ANNEXURE 1

Scheme Name: 33kV Overhead Road Crossing with UG Cable

Background

33kV lines were constructed with bare conductors passing National Highway / State Highway roads. In the event of a fault, often possess snapping hazards, conductor sagging, and safety risks. There is an inherent risk of being stuck by a tall vehicle or Heavy Goods. In order to mitigate the risk, Underground cable on such crossing is proposed. These locations are identified and 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.	33kV Road Crossing NH/SH with UG cable	Nos.	88	14	74

Proposal

Provision of **33kV UG cable to** prevent accidental contact, ensuring safety and reliability.

Proposed location are as follows:

Sl No.	Circle	District	Division	Subdivision	Section	Feeder	Location	NH/SH
1	Bargarh	Bargarh	BED	Bargarh-2	Ambapali	33KV Turunga	Pradhanpali,near NH	NH
2	Kalahandi	Kalahandi	KWED	Junagarh	Junagarh-2	33kV Junagarh Fdr.	Near Hinjlibahali Chowk	NH
3	Kalahandi	Kalahandi	KWED	Charbahal	Charbahal	33kV Charbahal	Near Hati bridge	NH
4	Sambalpur	Sambalpur	SED	Hirakud	Gosala	Chaurpur	kantapali	UG
5	Sambalpur	Sambalpur	SEED	Dhanupali	Dhanupali	33kV Putibandh	Near Ambira nagar	SH
6	Sambalpur	Jharsuguda	JED	SDO-1	Kolabira	33kv Kolabira fdr	sarbahal new flyover	SH
7	Rourkela	Sundargarh	Rajgangpur	Kalunga	Kalunga-2	Kalunga	Arun Steel	SH
8	Rourkela	Sundargarh	RED	Basanti	Basanti-1	Basanti	Sector-9	SH
9	Rourkela	Sundargarh	Rajgangpur	SDO-1	Kansbahal	Rourkela-1	Gogor	SH
10	Rourkela	Sundargarh	Rajgangpur	SDO-1	Kansbahal	Rourkela-2	Gogor	SH

Requirement/ Need of the Proposal

- Current system exposes the network to safety hazards from conductor snapping in NH & SH.
- Frequent interruptions, accidents, and non-compliance with CEA safety regulations occur in the absence of UG cable

Scope of Work

Sl. No.	Activity	UOM	Proposed Qty
1.	33kV Road Crossing NH/SH with UG cable	Nos.	10
	Total		**10**

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	33kV Road Crossing NH/SH with UG cable	Nos.	10	0.2856	2.86	Refer Annexure – 52 for detailed costing sheet
	Total		**10**		**2.86**	

Physical Target:

The proposed work will be completed by March-27.

Cost Benefit Analysis

Not applicable.

Benefit to the System and Consumers

- **System:** Fewer snapping-related outages, improved feeder reliability, reduced O&M burden, compliance with safety norms.
- **Consumers:** Safer surroundings, reduced accidents, more reliable and continuous 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.	33kV Road Crossing NH/SH with UG cable	Nos.	88	14	74	10	64		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 2

Scheme Name: 11kV Overhead Road Crossing with Cradle Guard

Background

Initially, most 11kV lines were constructed with bare conductors passing through trees, roads, and habitations without protective guarding. This often led to snapping hazards, conductor sagging, and safety risks. Since vesting, cradle guards have been installed at select vulnerable points, but many sections of feeders remain exposed. 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.	11kV Road Crossing with Cradle Guard	Nos.	729	0	729

Proposal

Provision of **cradle guards** at crossings, habitations, and tree-prone stretches of 11kV lines to prevent snapping and accidental contact, ensuring safety and reliability.

Requirement/ Need of the Proposal

- Current system exposes the network to safety hazards from conductor snapping and tree contact.
- Frequent interruptions, accidents, and non-compliance with CEA safety regulations occur in the absence of cradle guards.
- Cradle guards will safeguard lines in critical stretches, ensuring compliance and reducing outages.

Scope of Work

11kV Overhead Road Crossing with Cradle Guard:-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV Road Crossing with Cradle Guard	Nos.	40
	Total		

Refer Annexure – 133 for location details.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV Road Crossing with Cradle Guard	Nos.	40	0.0493	1.97	Refer Annexure – 53 for detailed costing sheet
	Total				**1.97**	

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

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Fewer snapping-related outages, improved feeder reliability, reduced O&M burden, compliance with safety norms.
- **Consumers:** Safer surroundings, reduced accidents, more reliable and continuous 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 Road Crossing with Cradle Guard	Nos.	729	0	729	40	689		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 3

Scheme Name: 33kV & 11kV Underground Railway crossing with UG Cable

Background

Initially, most 33kV & 11kV lines were constructed without spare cable. This often led to disruption of power supply in case of main cable failure until revival of main cable.
Since vesting, spare UG cable have been installed at many locations, but many feeders remain to be done. 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.	11kV Railway Crossing using U/G Cable	Nos.	65	47	18
2.	33kV Railway Crossing using U/G Cable	Nos.	17	0	17

Proposal

Provision of **33kV & 11kV UG cable to** prevent accidental contact, ensuring safety and reliability.

Requirement/ Need of the Proposal

- Current system leads to power supply disruption in case of main cable failure.
- Frequent interruptions, accidents, and non-compliance with CEA safety regulations occur in the absence of UG cable

Scope of Work

33kV & 11kV Railway crossing using U/G Cable:-

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV Railway Crossing using U/G Cable	Nos.	6
1.	33kV Railway Crossing using U/G Cable	Nos.	4
	Total		**10**

Locations:

11kV Network

Sl No	Circle Name	Division	Sub-Division	Section	Voltage Rating (KV)	Feeder Code	Feeder Name	Location
1	Sambalpur	Jharsuguda	JSG-I	Beheramal	11KV	41315201	11kV OMP	Panchpada
2	Sambalpur	Jharsuguda	JSG-I	Bagdihi	11KV	91536205	11kV BANDHPALI	Thakurpada
3	Sambalpur	Jharsuguda	JSG-II	Sahapada	11KV	41352203	11kV SRIPURA	Sunarimunda Railway Fatak
4	Sambalpur	Jharsuguda	Kuchinda	Bamra	11KV	4132C205	11kV GHANSARA	Bad-Dumbermunda
5	ROURKELA	SUNDARGARH	UJJALPUR	HEMGIRI	11KV	81231203	11kV KANIKA	KANIKA FATAK PADA
6	ROURKELA	RED	BISRA	BONDAMUNDA	11KV	81162202	11kV BARSUAN	BARTOLI

33kV Network

Sl. No	Circle	District	Division	Sub-Division	Section	Feeder Name	Railway Crossing Name	Location
1	Sambalpur	Jharsuguda	BNED	Belpahad	Gomadera	TRL1/2	KADUPADA	KADUPADA
2	Sambalpur	Jharsuguda	BNED	Belpahad	Bandhbahal	33KV OPGC	MAMA CHOWK	MAMA CHOWK
3	Sambalpur	Jharsuguda	BNED	Belpahad	Bandhbahal	33KV OPGC	Telenpali	Telenpali
4	Bargarh	Bargarh	BED	Bargarh-2	Ambapali	33KV Turunga	Near Barhamachar near ACC railway crossing	132KV crossing

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV Railway Crossing using U/G Cable	Nos.	6	0.1939	1.16	Refer Annexure – 55 for detailed costing sheet
1.	33kV Railway Crossing using U/G Cable	Nos.	4	0.2856	1.14	Refer Annexure – 54 for detailed costing sheet
	Total		**10**		**2.30**	

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

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Power disruption will improve, improved feeder reliability, reduced O&M burden, compliance with safety norms.
- **Consumers:** Safer surroundings, reduced accidents, more reliable and continuous 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 Railway Crossing using U/G Cable	Nos.	65	47	18	6	12		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33KV Railway Crossing using U/G Cable	Nos.	17	0	17	4	13		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 4

Scheme Name: Replacement of 33kV & 11 kV (HT) Bare to Insulated Conductor

Background

At the time of inception, the 33kV & 11KV distribution network was predominantly constructed using bare conductors (AAAC/ACSR). These lines, though economical, are prone to frequent transient interruptions due to tree contacts, bird faults, snapping during storms, and safety hazards in congested areas.

Since vesting, certain high-fault-prone stretches have been addressed by limited pilot projects of covered conductors in 33kV & 11KV feeders. However, a large portion of 33kV & 11KV feeders is still operating with bare conductors. The remaining stretches will be progressively converted to covered conductors under subsequent year's CAPEX plans in a phased manner.

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 Bare to Insulated Conductor	CKM	5562	39.92	5522
2.	33kV Bare to Insulated Conductor	CKM	519.13	3.59	515.54

Proposal

It is proposed to replace the existing bare conductors in identified 33kV & 11KV feeders with **insulated covered conductors**. The selection of feeders will be based on high fault incidence, dense vegetation, urban/congested corridors, and safety-sensitive locations.

Refer Annexure 134 & 135 for 11kV & 33kV Insulated conductor requirement.

Requirement/ Need of the Proposal

1. **Existing Deficiency/ Scope for Improvement:**

- Frequent feeder tripping due to tree branch contact, bird nesting, and accidental touches.
- High risk of conductor snapping leading to safety hazards and prolonged outages.
- Increased HT interruptions resulting in customer dissatisfaction and degradation of regulatory performance standards.

2. **Statutory / Regulatory Compliance:**

- As per CEA Safety Regulations, utilities must ensure adequate safety of lines passing through habitations and near trees. Bare conductors in such areas pose non-compliance risks.
- Conversion to covered conductors ensures compliance with these safety requirements and mitigates regulatory observations.

