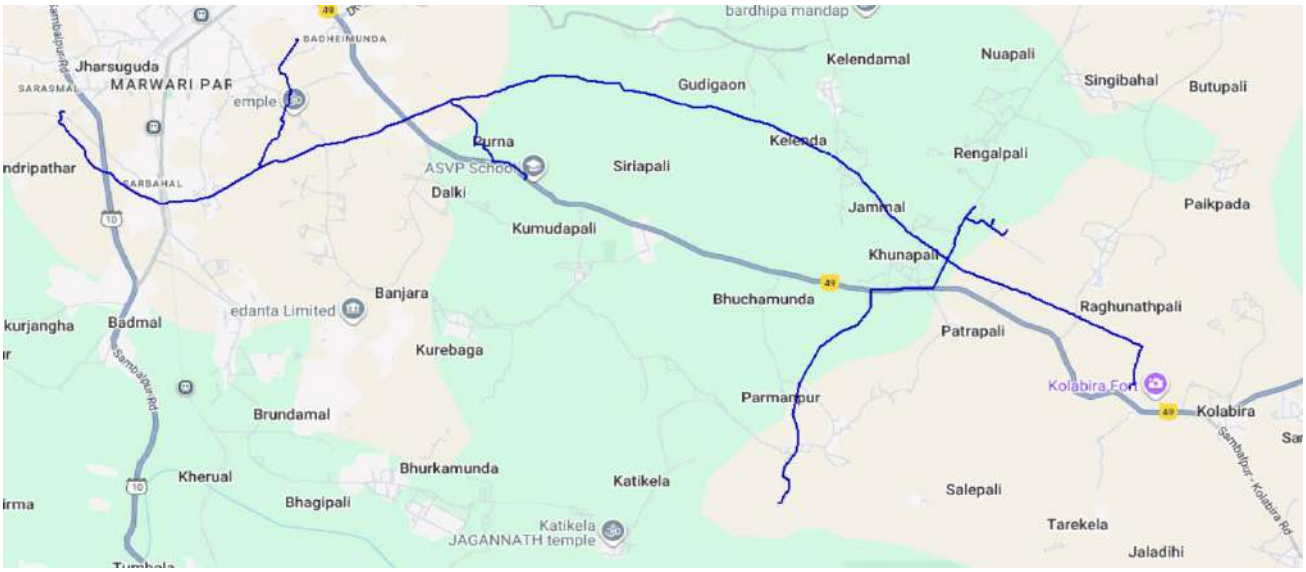
Objective: To improve the reliability of industrial area of Kolabira feeder through connecting New line from Kolabira PSS to Patrapali 4pole

Existing Scenario:

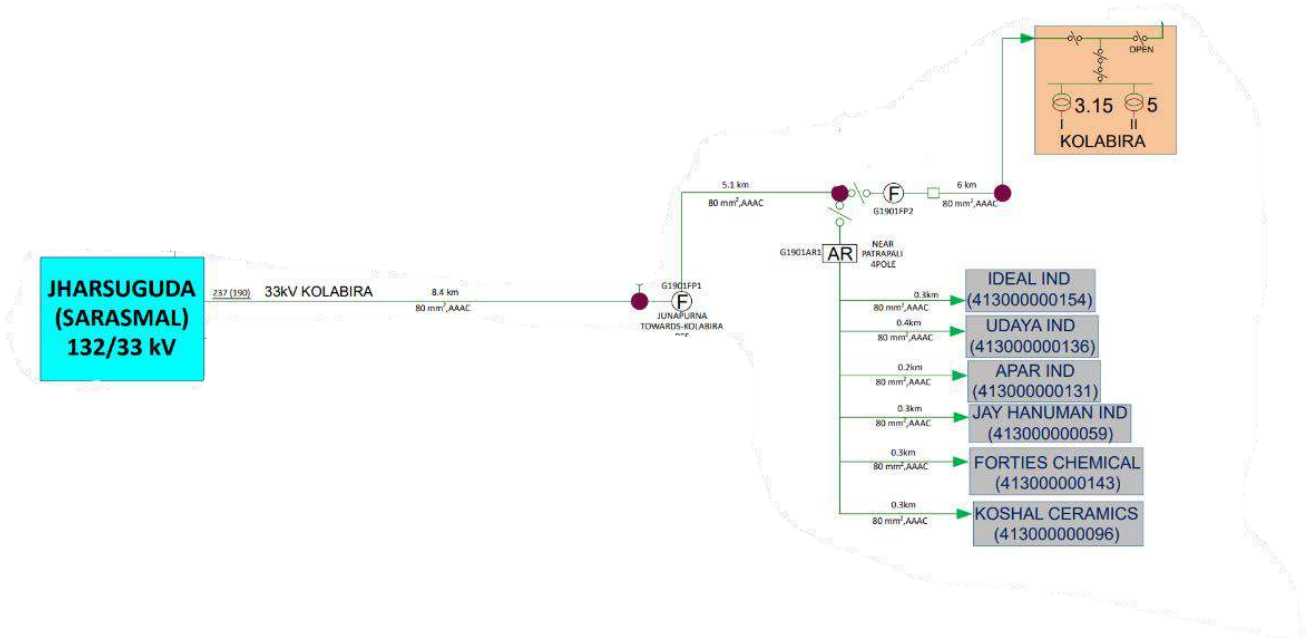
- At present, 33kV Kolabira feeder is emanating from Sarasamal (Jharsuguda) GSS. The total length of this feeder is 33 KM and the peak load is 287 AMP.
- The conductor size of 33kV Kolabira feeder is 232/100/80sq.mm AAAC.
- This feeder feeds 2 Nos of PSS (Purna & Kolabira PSS), 1nos of HT and 1 No of Megalift consumer.
- 6 Nos of HT High revenue consumers are getting supply from T-off Section.
- If t-off section got interrupted then all 6 Nos of HT consumer get affected.
- So interconnector from Kolabira PSS to Patrapali 4 pole is required to insure reliable power to six no. of HT consumer.
- This feeder is proposed to ensure safe power supply to the commercial consumers.
- Break-down on 33kV feeder is encountered which hampers the reliability of power supply and also considering future load growth of the upcoming consumers, laying new interconnector from Kolabira PSS to Patrapali 4 Pole feeder is proposed for improving reliability.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Jharsuguda	Kolabira	14241	33	552.93	

GIS Map:



Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Source - 37095897

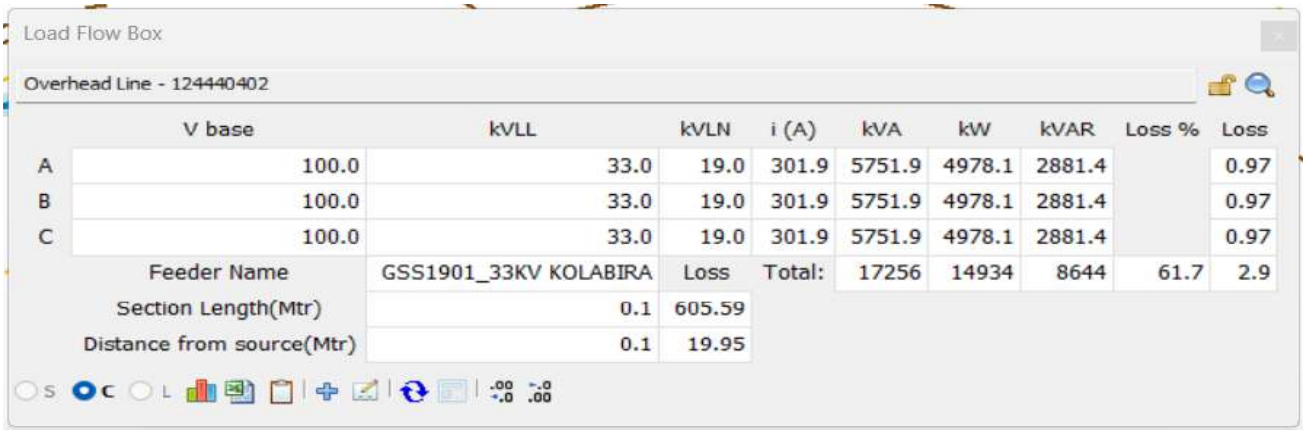
	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	287.4	5475.0	4746.9	2728.2		0.00
B	100.0	33.0	19.1	287.4	5475.0	4746.9	2728.2		0.00
C	100.0	33.0	19.1	287.4	5475.0	4746.9	2728.2		0.00
	Feeder Name	GSS1901_33KV KOLABIRA	Loss	Total:	16425	14241	8184	58.0	0.0
	Section Length(Mtr)	0.0	552.93						
	Distance from source(Mtr)	0.0	20.05						