Scope of Work

11kV Bare to Insulated Conductor: -

Sl. No.	Activity	UOM	Proposed Qty
1.	11kV Bare to Insulated Conductor	CKM	8
2.	33kV Bare to Insulated Conductor	CKM	5
	Total		

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

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	11kV Bare to Insulated Conductor	CKM	8	0.2000	1.60	Refer Annexure – 57 for detailed costing sheet
2.	33kV Bare to Insulated Conductor	CKM	5	0.3042	1.52	Refer Annexure – 56 for detailed costing sheet
	Total				**3.12**	

Physical Target:

The proposed work will be completed by March 27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

System Benefits:

- Substantial reduction in feeder interruptions and SAIFI/SAIDI indices.
- Improved life of associated equipment like transformers and switchgear due to fewer faults.
- Lower O&M cost by reducing patrolling and fault restoration efforts.
- Improved compliance with safety and regulatory standards.

Consumer Benefits:

- Enhanced reliability of power supply with fewer outages.
- Better quality of power (less flicker and interruptions).
- Improved public safety in urban, roadside, and habitation areas.
- Greater customer satisfaction and improved utility reputation.

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 Bare to Insulated Conductor	CKM	5562	39.92	5522	8.0	4414		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33kV Bare to Insulated Conductor	CKM	519.13	3.59	515.54	5.0	510.54		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 5

Scheme Name: Installation of 33kV & 11kV Intermediate Pole

Background

At inception, several 33kV & 11kV lines were constructed with long spans between poles resulting in excessive sagging, mechanical stress on conductors, and safety risks.

Since vesting, some sag-prone stretches have been reinforced with intermediate poles, but many feeders still require strengthening. The remaining stretches will be addressed 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 Intermediate Pole	Nos.	56574	16244	40330
2.	33kV Intermediate Pole	Nos.	4962	786	4176

Proposal

Installation of **intermediate poles** in long-span sections of 33kV & 11kV lines to reduce sag, improve mechanical strength, and enhance safety.

Requirement/ Need of the Proposal

- Existing long spans cause sagging, higher risk of snapping, and unsafe clearances.
- Intermediate poles will ensure compliance with CEA safety norms for ground clearance.
- Strengthening will improve system reliability and reduce faults in vulnerable stretches.

Scope of Work

Procurement and Installation of 11kV & 33kV Intermediate Pole :-

Sl. No.	Activity	UOM	Proposed Qty
1.	Intermediate Pole for 11 kV Network (11 Mtr)	Nos.	185
2.	Intermediate Pole for 11 kV Network (9 Mtr)	Nos.	650
3.	HT Stay Set for Pin point Pole for 11 kV Intermediate Pole	Nos.	84
4.	Intermediate Pole for 33 kV Network (13 Mtr)	Nos.	10
5.	Intermediate Pole for 33 kV Network (11 Mtr)	Nos.	325
6.	HT Stay Set for Pin point Pole for 33 kV Intermediate Pole	Nos.	34

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	Intermediate Pole for 11 kV Network (11 Mtr)	Nos.	185	0.0070	1.29	Refer Annexure – 61 for detailed costing sheet
2.	Intermediate Pole for 11 kV Network (9 Mtr)	Nos.	650	0.0017	1.13	Refer Annexure – 62 for detailed costing sheet
3.	HT Stay Set for Pin point Pole for 11 kV Intermediate Pole	Nos.	84	0.0006	0.05	Refer Annexure – 63 for detailed costing sheet
4.	Intermediate Pole for 33 kV Network (13 Mtr)	Nos.	10	0.0085	0.09	Refer Annexure – 58 for detailed costing sheet
5.	Intermediate Pole for 33 kV Network (11 Mtr)	Nos.	325	0.0074	2.42	Refer Annexure – 59 for detailed costing sheet
6.	HT Stay Set for Pin point Pole for 33 kV Intermediate Pole	Nos.	34	0.0006	0.02	Refer Annexure – 60 for detailed costing sheet
	Total				**5.0**	

Refer Annexure 136, 137 & 138 for 33kV & 11 kV Intermediate Pole locations.

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 snapping, improved reliability, compliance with safety standards, longer conductor life, and lower O&M.
- **Consumers:** Fewer interruptions, improved continuity of supply and safer environment.

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 Intermediate Pole	Nos.	56574	16244	40330	9 mtr PSC Pole – **650 nos.** 11 mtr RSJ pole – **185 nos. (835)**	39495		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	33kV Intermediate Pole	Nos.	4962	786	4176	335	3841		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 6

Scheme Name: Procurement of Testing Equipment

Background:

Routine testing and maintenance are crucial for ensuring the reliability and operational health of electrical infrastructure. Preventive maintenance of equipment and timely breakdown analysis of systems require fully functional and accurate testing equipment. To ensure sustained performance and safety of the network, testing equipment are essential for field teams across all division.

Proposal:

It is proposed to procure the following equipment.

S.No	Description	Qty
1	CRM kit	6
2	3 phase relay testing kit.	3
3	Galvanometer for polarity testing.	15
4	AC/DC mA meter	7
5	WR	5
6	Breaker Timing kit	3
7	EARTH PIT TESTER-Clamp plus 4 points	3
8	BDV KIT	5
9	DGA KIT	2
10	DG	5
11	Phase sequence tester	5
12	Earthing Design, Improvement and Refurbishment of PSS	5
13	Dehumidifier with SITC including cables	100
14	Tan delta Kit	2
15	RTV Coating & Insulation Varnishing	20
16	Thermovision Camera	12
17	Cable fault locator	2
18	Cable Route Tracer	2
19	PD Meter	5

Requirement/ Need of the Proposal

The objective of this project is to make each division self-sufficient by providing dedicated and independent testing kits. This will eliminate dependency on centralized or shared kits, reduce downtime, and enhance the efficiency and effectiveness of preventive and breakdown maintenance activities.

Scope of Work

Procurement of Testing equipment as indicated in the proposal

Proposed Cost with Estimate Break-up:

Physical Target: *Work will be completed by March '27*

S.No	Description	Qty	Unit rate (in Rs.)	Total Cost (in Rs.)	PO
1	CRM kit	6	1,28,490.00	7,70,940.00	4200000030
2	3 phase relay testing kit.	3	42,00,000.00	1,26,00,000.00	4200002399
3	Galvanometer for polarity testing.	15	10,000.00	1,50,000.00	NEW Equipment
4	AC/DC mA meter	7	10,000.00	70,000.00	4200000151
5	WR	5	2,50,000.00	12,50,000.00	4200000045
6	Breaker Timing kit	3	1,30,000.00	3,90,000.00	4200003218
8	EARTH PIT TESTER-Clamp plus 4 points	5	3,70,000.00	18,50,000.00	NEW Equipment
9	BDV KIT	5	1,50,000.00	7,50,000.00	4200003258
10	DGA KIT	2	35,00,000.00	70,00,000.00	4200001057
12	DG	5	40,000.00	2,00,000.00	4200001873
13	Phase sequence tester	5	20,000.00	1,00,000.00	4200000406
14	Earthing Design, Improvement and Refurbishment of PSS	5	10,00,000.00	50,00,000.00	New Project
15	Dehumidifier with SITC including cables	100	50,000.00	50,00,000.00	4200002694
16	Tan delta Kit	2	27,00,000.00	54,00,000.00	4200002622
17	RTV Coating & Insulation Varnishing	20	60,000.00	12,00,000.00	4800003536
18	Thermovision Camera	12	5,46,796.18	65,61,554.16	4200001388
19	Cable fault locator	2	70,00,000.00	1,40,00,000.00	As per TPNODL Order
20	Cable Route Tracer	2	21,91,525.00	43,83,050.00	4200003283
21	PD Meter	5	15,00,000.00	75,00,000.00	As per TPNODL Order
			Grand Total	**7,41,75,544.16**	
			In Crs	**7.42**	

Cost Benefit Analysis: Not Applicable

Not Applicable

Benefit to the System and Consumers:

- *Support to Preventive maintenance of Switchgears*
- *Root Cause Failure Analysis*
- *Reliable Power Supply by Removing Deteriorating Switchgear and transformer*
- *Conditioning monitoring of Power system*
- *Compliance to Annual Maintenance Plan*
- *To Monitor THI (Transformer Health Index)*
- *Reduction of PTR Failure*
- *For ensuring N-1 Feeders by checking Phase sequence*

ANNEXURE 7

Scheme Name: Establishment of Meter Testing Lab (MTL) at Kesinga

Background

TPWODL has a large distribution area of 48373 Sq. Km. At the time of inception (vesting), there were no dedicated in-house Meter Testing Labs (MTLs) available for statutory and routine meter testing. Post vesting, three MTLs have been successfully established and are operational at Burla, Balangir, and Rajgangpur. These labs are currently catering to the meter testing needs of their respective regions.

However, with increasing consumer base, enhancement of metering systems, and strict enforcement of CEA Metering Regulations and other statutory standards, the existing capacity is inadequate to cater to the entire operational area. Hence, to meet the growing demand and statutory compliance, an expansion plan for establishing six (6) additional MTLs in a phased manner has been envisaged under CAPEX.

In FY 2026–27, it is proposed to establish one MTL at Kesinga, which will cater to the testing requirements of the Kalahandi and nearby areas.

Proposal

This proposal seeks CAPEX funding of **Rs 4.50 Cr.** for setting up a fully equipped Meter Testing Lab at Kesinga, which will be capable of testing single-phase, three-phase, and CT-operated meters as per statutory guidelines.

The lab will be built to support:

- Statutory testing as per CEA guidelines.
- Periodic and routine testing.
- Testing of disputed, faulty, and new meters.
- Pre-installation accuracy verification.

The Kesinga (Kalahandi) MTL will reduce pressure on existing labs and will act as a nodal facility for the surrounding operational areas.

Requirement / Need of the Proposal

While three MTLs are operational, their geographic spread is insufficient to efficiently cater to all divisions.
Currently:

- Kesinga and nearby areas are dependent on the Balangir lab, leading to logistical delays and increased turnaround time.
- Statutory testing obligations are not being met within the prescribed timeline due to limited lab capacity.
- Consumer complaint resolution related to metering is delayed, impacting consumer satisfaction and regulatory compliance.

By establishing a dedicated MTL at Kesinga:

- Statutory compliance under CEA Metering Regulations and Electricity Act provisions will be ensured.
- Meter testing will become more timely, cost-effective, and reliable.
- Enhanced metering infrastructure will support smart metering rollout in future phases.
- Testing of meters as per **IS 13779, IS 14697, IS 16444 Part 1 & 2** in laboratory conditions before deployment.

Scope of Work (Quantifiable Terms with Location Back-up)

Activity	Description	Location
Civil Works	Construction/modification of lab room, electrical layout, earthing	Kesinga
Equipment	Procurement of test bench, reference meter, CT/PT testing tools, insulation testers	Kesinga
Software & IT	Meter testing management software, data storage, printer & PC setup	Kesinga
Certification Readiness	Setup for NABL pre-certification and quality compliance	Kesinga
Manpower Training	Technical training and safety orientation	Kesinga

Proposed Cost with Estimate Break-up

Sr. No.	Item Description	Quantity	Estimated Cost (INR)	In Cr
1	1-Phase, 20 Position, 0.05 Accuracy Class Test Bench	1	90,00,000	0.90
2	3-Phase, 20 Position, 0.05 Accuracy Class Test Bench	1	1,10,00,000	1.10
3	Lab Building (with AC, furniture, and earthing)	1	1,50,00,000	1.50
4	Online UPS (N-1 mode, 4-hour backup)	1	50,00,000	0.50
5	Red Phase (for CT/PT testing)	1	30,00,000	0.30
6	Accessories, Racks, Tools, etc.	1	10,00,000	0.10
7	Tamper Simulation Kit, Phantom Load, etc.	1	10,00,000	0.10
	Total (Per Lab)		**In Cr.**	**4.50**

Total Proposed Budget: 4.50 Cr

Physical Target

- Completion Target: End of Q4 FY 2026-27 (March 2027)
- Commissioning & Trial Run: March 2027
- Target Volume: Capacity to test approx. 3500 meters per month initially

Cost Benefit Analysis:

Not Applicable

Benefit to the System and Consumers

- Ensures **statutory compliance** with metering regulations (CEA, OERC)
- **Improved operational efficiency** by reducing meter testing cycle time
- **Better consumer service delivery** through quick dispute resolution
- **Cost reduction** in meter transportation and external testing
- Strengthens the system for **smart meter integration** and remote diagnostics

Parameter	Without MTL at Kesinga	With Proposed MTL
Transportation & Logistics	High	Reduced by ~40%
Meter Testing Turnaround	>20 days	Within 5–7 days
Regulatory Compliance Risk	High (non-compliance)	Fully Compliant

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	Establishment of Additional Meter Testing Labs at Kesinga (Kalahandi) in TPWODL	Nos.	9	3	6	1	5	An MTL is proposed at Kesinga to cover the entire Kalahandi Circle, where the number of consumers is substantial and transportation costs are high, as every meter currently has to be sent to the Balangir MTL for testing.

ANNEXURE 8

Scheme Name: Procurement of Safety equipment.

Background

Safety is core values of TPWODL, Where the well-being of our employees, Business associates and public utmost priority. The organization consistently strives to improve safety practices across operation, in aligned with industry best practices and statutory requirements. Ensuring the safety of personal involved in fieldwork, it is necessary to provide safety equipment to workforce.

Proposal

To ensure safety Improvement and regulatory compliance, it is proposed to procure Safety Equipment like Multi-function Discharge Rod and advances Neon tester across all divisions to strengthen workplace safety.

Key benefits:

- Creation of a safer work environment by ensuring proper safety tool usage.
- Prevention of human injury during line maintenance activities.
- Enhancement of operational excellence through compliance with safety protocols and risk minimization.

Requirements /Need of the proposal

This proposal ensures safety risk mitigation through provision of safety equipment

Scope of the Work:

- **Discharge Rod Multifunction**
- **Neon Tester**

Proposed Cost with Estimated Break-up:

Sl. No	Item	Total	Base Cost (in Rs.)	Escl (%)	Unit cost (in Rs.)	Total Cost	Ref PO no.
1	Discharge Rod Multifunction	412	22857.00	6.00%	24228.42	9982109.04	New equipment
2	Neon Tester	206	27069.00	6.00%	28693.14	5910786.84	4200003237
	Total					15892895.88	
					In Cr	**1.59**	

Physical Target:

The work will be completed by March -2027

Cost benefit Analysis:

Not Applicable

Benefit to the System and Consumer:

Workforce Safety & Risk Reduction

ANNEXURE 9

Scheme name: Access Road for inside and outside of PSS

Background:

At present, there are few Primary Substation (PSS) at TPWODL where dedicated all-weather approach road is not available. The existing road is an unpaved, uneven earthen track prone to severe deterioration during the monsoon season. This lack of a proper access road result in:

- Restricted movement of operational staff, vehicles, and equipment
- Safety hazards due to slippery and unstable surfaces
- Delays in transportation of critical spares and materials, especially during emergencies
- Difficulty in mobilizing cranes, testing vehicles, and fire tenders

In view of these operational challenges and safety concerns, it is essential to construct a properly designed access road to ensure uninterrupted, safe, and efficient connectivity to the PSS.

We have already completed 63 nos PSS Approach Road upto FY 24-25 and with the available budget we will complete 30 Nos PSS Approach in this FY 25-26 for non ODSSP PSS. All the ODSSP PSS, Road already exists.

Proposal :

We propose 20 Nos PSS Road FY 26-27 as per criticality of existing bad condition of PSS Road. While these works will address a substantial portion of the balance scope, certain work will continue beyond FY 2026–27, to be taken up in subsequent years as part of the phased development plan.

Requirement / Need of the Proposal:

Need of constructing a road at the Primary Substation (PSS) is to provide safe, durable, and all-weather access for operation, maintenance, and emergency response activities. A properly constructed internal road enhances the movement of personnel, vehicles, and equipment within the substation premises, thereby ensuring timely maintenance of critical electrical infrastructure. It also improves overall safety by facilitating the smooth transportation of heavy machinery and materials required for substation operations. Additionally, the road infrastructure strengthens physical security, supports efficient logistics, and contributes to the long-term sustainability and functionality of the PSS.

Scope of Work:

The scope of this project includes the complete civil construction of RCC Concrete Road in Primary Substation (PSS) premises under the TPWODL area to ensure the smooth transportation of heavy machinery and materials required for substation operations.

Circle	Division	Sub Division	Section	33kV/11kV Primary Sub-Station (PSS)
SAMBALPUR	SEED	DHANUPALI	DHAMA	DHAMA
SAMBALPUR	SEED	RENGALI	SASAN	SASON
SAMBALPUR	SEED	RAIRAKHOL	HATIBARI	HATIBARI SBP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	RN PALI	KOLABIRA
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KUCHINDA	KUCHINDA
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	BAMRA
ROURKELA	RED RKL	BISRA	SAKTINAGAR	NIT(REC)
ROURKELA	RED RKL	BISRA	BISRA	BISRA
ROURKELA	RSED RKL	IND ESTATE	INDUSTRIAL ESTATE	INDUSTRIAL ESTATE RKL
ROURKELA	RSED RKL	IND ESTATE		PILOT PROJECT
ROURKELA	RSED RKL	IND ESTATE	CHHEND	CHHEND
ROURKELA	RSED RKL	PANPOSH	PANPOSH	PANPOSH
ROURKELA	RSED RKL	PANPOSH	LATHIKATA	LATHIKATA
ROURKELA	RED RAJGANGPUR	KALUNGA		VEDVYAS
ROURKELA	RED RAJGANGPUR	KALUNGA		OTTO INDIA
ROURKELA	RED RAJGANGPUR	KUARMUNDA		KUARMUNDA
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-3	BHANGABARI
KALAHANDI	KEED	NARLA	BISWANATHPUR	BISWANATHPUR
BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-III	LALTIKIRA
BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-IV	SUDPADA

Location of PSS under scope of work

Proposed cost with estimate Break-up

It is proposed to undertake construction of 545nos brick fencing at selected DSS locations across the TPWODL operational area during the financial year 2026–27.

SL no	Item	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Access Road for inside and outside of PSS	20	10.0	200.0
	Total			
			In CR	**2.0**

Physical Target

The work for access road will be completed by end of March'27.

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

Investment in the construction of RCC (Reinforced Cement Concrete) roads at Primary Substations (PSS) brings long-term operational, safety, and economic benefits to the organization. RCC roads provide a strong and durable surface that ensures smooth access for vehicles, equipment, and personnel throughout the year, regardless of weather conditions. Improved road infrastructure at substations enhances mobility for operation and maintenance teams, enabling quick response during emergencies and reducing downtime in critical situations. From a safety perspective, RCC roads minimize the risks of accidents caused by uneven or damaged surfaces, supporting safe working conditions for staff and contractors.

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.	PSS Approach Road (Non ODSSP PSS)	EA	166	93	73	20	53	Priority considered in 1.Sambalpur and Rourkela Main Town 2. Town areas in all five circles

ANNEXURE 10

Scheme name : Renovation / Construction of Control Room Building in PSS

Background:

The control room is the nerve center of any Primary Substation (PSS), housing critical equipment such as SCADA panels, protection relays, communication systems, battery banks, and other auxiliary electrical infrastructure. The safe, clean, and operationally efficient condition of the control room is crucial for uninterrupted power distribution and real-time network monitoring.

Our company presently operates and maintains 166 Non ODSSP Primary Substations in which We need 146 Nos PSS CRB Extension/Renovation and 20 Nos construction of New Control Room Building, as of now we have completed 66nos PSS CRB Renovation & 4 nos new Control Building construction upto FY 24-25

- Accommodate outdoor Control Relay Panel inside Control Building require CRB extension
- Dampness and water seepage in roof slabs and walls during rainy seasons
- Broken flooring, damaged ceiling tiles, and flaking wall plaster
- Inadequate ventilation and outdated electrical wiring
- Absence of proper workspace arrangements for field staff
- Degraded doors, windows, and washroom utilities
- Lack of fire safety systems and poor lighting conditions

We have already completed 66nos PSS Control Room renovation upto FY 24-25 and with the available budget we will complete 10 Nos Control Room renovation in this FY 25-26 for non ODSSP PSS.

Proposal :

We propose 10 Nos Control Room renovation FY 26-27. While these works will address a substantial portion of the balance scope, certain Control Room renovation will continue beyond FY 2026–27, to be taken up in subsequent years as part of the phased development plan.

Requirement / Need of the Proposal:

Requirement of CRB renovation is essential as the control room is the nerve center of any Primary Substation (PSS), housing critical equipment such as SCADA panels, protection relays, communication systems, battery banks, and other auxiliary electrical infrastructure. The safe, clean, and operationally efficient condition of the control room is crucial for uninterrupted power distribution and real-time network monitoring.

Extension of Control Building require as outdoor Control Relay panel needs to be indoor & must be accommodate inside Control Building

Scope of Work:

The scope of this project includes the extension of Control Building for accommodation of Outdoor Control Relay Panel. Renovation of total control building includes finishing, door window replacement, broken tile replacement & final painting.

Location of PSS are as follows:

SL NO	Circle	Division	PSS NAME
1	Sambalpur	DED Deogarh	Budhapal
2	Sambalpur	DED Deogarh	Kandhal
3	Sambalpur	JED Jharsuguda	Koalbira
4	Sambalpur	JED Jharsuguda	Kesaibahal
5	Rourkela	RED Rourkela	Chend
6	Rourkela	RED Rourkela	Rajamunda
7	Rourkela	RSED Rourkela	Bonai
8	Rourkela	RSED Rourkela	Power House
9	Bargarh	BED Bargarh	Turunga
10	Bargarh	BED Bargarh	Khuntlipali

Proposed cost with estimate Break-up

It is proposed to undertake construction of 545nos brick fencing at selected DSS locations across the TPWODL operational area during the financial year 2026–27.

SL no	Item	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Renovation of Control room building	10	20	200.0
	Total			**200**
			In CR	**2.0**

Physical Target

The work for Renovation of Control room building will be completed by end of March'27.

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

Investment in the renovation of old control room buildings is a critical step towards strengthening the reliability and safety of substation operations. Over time, ageing infrastructure develops structural weaknesses, electrical faults, leakage, and inadequate working conditions that can hinder smooth operation and maintenance activities. Renovation addresses these challenges by improving structural stability, enhancing insulation, upgrading electrical and firefighting systems, and creating a safe and efficient workplace for staff.

From a financial perspective, renovation reduces recurring maintenance costs, prevents unplanned breakdowns, and avoids major capital expenditure on new buildings by extending the life of existing assets. It

also improves workplace conditions, boosting employee morale and productivity. Overall, the investment ensures sustainable infrastructure, operational reliability, and long-term cost savings for the organization.

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.	Extension & Renovation of Control Room Building	EA	146	76	70	10	60	Priority considered in 1.Sambalpur and Rourkela Main Town 2. Town areas in all five circles

<u>Construction of New Control Room Building</u>

<u>Background</u>

TPWODL operates and maintains a network of 166 non-ODSSP Primary Substation (PSS) control room buildings across its operational area. Out of 166 Nos Non – ODSSP PSS Control Building, We need 20 nos New Control Building Construction where CRB is not available or existing CRB is not in condition of renovation. These control rooms are critical infrastructure that house protection, control, and communication equipment vital for safe and reliable power distribution to consumers.

During recent inspections and assessments, it has been observed that out of these 166 control room buildings, **04nos control room buildings are in a severely deteriorated and dilapidated condition.** The deterioration is so extensive that renovation or retrofitting measures are not technically or economically feasible. The unsafe condition of these structures poses risks to:

- The continuity and reliability of power supply,
- The safety of personnel working inside these buildings,
- The security of valuable electrical equipment and assets housed within.

To ensure uninterrupted operations and improve safety and working conditions, it is essential to construct **04nos new control room buildings** in place of the existing structures. The new control rooms will be designed to:

The objective of constructing a new Control Room building is to replace the existing facility, which is in a deteriorated condition and no longer suitable for safe and efficient operation. The new building will provide a structurally sound, modern, and well-equipped workspace designed to meet current safety and operational standards.

Out of 20 Nos new Control Building Construction plan, 04 nos completed by FY 24-25. We have planned to complete one nos new Control Building in this financial year FY 25-26.

Proposal : New Control Building Construction has been planned of 4 Nos FY 26-27 across TPWODL area as per operational priority.

New PSS CRB against budget FY 26-17 is as per annexure VI

Requirement / Need of the Proposal: Requirement of new CRB is essential as the control room is the nerve center of any Primary Substation (PSS), housing critical equipment such as SCADA panels, protection relays, communication systems, battery banks, and other auxiliary electrical infrastructure. The safe, clean, and operationally efficient condition of the control room is crucial for uninterrupted power distribution and real-time network monitoring.

Scope of Work:

The scope of this project includes RCC frame structure, finishing, door window fixing, Plumbing sanitary work & final painting.

L**ocation of PSS are as follows:**

SL NO	CIRCLE	PSS NAME
1	Balangir	Laltikra
2	Balangir	Belpahar
3	Balangir	Khaprakhol
4	Bargarh	Paikmal

Proposed cost with estimate Break-up

For the Financial Year 2026–27, a target has been planned for the **construction of 4 Nos. new Control Room buildings** at identified substations, based on operational priority. These new buildings are proposed as the existing structures are in a deteriorated condition and no longer meet the safety, durability, and functional requirements of substation operations.

SL no	Item	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Construction of Control room building	4	50	200.0
	Total		**In CR**	**2.0**

This investment will significantly improve operational efficiency, reduce safety risks, and enhance the long-term sustainability of substation infrastructure.

Physical Target

The work for Construction of Control room building will be completed by end of March'27.

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

Investment in the construction of new Control Room buildings, in place of old and deteriorated structures, is essential to ensure safe, reliable, and efficient substation operations. Over time, ageing buildings develop cracks, leakages, weakened structures, and outdated facilities that compromise both equipment safety and working conditions for employees. Continuing to operate from such buildings poses risks of electrical faults, water ingress, and even structural failure, which may lead to operational disruptions and safety hazards.

The construction of new Control Room buildings offers multiple benefits. Structurally strong and modern facilities will provide a safe and secure environment for housing critical monitoring and control equipment, thereby protecting assets from environmental damage and ensuring uninterrupted power supply. Modern designs will incorporate adequate ventilation, lighting, firefighting systems, and space planning to improve the efficiency of operations and maintenance teams.

In addition to operational benefits, new buildings will create a better workplace for staff, improving morale, productivity, and safety compliance. Overall, investing in new Control Room buildings ensures long-term infrastructure sustainability, reliability of substation operations, and alignment with present and future utility standards

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.	Construction of New Control Room Building	EA	20	5	15	4	11	Priority considered in 1.Sambalpur and Rourkela Main Town 2. Town areas in all five circles

ANNEXURE 11

Scheme name: Provision for Water Supply arrangement for PSS

Background

TPWODL is operating **312 Primary Substations** (ODSSP – 146 Nos + Non ODSSP – 166 Nos)across its license area. Continuous and reliable water availability at these substations is essential for

- Earthing pit need water
- Drinking water needs of operational staff,
- Cleaning and upkeep of the control rooms and switchyard equipment,
- Fire safety and emergency preparedness (water storage for firefighting).

There are issues with water supply due to factors such as:

- Drying up of existing borewells,
- Reduction in groundwater table,
- Failure of nearby piped water supply arrangements,
- Inadequate storage and recharge facilities.

To address such exigencies and ensure uninterrupted operations, it is necessary to **construct new borewells.**

We have already plan to resolve the water supply & Borewell issue of all PSS by end of FY24-25 except 58 nos.

Proposal

we have proposed 58 nos Borewell in FY 26-27.

Location of PSS under scope of work:

Sl. No.	Circle	Division	Sub Division	Section	33kV / 11kV Primary Sub-Station (PSS)
1	SAMBALPUR	SEED	BHUTAPADA	DHANUPALI	PUTIBANDH
2	SAMBALPUR	SEED	RENGALI	SASAN	SASON
3	SAMBALPUR	SEED	RAIRAKHOL	RAIRAKHOL	RAIRAKHOL
4	SAMBALPUR	SEED	RAIRAKHOL	NAKTIDEUL	NAKTIDEUL
5	SAMBALPUR	SEED	DHANUPALI	PADIABAHAL	PADIABAHAL
6	SAMBALPUR	SEED	RENGALI	RENGALI	LAPANGA
7	SAMBALPUR	SEED	RENGALI	PARMANPUR	PARMANPUR
8	SAMBALPUR	SEED	RAIRAKHOL	HATIBARI	JUJOMURA
9	SAMBALPUR	SED,SBP	AINTHAPALI	RE AINTHAPALI	REMED
10	SAMBALPUR	SEED	DHANUPALI	MANESWAR	MANESWAR
11	SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	BANDHBAHAL	PANDRI
12	SAMBALPUR	BNED BRAJRAJNAGAR	BRAJARAJNAGAR	BRAJARAJ NAGAR	GANDHICHOWK
13	SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	DEOGARH

Sl. No.	Circle	Division	Sub Division	Section	33kV / 11kV Primary Sub-Station (PSS)
14	ROURKELA	RED RKL	UDITNAGAR	POWERHOUSE ROAD	POWER HOUSE RKL
15	ROURKELA	RED RKL	BASANTI	BASANTI	BASANTI
16	ROURKELA	RED RKL	KOELNAGAR	KOELNAGAR	KOELNAGAR
17	ROURKELA	RED RKL	KOELNAGAR	KOELNAGAR	HAMIRPUR
18	ROURKELA	RED RKL	KOELNAGAR	SAKTINAGAR	NIT(REC)
19	ROURKELA	RED RKL	BISRA	BONDAMUNDA	BONDAMUNDA
20	ROURKELA	RED RKL	BISRA	BISRA	BISRA
21	ROURKELA	RSED RKL	IND ESTATE	INDUSTRIAL ESTATE	INDUSTRIAL ESTATE RKL
22	ROURKELA	RSED RKL	BONAI	KOIRA	TENSA
23	ROURKELA	RSED RKL	BONAI	LAHUNIPARA	K BALANGA
24	ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	BARGAON	BARGAON
25	ROURKELA	RED RAJGANGPUR	RAJGANGPUR-I	RAJGANGPUR	RAJGANGPUR
26	ROURKELA	RED RAJGANGPUR	KALUNGA	KALUNGA-II	OTTO INDIA
27	ROURKELA	RED RAJGANGPUR	KUARMUNDA	BIRMITRAPUR	BIRMITRAPUR
28	ROURKELA	RED RAJGANGPUR	KUARMUNDA	HATIBARI	HATIBARI RKL
29	ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	BARGAON	JARANGLOI
30	ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	BARGAON	SAHAJBAHAL
31	ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	KUTRA	BIRINGATOLI
32	ROURKELA	SED SUNDARGARH	SUNDARGARH	SEC-II	COLLEGE
33	ROURKELA	SED SUNDARGARH	UJALPUR	LEPHRIPADA	LEPHRIPADA
34	KALAHANDI	KEED	KESINGA	BORDA	BORDA
35	KALAHANDI	KEED	NARLA	BISWANATHPUR	BISWANATHPUR
36	KALAHANDI	KWED	CHARBAHAL	KOKSARA	GADRAMAL
37	KALAHANDI	NUAPADA	KHARIAR	KHARIAR	KHARIAR
38	KALAHANDI	NUAPADA	KHARIAR	SINAPALI	SINAPALI
39	KALAHANDI	NUAPADA	KHARIAR ROAD	KH. ROAD-2	BISORA
40	KALAHANDI	NUAPADA	KHARIAR	KHARIAR-2	BADI
41	KALAHANDI	NUAPADA	KHARIAR	SINAPALI	TIMANPUR
42	BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-III	LALTIKIRA
43	BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-IV	SUDPADA
44	BOLANGIR	BED,BOLANGIR	NO-II	CHHATAMAKHANA	BHADRA(KANDAJURI)
45	BOLANGIR	BED,BOLANGIR	NO-II	CHUDAPALI	CHUDAPALI(BARPUDIGIA)

Sl. No.	Circle	Division	Sub Division	Section	33kV / 11kV Primary Sub-Station (PSS)
46	BOLANGIR	BED,BOLANGIR	LOISINGHA	LOISINGHA	LOISINGHA
47	BOLANGIR	BED,BOLANGIR	TUSURA	TUSURA	GUDBHELA
48	BOLANGIR	TED, TITILAGARH	TITILAGARH	TITLAGARH 2	PIPALPADAR
49	BOLANGIR	TED, TITILAGARH	KANTABANJI	MURIBAHAL	MURIBAHAL
50	BOLANGIR	TED, TITILAGARH	PATNAGARH	BELPARA	BELPADA
51	BOLANGIR	TED, TITILAGARH	PATNAGARH	BELPARA	DHUMABHATA
52	BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 1	TENDAPADAR
53	BOLANGIR	TED, TITILAGARH	PATNAGARH	KHAPRAKHOL	LATHORE
54	BOLANGIR	SED,SONEPUR	BMPUR	BMPUR	BMPUR
55	BOLANGIR	SED,SONEPUR	BMPUR	SUBALYA	MURSHUNDHI
56	BARGARH	BED, BARGARH	ATTABIRA	REGALICAMP	PATRAPALI
57	BARGARH	BWED, BARGARH	SOHELA	SOHELA-1	SOHELA
58	BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	MANDOSIL

Requirement / Need of the Proposal:

Bore well and water connection is require in PSS for the reason

- Sufficient water in Earthing pit
- Maintain sufficient water availability round-the-clock,
- Prevent operational delays due to water shortage,
- Improve working conditions and sanitation at substations,
- Comply with fire safety norms and preparedness.

Scope of Work:

The scope of this project includes Borewell along with pipe connection to Earthing Pit & Control Building

SL no	Item	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Provision for Water Supply arrangement for PSS	58	2.5	145
	Total		**In CR**	**1.45**

Proposed Cost for Borewell & Water Supply:

Cost for Bore Well & Water Connection in Each PSS is Rs. 2.50 Lacs. Total Cost for Borewell & Water Connection for 58 nos. PSS is Rs. 1.45 Cr**.**

Physical Target:

Physical Target for construction of Bore Well & Water Connection by end of March'27 for proposed Bore Well & water Connection – 58 Nos

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

- Maintain Earthing Value of Earth Pit
- Assured water supply for operational, domestic, and fire safety requirements,
- Reduced dependency on external sources and water tankers,
- Enhanced staff morale and improved hygiene,
- Timely response to emergencies without procedural delays.

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.	Bore Well & Water Connection in PSS	EA	166	108	58	58	0	As Water connection is very essential in PSS, balance all 58 nos Borewell propose FY 26-27

ANNEXURE 12

Scheme name : Construction of Boundary wall for PSS

Background:

To ensure the safety, security, and long-term sustainability of electrical infrastructure, the construction of permanent boundary walls around Power Substations (PSS) has been a key initiative under TPWODL's civil infrastructure development program. Boundary walls serve as a critical element in safeguarding high-voltage installations by restricting unauthorized access, protecting valuable equipment, and reducing risks to public safety. These walls also prevent encroachment, theft, vandalism, and damage by stray animals, which can otherwise lead to supply disruptions, equipment failure, and increased maintenance costs.

Since its inception in FY 2021–22, the TPWODL has made significant progress in this direction as per available budget.

We have already completed 96 nos PSS Boundary Wall upto FY 24-25 and with the available budget we will complete 30 Nos PSS Boundary Wall in this FY 25-26 for non ODSSP PSS. Boundary Wall already exists in all ODSSP PSS

Proposal:

We propose 10 Nos PSS Boundary Wall FY 26-27 as per criticality of existing bad condition of Boundary Wall . While these works will address a substantial portion of the balance scope, certain PSS Boundary Wall will continue beyond FY 2026–27, to be taken up in subsequent years as part of the phased development plan.

Location of PSS under scope of work are as follows:

Sl. No.	Circle	Division	Sub Division	Section	33kV/11kV Primary Sub-Station (PSS)
1	SAMBALPUR	SEED	RENGALI	SASAN	SASON
2	SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	LAIKERA	LAIKERA
3	SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	BAMRA
4	SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	KANDHAL
5	SAMBALPUR	DEOGARH	DEOGARH	BARKOTE	BARKOTE
6	ROURKELA	RSED RKL	IND ESTATE	INDUSTRIAL ESTATE	PILOT PROJECT
7	ROURKELA	RSED RKL	PANPOSH	PANPOSH	PANPOSH
8	ROURKELA	RED RAJGANGPUR	KALUNGA	KALUNGA 1	OTTO INDIA
9	ROURKELA	SED SUNDARGARH	SUNDARGARH	SUNDARGARH'	COLLEGE
10	BOLANGIR	BED, BOLANGIR	NO-II	CHUDAPALI	CHUDAPALI(BARPUDIGIA)

Requirement / Need of the Proposal

Primary Substations (33/11 kV) are critical installations in the power distribution network of TPWODL. These substations house high voltage equipment such as transformers, circuit breakers, and control systems which are essential for uninterrupted power supply.

Many PSS locations currently lack proper boundary wall enclosures, or have dilapidated or partially damaged boundary structures, which poses a serious threat to safety and security.

The construction of boundary walls around PSS is vital due to the following reasons:

- Public Safety: Prevents unauthorized or accidental access by people, especially children, to high-voltage areas
- Animal Intrusion Control: Restricts entry of stray cattle and wildlife that may come in contact with live equipment, causing faults or electrocution
- Theft Prevention: Acts as a physical barrier against theft of expensive equipment, copper wires, and transformer oil
- Infrastructure Protection: Safeguards the physical and electrical infrastructure from external damage and vandalism
- Compliance & Safety Standards: Aligns with safety regulations issued by CEA and State Electricity Regulatory Authorities

Scope of Work:

The scope of this project includes the complete civil construction of brick boundary walls around selected Primary Substation (PSS) premises under the TPWODL area to ensure the physical security, operational safety, and long-term protection of critical electrical infrastructure.

Proposed cost with estimate Break-up

In order to enhance the physical security, operational safety, and boundary demarcation of our Primary Sub Station (PSS), it is proposed to undertake the construction of 10 nos brick Boundary wall at selected PSS locations across the TPWODL operational area during the financial year 2026–27.

SL no	Item	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Construction of Boundary wall for PSS	10	30.0	300.0
	Total			
			In CR	**3.0**

Physical Target

The work for PSS Boundary Wall will be completed by end of March'27.

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

Investing in a boundary wall for a PSS is a strategic decision with multifaceted returns. Primarily, it delivers significant risk and loss mitigation: integrating such security measures during the construction phase is markedly more cost-effective than retrofitting later, reducing vulnerability to theft, vandalism, and physical damage to vital assets. Furthermore, a boundary wall enhances safety and security, deterring unauthorized access and lowering accident risks for both people and equipment. It also supports site management and compliance, simplifying surveillance, perimeter monitoring, and adherence to regulatory standards. In essence, allocating budget for a boundary wall is not merely a protective measure—it is a prudent investment that safeguards infrastructure, strengthens continuity, and maximizes long-term value.

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.	PSS Boundary Wall (Non ODSSP PSS)	Nos.	166	126	40	10	30	Priority considered in 1.Sambalpur and Rourkela Main Town 2. Town areas in all five circles

ANNEXURE 13

Scheme name : Installation of Fencing at Distribution Substation (DSS)

Background:

Distribution Substation are located at various locations catering the power supply requirement to the consumers. Since these are installed at various scattered locations along the Road, public places, near the commercial areas etc. During the survey, it is observed that boundary walls or fencing are either damaged or do not exist thus posing a safety threat to stray animals and public at large.

At many of the places it was found that the condition of the Fencing of DSS is in a very bad condition. Ensuring safety of People & equipment is very much needed for safe operation. Hence it is proposed for construction of fencing for DSS.

We have already completed 2689 nos DTR Fencing upto FY 24-25 and with the available budget we will complete 630 Nos DTR Fencing in this FY 25-26.

Proposal:

We propose 545 Nos DTR Fencing in FY 26-27.

Requirement / Need of the Proposal

A large number of Distribution Substations (DSS) across TPWODL are currently without fencing or secured boundaries. This has left live electrical equipment exposed to the open environment, posing a significant threat to public and animal safety.

There have been multiple incidents in the past involving electrocution of both humans and animals due to accidental or unauthorized entry into DSS areas. The absence of proper fencing increases the risk of:

- Unauthorized access and theft of critical electrical components
- Serious injuries or fatalities due to contact with live equipment
- Safety non-compliance with regulatory and electrical standards
- In light of the above risks and with a strong focus on public and employee safety, TPWODL proposes to install fencing at all Distribution Substations (DSS) across its licensed area. This will ensure that:
- Access to live electrical installations is controlled and restricted
- Accidental human and animal contact is prevented
- Theft and vandalism of valuable infrastructure are minimized
- DSS facilities comply with safety guidelines

Scope of Work

The scope of this project includes all labour, materials, tools, equipment, transportation, and services required for the construction of a brick fence around the perimeter of the designated distribution substation

Sl no	Circle Name	Plan FY 26-27
1	Sambalpur	150

Sl no	Circle Name	Plan FY 26-27
2	Rourkela	125
3	Bargarh	75
4	Balangir	95
5	Kalahandi	100
	Total	**545**

Proposed cost with estimate Break-up

It is proposed to undertake construction of 545nos brick fencing at selected DSS locations across the TPWODL operational area during the financial year 2026–27.

Sl no	Circle Name	Plan FY 26-27	Unit cost (in Rs Lakhs)	Item cost (in Rs Lakhs)
1	Sambalpur	150	1.10	165.0
2	Rourkela	125	1.10	137.5
3	Bargarh	75	1.10	82.5
4	Balangir	95	1.10	104.5
5	Kalahandi	100	1.10	110.0
	Total	**545**		**599.5**
			In CR	**6.0**

Physical Target

The work for DTR Fencing will be completed by end of March'27.

Cost Benefit Analysis

Not applicable

Benefits of the System and consumers

The construction of brick fencing around Distribution Substations (DSS) in the TPWODL area offers significant operational safety and infrastructure management benefits. One of the primary advantages is enhanced security. Brick fencing acts as a strong physical barrier that prevents unauthorized access, theft, and vandalism of valuable electrical assets such as transformers, cables, and other substation equipment. Additionally, the fencing ensures public and animal safety by clearly demarcating high-voltage zones, thereby minimizing the risk of accidental contact with live electrical infrastructure. It also reduces the likelihood of legal or public grievances related to safety lapses.

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.	DTR Fencing	EA	82752	3319	79433	545	78888	Priority considered in 1.Sambalpur and Rourkela Main Town 2. Town areas in all five circles

ANNEXURE 14

Scheme Name: Earthing in PSS and DSS

Earthing in PSS

Background

Currently, earth pits in various non-ODSSP PSS are in dilapidated condition i.e rusted Earth electrodes, damaged earth pit chambers, rusted / damaged / disconnected earth flats etc. Regular incidents of flash over/smoke were common due to poor earthing condition.

Proposal

It is proposed to install new earth electrodes along with laying of 50X6 MM GI Flat, earth pit chambers, water supply arrangement.

Requirement/ Need of the Proposal

Adequate and proper earthing is crucial in Primary substations for personnel safety, equipment protection, and system stability. It provides a safe, low-impedance path for fault currents and lightning surges to dissipate into the ground, preventing dangerous step and touch voltages. This prevents electrical shocks, fires, and damage to expensive equipment, ensuring the reliable operation of the electrical system

Scope of Work

Scope includes earth electrodes, laying of 50X6 MM GI Flat, construction of earth pit chambers, filling of earth pits with clayey and loamy soils along with ground enhancement material (GEM) like bentonite to improve conductivity & water supply arrangements in earth pits.

To install 916 numbers of earthing in 67 numbers PSS distributed in five different circles in TPWODL operation area. Location of PSS are given in **Appendix - I**

Proposed Cost with Estimate Break-up

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Earthing for PSS	Nos.	916	0.0013	1.19	Refer Annexure 65 costing details
TOTAL				**1.19**	

Physical Target:

The work will be completed by March 27.

Cost Benefit Analysis

Not applicable

Benefit of robust earthing to the System and Consumers:

- Robust earthing system provides protection against electric shock
- It Prevents electrical fires in Primary Substations
- It safe-guard equipment from damage by lightning or power surges
- Improves system stability by stabilizing voltage levels
- Enhances overall reliability and longevity of electrical components and appliance.

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.	PSS Earthing	No	3288	1915	1373	916	457		Priority considered in PSS where earthing resistance value is more than 10 Ohms.