Proposed Scenario:

- 232sqmm AAAC conductor-4 Ckm from Kolabira PSS to Patrapali 4 Pole

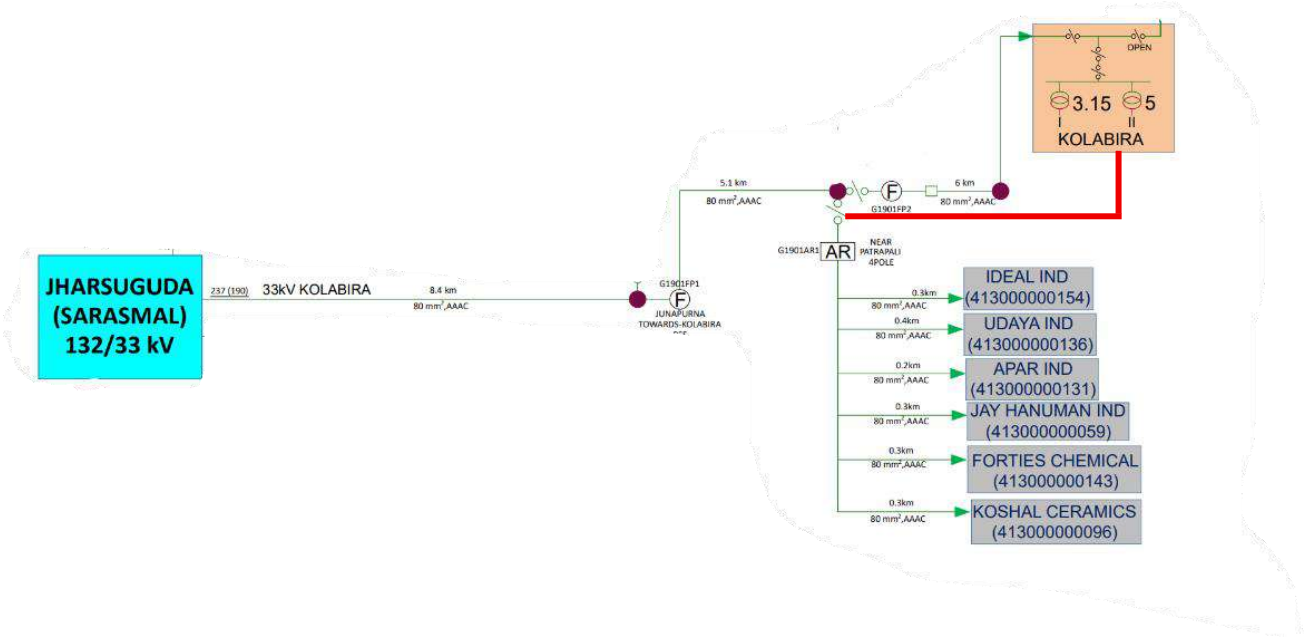
Proposed Loading after 1 Yrs Load Growth:

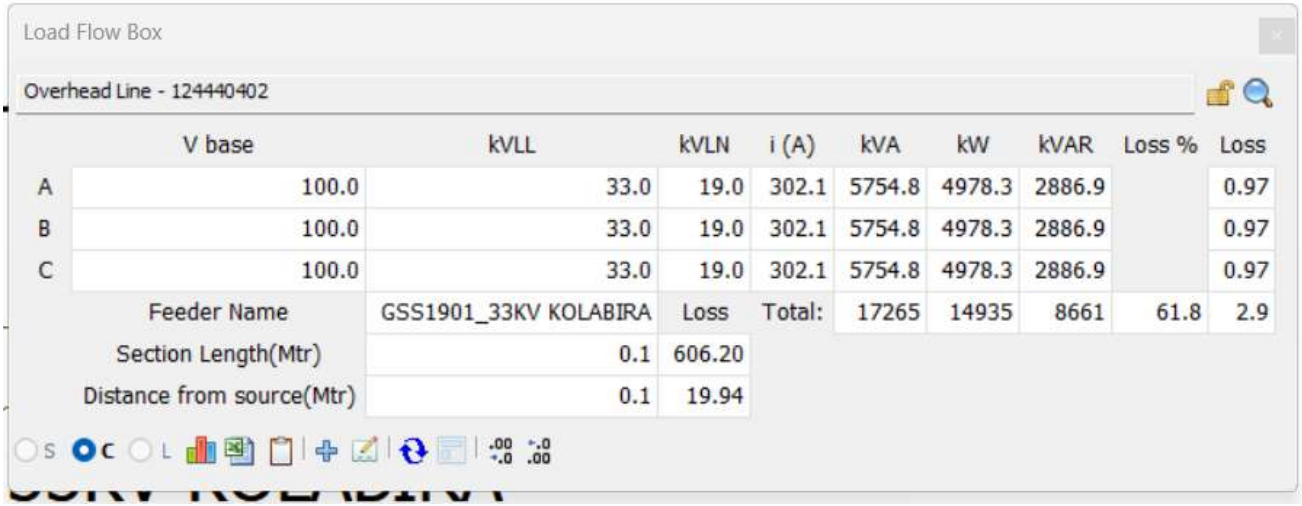
Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Jharsuguda	Kolabira	14934	33	605	



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
B	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
C	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
Feeder Name		GSS1901_33KV KOLABIRA	Loss	Total:	17256	14934	8644	61.7	2.9
Section Length(Mtr)		0.1	605.59						
Distance from source(Mtr)		0.1	19.95						

Proposed SLD:




Load Flow Box

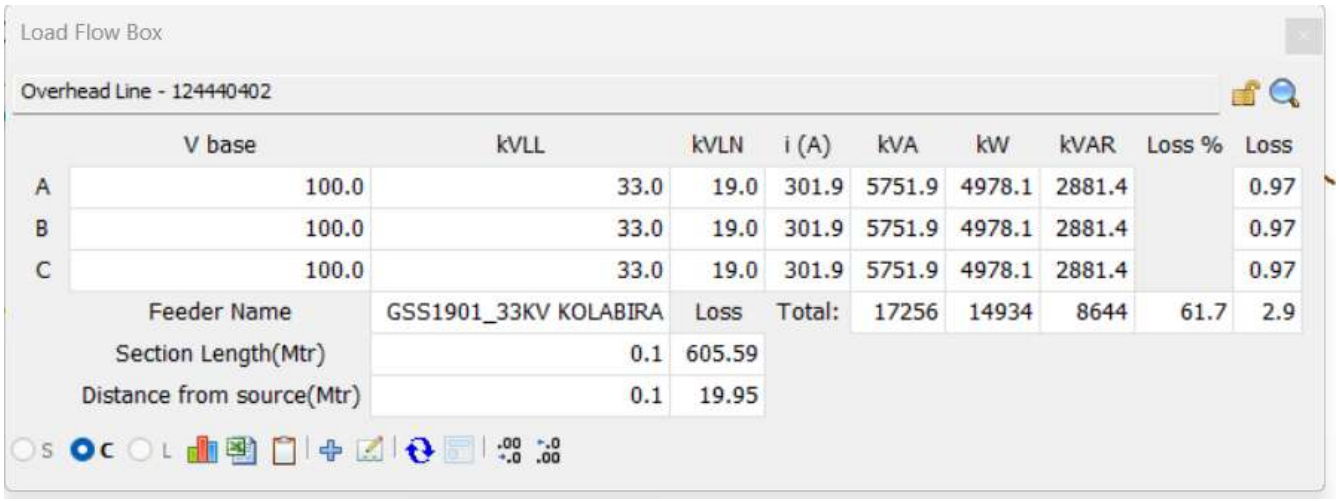
Overhead Line - 124440402

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	302.1	5754.8	4978.3	2886.9		0.97
B	100.0	33.0	19.0	302.1	5754.8	4978.3	2886.9		0.97
C	100.0	33.0	19.0	302.1	5754.8	4978.3	2886.9		0.97
Feeder Name		GSS1901_33KV KOLABIRA	Loss	Total:	17265	14935	8661	61.8	2.9
Section Length(Mtr)		0.1	606.20						
Distance from source(Mtr)		0.1	19.94						