Appendix -I

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
SAMBALPUR	SED,SBP	HIRAKUD	HIRAKUD	HIRAKUD	Non-ODSSP
SAMBALPUR	SEED	BHUTAPADA	DHANUPALI	PUTIBANDH	Non-ODSSP
SAMBALPUR	SEED	DHANUPALI	DHAMA	DHAMA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	PAHADI	PURNA (KUMUDAPALI)	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KUCHINDA	KUCHINDA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KESEIBAHAL	ARDABAHL	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	GARPOSH	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	BUDHAPAL	BUDHAPAL	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	DEOGARH	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	KANDHAL	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	TILEIBANI	TILEIBANI	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	REAMAL	TELIMUNDA(REAMAL)	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	TILEIBANI	PARPOSHI	ODSSP
ROURKELA	RED RKL	UDITNAGAR	POWER HOUSE ROAD	POWER HOUSE RKL	Non-ODSSP
ROURKELA	RED RKL	BASANTI	BASANTI	BASANTI	Non-ODSSP
ROURKELA	RED RKL	KOELNAGAR	KOELNAGAR	KOELNAGAR	Non-ODSSP
ROURKELA	RED RKL	BISRA	SAKTINAGAR	NIT(REC)	Non-ODSSP
ROURKELA	RED RKL	BISRA	BISRA	JAREIKELA	ODSSP
ROURKELA	RED RKL	BASANTI	GB PALLI	GOPABANDHUPALI	ODSSP
ROURKELA	RED RKL	BISRA	BISRA	BISRA	Non-ODSSP
ROURKELA	RSED RKL	IND ESTATE	INDUSTRIAL ESTATE	INDUSTRIAL ESTATE RKL	Non-ODSSP
ROURKELA	RSED RKL	IND ESTATE	CHHEND	CHHEND	Non-ODSSP
ROURKELA	RSED RKL	PANPOSH	PANPOSH	PANPOSH	Non-ODSSP
ROURKELA	RSED RKL	PANPOSH	JALDA	JALDA	ODSSP
ROURKELA	RSED RKL	BONAI	BONAI	BONAI	Non-ODSSP
ROURKELA	RSED RKL	BONAI	BONAI	GURUNDIA	Non-ODSSP
ROURKELA	RSED RKL	BONAI	LAHUNIPARA	RAJAMUNDA	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SEC-II	COLLEGE	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	KARAMDIHI	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	BALISANKARA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	MAJHAPADA	MAJHAPADA	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	SARGIPALI	SARGIPALI	Non-ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
ROURKELA	SED SUNDARGARH	UJALPUR	LEPHRIPADA	LEPHRIPADA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	GOPLAPUR	GARJANBAHAL	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	KINJIRKELA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	SARGIPALI	DARLIPALI	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	HEMGIRI	HEMGIRI	ODSSP
KALAHANDI	KEED	KESINGA	KESINGA	KESINGA	Non-ODSSP
KALAHANDI	KEED	KESINGA	BORDA	BORDA	Non-ODSSP
KALAHANDI	KEED	NARLA	NARLA	NARLA	Non-ODSSP
KALAHANDI	KEED	NARLA	BISWANATHPUR	BANDHAPARI	Non-ODSSP
KALAHANDI	KEED	KESINGA	NUNMATH	NUNMATH	ODSSP
KALAHANDI	KEED	NARLA	MADANPUR	MADANPUR	Non-ODSSP
KALAHANDI	KEED	NARLA	MADANPUR	BANJAMUNDA	Non-ODSSP
KALAHANDI	KWED	JUNAGARH	KALAMPUR	KALAMPUR	ODSSP
KALAHANDI	KWED	CHARBAHAL	CHARBAHAL	CHARBAHAL	Non-ODSSP
KALAHANDI	KWED	CHARBAHAL	LADUGAON	GADRAMAL	Non-ODSSP
KALAHANDI	KWED	DHARAMGARH	DHARMAGARH-2	DASPUR	ODSSP
KALAHANDI	NUAPADA	NUAPADA	NUAPADA	NUAPADA	Non-ODSSP
KALAHANDI	NUAPADA	NUAPADA	KOMNA	KOMNA	Non-ODSSP
KALAHANDI	NUAPADA	KHARIAR	BODEN	BODEN	Non-ODSSP
KALAHANDI	NUAPADA	KHARIAR ROAD	KH. ROAD-2	BISORA	Non-ODSSP
KALAHANDI	NUAPADA	NUAPADA	NUAPADA	SARABONG	Non-ODSSP
BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-III	LALTIKIRA	Non-ODSSP
BOLANGIR	BED,BOLANGIR	NO-II	REC	BEHERAPALI(REC)	Non-ODSSP
BOLANGIR	BED,BOLANGIR	NO-II	CHHATAMAKHANA	CHHATAMAKHANA	Non-ODSSP
BOLANGIR	BED,BOLANGIR	NO-II	CHUDAPALI	CHUDAPALI(BARPUDIGIA)	Non-ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	DEOGAN	DEOGAON	Non-ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	DEOGAN	JARASINGHA	ODSSP
BOLANGIR	BED,BOLANGIR	LOISINGHA	LOISINGHA	LOISINGHA	Non-ODSSP
BOLANGIR	BED,BOLANGIR	LOISINGHA	AGALPUR	AGALPUR	Non-ODSSP
BOLANGIR	TED, TITILAGARH	SAINTALA	SAINTALA	SAINTALA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	TITILAGARH	TITLAGARH 2	KHOLAN	Non-ODSSP
BOLANGIR	TED, TITILAGARH	TITILAGARH	SINDHEKELA	SINDHEKELA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	BANGOMUNDA	Non-ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	TUREIKELA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 2	THAKPADA	Non-ODSSP

Earthing of DSS

Background

At inception, many Distribution Transformers (DTs) were installed with inadequate or deteriorated earthing systems. This exposed equipment and consumers to safety risks and increased fault levels.

Since vesting, earthing improvements have been carried out at select DTs, but a large number are still pending. The balance requirement will be addressed 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.	DSS Earthing	Nos.	23334	5637	17697

Proposal

Provision of **standardized earthing system** (pipe/plate/chemical earthing with proper interconnection) for all DTs to ensure safety, reliability, and regulatory compliance.

Requirement/ Need of the Proposal

- Existing earthing at many DTs is either damaged, high resistance, or non-standard.
- This leads to frequent equipment failure, safety hazards, and non-compliance with CEA safety guidelines.
- Strengthening DT earthing will improve system reliability, reduce accidents, and ensure statutory compliance.

Scope of Work
Installation of DSS Earthing: -

Sl. No.	Activity	UOM	Proposed Qty
1.	DSS Earthing	Nos.	2649
	Total		

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	DSS Earthing	Nos.	2649	0.0013	3.43	Refer Annexure -64 for detailed costing sheet
	Total				**3.43**	

Refer Annexure 139 for DSS earthing locations.

Physical Target:

Work will be completed by March 27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

- **System:** Reduced DT and equipment failures, improved fault clearance, compliance with safety norms, enhanced reliability.
- **Consumers:** Safer installations, reduced risk of shocks/accidents, improved 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.	DSS Earthing	Nos.	23334	5637	17697	2649	15048		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 15

Scheme Name: 1-Phase Smart Meter Installation

Background

The Hon'ble Odisha Electricity Regulatory Commission (OERC) has mandated Odisha DISCOMs to modernize the metering infrastructure and prioritize the implementation of smart meters, in line with the Government of India's mission. This aligns with the national objective of improving energy efficiency, enhancing billing transparency, and reducing distribution losses through advanced metering infrastructure.

As of FY 2025–26, **4.68 lakh 1-PH Smart Meters** have been installed out of a total consumer base of **21.26 lakh 1-PH Consumers**. This leaves a balance of over **16.58 lakh consumers** yet to be migrated to smart metering infrastructure.

TPWODL plans to complete the remaining smart meter installation in a phased manner under subsequent CAPEX proposals, with a focus on improving billing efficiency, reducing AT&C losses, and ensuring regulatory compliance. The present proposal is part of this roadmap, targeting the next major tranche of installations in FY 2026–27.

Proposal

The proposal seeks capital expenditure approval of **₹17.46 Cr** for the **installation of 2,46,500 smart meters** and shifting of **15,000 Meters from inside the premise to outside** during FY 2026–27, under the CAPEX plan.

This includes:

- Replacement of **1.15 Lakh faulty static meters** with smart meters
- Replacement of **1.15 Lakh old static meters which are more than 5 Years old** with smart meters.
- Installation of **16,500 smart meters** for unbilled consumers identified under the ongoing **"Khoj" drive**.
- Relocation of **15,000 existing smart meters** installed indoors or in inaccessible locations to safer, external positions to enable remote reading and reduce theft.

The primary objective of the proposal is to reduce AT&C losses through improved metering accuracy, real-time data access, and faster revenue realization. In the proposal no cost has been considered for HES System, only installation cost of 1-PH Smart Meters along with accessories have been considered.

Requirement / Need of the Proposal

Deficiencies in Current System:

- Manual meter reading is prone to human error, delayed billing, and revenue leakage.
- Conventional meters lack two-way communication and real-time monitoring.
- Static meters lack tamper alerts and remote access.
- High incidence of energy theft and meter bypassing in loss-prone areas.
- Inaccessible meter installations prevent accurate billing and timely disconnection in case of default.
- Unbilled consumers (identified through surveys) contribute to commercial losses.

Proposed System Improvements:

- Remote meter reading and on demand reading.
- Tamper/theft alerts for revenue discipline.
- Reduction in human error and billing cycle duration.
- Enhanced network visibility for planning and energy auditing.
- Brings unbilled consumers into the billing fold, improving revenue.
- Meter shifted outside ensure safe and transparent access for consumers and utility staff.
- Prepares system for future prepaid and Time-of-Day (ToD) billing.
- Facilitates NET Metering for Solar consumers.

Statutory Compliance:

- Fulfils Ministry of Power's mandate for universal smart metering.
- Ensures better alignment with **CERC/OERC directives** on energy accounting and consumer transparency.
- Supports transition to future-ready services like prepaid metering and ToD tariff implementation.
- Supports transition to smart metering for all LT consumers, as mandated by the GoI roadmap.
- Enhances system auditability and transparency in energy accounting.

Scope of Work (Quantifiable Terms with Location Back-up)

Component	Quantity	Target Areas / Remarks
Static to Smart Meter Conversion (Faulty meters)	1,15,000 Nos.	Across all zones with high energy loss or billing issues
Static to Smart Meter Conversion (>5 Years Old Static Meters)	1,15,000 Nos.	Across all zones with high energy loss or billing issues
Smart Meters for New "Khoj" Consumers	16,500 Nos.	Identified unbilled consumers under consumer indexing survey
Shifting of Inaccessible Smart Meters	15,000 Nos.	Locations with high complaints of inaccessibility or tampering

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

Proposed Cost with Estimate Break-up

Proposal Description	Major work under proposals	UOM	MATERIAL/SUPPLY COST			ERECTION/INSTALLATION COST		Total Cost (In Lakhs) (C=A+B)	REMARK	Priority Criteria
			Qty	Unit Price (In Rs.)	Total Cost (In Lakhs) (A)	Unit Price (In Rs.)	Total Cost (In Lakhs) (B)			
Loss Reduction Activity	Replacement of 1-PH Static Faulty meters with Smart Meters	EA	115000	0.00	0.00	748.43	860.69	860.69	Refer **Appendix II** for detail costing	Faulty Meters and Old Meters ageing > 5 Years

Proposal Description	Major work under proposals	UOM	MATERIAL/SUPPLY COST			ERECTION/INSTALLATION COST		Total Cost (In Lakhs) (C=A+B)	REMARK	Priority Criteria
			Qty	Unit Price (In Rs.)	Total Cost (In Lakhs) (A)	Unit Price (In Rs.)	Total Cost (In Lakhs) (B)			
Loss Reduction Activity	Mass Meter Replacement 1-PH Smart Meter installation (replacement of old static meters > 5 Years)	EA	115000	0.00	0.00	525.41	604.22	604.22	Refer **Appendix III** for detail costing	
Loss Reduction Activity	1-PH Smart Meter Installation in old unbilled connections availing power from network	EA	16500	0.00	0.00	1192.18	196.71	196.71	Refer **Appendix IV** for detail costing	Need to bring all consumers under billing net
Loss Reduction Activity	Shifting of existing meters from inside to outside/ lowering of height	EA	15000	16.11	2.42	545.16	81.77	84.19	Refer **Appendix V** for detail costing	Prioritized as per high loss villages identified.
		TOTAL			**2.42**		**1743.39**	**1745.81**		

Total Proposed Budget: 17.46 Cr

Note:

- Up to 2 KW connections - Meter cost proposed to be received through grant from Govt of Odisha
- For > 2KW connections - Meter Cost will be recovered through Meter Rent

Physical Target

All the below mentioned activities will be completed by Mar'27.

Activity	Quantity
Smart meter installation (Faulty Meters)	115000
Smart Meter Installation (>5 Years Old Static Meters)	115000
Smart meters for Khoj consumers	16500
Shifting of smart meters	15000

Cost Benefit Analysis

Particulars	Pre-Smart Meter Scenario	Post-Smart Meter Scenario
Billing Efficiency	~64%	>75%
Meter Reading Frequency	Bi-monthly / delayed	Near real-time (daily/hourly)
Theft Detection	Delayed, manual	Real-time tamper alerts
Operational Cost (Reading)	₹ 21.83/consumer/month	₹ 10.62/consumer/month
AT&C Loss (in target areas)	~30–40%	Expected reduction to 10–15%

Benefit to the System and Consumers

Consumer-Level Benefits:

- Accurate, timely, and dispute-free billing.
- Transparency in consumption and charges (mobile/web access).
- Provision for prepaid and Time-of-Day tariffs.
- Reduced billing complaints and faster grievance redressal.
- Better load management and sensible power consumption by consumers.

System-Level Benefits:

- Improved revenue due to timely billing.
- Better energy accounting and audit trails.
- Faster detection of theft, bypassing, or tampering.
- Enables data-driven planning for load and loss management.
- Accurate, tamper-proof metering
- Reduced manual intervention and associated risks

This proposal is aligned with the broader goal of making the distribution system **smart, transparent,** and **consumer-centric** while also ensuring **compliance with regulatory and national smart metering targets**. The requested budget of **₹17.46 Cr** is justified against quantifiable losses to be curtailed and long-term operational gains.

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	Replacement of 1-PH Static Faulty meters with Smart Meters	EA	2126985	611785	1515200	230000	1285200	On an average 10K New Faulty cases come every month	Faulty Meters and Old Meters ageing > 5 Years
2	Mass Meter Replacement 1-PH Smart Meter installation (replacement of > 5 Years old static meters)								
3	1-PH Smart Meter Installation in old unbilled connections availing power from network	EA	52000	35500	16500	16500	0		Need to bring all consumers under billing net.
4	Shifting of existing meters from inside to outside/ lowering of height	EA	170000	60000	110000	15000	95000		Prioritized as per high loss villages identified.

Appendix I

Division wise Scope of Work

Circle	Division	Replacement of 1-PH Static Faulty meters with Smart Meters	Mass Meter Replacement 1-PH Smart Meter installation (replacement of old static meters > 5 Years)	1-PH Smart Meter Installation in old unbilled connections availing power from network	Shifting of existing meters from inside to outside/ lowering of height
Sambalpur	SED Sambalpur	2065	4660	155	150
	SEED Sambalpur	6090	6120	950	430
	DED Deogarh	3450	6380	285	100
	BNED Brajrajnagar	1150	7960	120	30
	JED Jharsuguda	4600	5635	160	1075
Rourkela	RED Rourkela	4290	5920	450	25
	RSED Rourkela	5320	6020	100	25
	RED Rajgangpur	3450	6870	230	520
	SED Sundargarh	6900	5990	380	500
Bargarh	BED Bargarh	6470	5865	1320	1660
	BWED Bargarh	12890	6010	1570	2160
Balangir	BED Balangir	9200	14170	1385	2170
	TED Titlagarh	11500	6775	4450	1965
	SED Sonepur	4600	6255	1190	1980
Kalahandi	KEED Kalahandi	9020	6520	1535	200
	KWED Kalahandi	12650	6700	1355	1460
	NED Nuapada	11355	7150	865	550
	Total	**115000**	**115000**	**16500**	**15000**

Appendix II

Costing Sheet for Replacement of 1-PH Static Faulty Meters with Smart Meters

Material Cost

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)
				FY27	Current	FY27	FY27
Loss Reduction Activity	Replacement of 1-PH Static Faulty meters with Smart Meters	Smart Meter	EA	115000	0.00	0.00	0.00
		Meter Box	EA	115000	0.00	0.00	0.00
		Polycarbonate Meter Seals	EA	345000	0.00	0.00	0.00
		Total			**0.00**	**0.00**	**0.00**

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	
Loss Reduction Activity	Replacement of 1-PH Static Faulty meters with Smart Meters	Meter Installation	EA	115000	531.00	557.55	641.18	RC No 6200007115 – Item Sr No 1.01
		Old Meter Removal	EA	115000	153.40	161.07	185.23	RC No 6200007115 - Item Sr No 1.03
		Transportation	EA	115000	28.39	29.81	34.28	RC No 6200007115 - Item Sr No 1.040
		Total			**712.79**	**748.43**	**860.69**	

Note:

1. **Up to 2 KW connections** - Meter cost proposed to be received through grant from Govt of Odisha.
2. **For > 2KW connections** - Meter Cost will be recovered through Meter Rent
3. 3 Nos New Polycarbonate Seals are installed during Meter replacement activity (1 Seal on Meter Terminal and 2 Seals on Meter Box)

Appendix III

Costing Sheet for Mass Meter Replacement- 1-PH Smart Meter Installation (Replacement > 5 Years Old Static Meters

Material Cost

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)
				FY27	Current	FY27	FY27
Loss Reduction Activity	Mass Meter Replacement 1-PH Smart Meter installation (replacement of > 5 Years old static meters)	Smart Meter	EA	115000	0.00	0.00	0.00
		Meter Box	EA	115000	0	0.00	0.00
		Polycarbonate Meter Seals	EA	345000	0.00	0.00	0.00
		Total			**0.00**	**0.00**	**0.00**

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	
Loss Reduction Activity	Mass Meter Replacement 1-PH Smart Meter installation (replacement of > 5 Years old static meters)	Meter Installation	EA	115000	472.00	495.60	569.94	RC No 6200007115 Sr No 1.04
		Old Meter Removal	EA	115000	0.00	0.00	0.00	
		Transportation	EA	115000	28.39	29.81	34.28	RC No 6200007115 Sr No 1.040
		Total			**500.39**	**525.41**	**604.22**	

Note:

1. **Up to 2 KW connections** - Meter cost proposed to be received through grant from Govt of Odisha.
2. **For > 2KW connections** - Meter Cost will be recovered through Meter Rent
3. 3 Nos New Polycarbonate Seals are installed during Meter replacement activity (1 Seal on Meter Terminal and 2 Seals on Meter Box)

Appendix IV

Costing Sheet for Mass Meter Replacement- 1-PH Smart Meter Installation in old unbilled connections availing power from network

MATERIAL COST

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)
				FY27	Current	FY27	FY27
Loss Reduction Activity	1-PH Smart Meter Installation in old unbilled connections availing power from network	Smart Meter	EA	16500	0.00	0.00	0.00
		Meter Box	EA	16500	0.00	0.00	0.00
		Polycarbonate Meter Seal	EA	49500	0.00	0.00	0.00
		Armoured Cable (2Cx6 Sqmm)	EA	412500	0.00	0.00	0.00
		Total			**0.00**	**0.00**	**0.00**

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	
Loss Reduction Activity	1-PH Smart Meter Installation in old unbilled connections availing power from network	Meter Installation	EA	16500	531.00	557.55	92.00	RC No 6200007115 Sr No 1.01
		Installation Armoured Cable (2Cx6 Sqmm)	EA	16500	501.50	526.58	86.88	RC No 6200007115 Sr No 1.07
		Transportation	EA	16500	102.91	108.05	17.83	RC No 6200007115 Sr No 1.040
		Total			**1135.41**	**1192.18**	**196.71**	

Note:

1. **Up to 2 KW connections** - Meter cost proposed to be received through grant from Govt of Odisha.
2. **For > 2KW connections** - Meter Cost will be recovered through Meter Rent
3. 3 Nos New Polycarbonate Seals are installed during Meter replacement activity (1 Seal on Meter Terminal and 2 Seals on Meter Box)
4. 25 Mtrs/Case of 2Cx6 Sqmm cable is considered.

Appendix V

Costing Sheet for Shifting of Meters from inside the premise to outside/lowering of height

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	
Loss Reduction Activity	Shifting of meters from inside to outside/ lowering of height	Existing Meter	EA	15000	0.00	0.00	0.00	
		Polycarbonate Meter Seal	EA	45000	5.37	5.37	2.42	RO No 5000054961 Dated 05.05.2025
		Total			**5.37**	**5.37**	**2.42**	

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	
Loss Reduction Activity	Shifting of meters from inside to outside/ lowering of height	