Proposed Loading after 1 Yrs Load Growth with Proposal

Proposed Condition after one Year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Jharsuguda	Kolabira	14934	33	605	

Load Flow Study after proposal scenario in Cyme Software:


Load Flow Box

Overhead Line - 124440402

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
B	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
C	100.0	33.0	19.0	301.9	5751.9	4978.1	2881.4		0.97
Feeder Name		GSS1901_33KV KOLABIRA	Loss	Total:	17256	14934	8644	61.7	2.9
Section Length(Mtr)		0.1	605.59						
Distance from source(Mtr)		0.1	19.95						

Scope of Work:

- 4 Ckm new interconnector line from MARANG PIDI to ARRORA EGENCY FOUR POLE.
- 1 Nos of O/D VCB at Kolabira PSS
- 2 Nos of 4 pole with 2 Isolators
- 1 Nos of DP with Isolators

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division :-	**JED**	
Name of the Work :-	Proposal for 33kV New interconnector link line from Kolabira PSS to Patrapali $ pole for reliability improvement of 6 Nos of HT consumers	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A: 232Sqmm AAAC conductor -4 CKM (Refer Annexure-111)	1.2708
2	PART B: O/D VCB-1Nos (Refer Annexure-162)	0.2961
3	PART C: 4 Pole with 2 Nos of Isolators-2 Nos (Refer Annexure-169)	0.2282
4	PART D: DP with Isolators-1Nos (Refer Annexure-96)	0.0576
	Total Amount (In Cr.)	**1.85**
Total estimated cost is Rs.1.85 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹1.85 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

- 33kV Kolabira feeder acts as a High revenue feeder; any fault at T-off section of industrial feeder leads to complete blackout of industrial Area.
- This proposal improves the reliability of industrial feeder
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on both feeders without redundancy increases stress on existing infrastructure.
- Risk of thermal overloading during peak hours or contingency switching

Benefit to the system and consumers:

- Reliability improvement of 33kV industrial Area of Kolabira feeder .
- Reliability will be improved for commercial consumers by strengthening the proposed line.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

N-1 connectivity between feeders from different PSS

Proposal for Link line between Old Udit Nagar feeder and RGH feeder:

Proposal:

11kV New link line between Old Udit Nagar feeder and RGH feeder to provide N-1 connectivity to Old Udit Nagar feeder from Civil Township PSS

Requirement/ Need of the proposal:

Objective:

Back feed arrangement for Old Udit Nagar feeder (Powerhouse PSS) from RGH Feeder (Civil Township PSS) during power supply failure.

Existing Scenario:

- Old Udit Nagar feeder emanates from Powerhouse PSS and provides power supply to approximately 2500 Nos of commercial & domestic consumer at Udit Nagar area of Rourkela city. It is one of the main business hubs of Rourkela. In addition to that It gives supply to Municipality office, Income tax office, police station, civil court, hotel & hospitals.
- Conductor size of the feeder is 100Sqmm, ACSR and in peak summer load of this feeder rises to 201A. Further load growth is expected due to growing commercial activities & rapid urbanization in the area.
- Revenue collection is significant from commercial & domestic consumers in this area.

Existing FY-26 Loading and projected loading Deatils :

Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand Fy-26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand Fy-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Power House	Old Udit Nagar	5.92	3.838	64.83	Not Overloaded	4.128	69.72	Not Overloaded
Civil Township	RGH Feeder	5.92	1.236	20.8	Not Overloaded	1.33	22.46	Not Overloaded

Existing SLD: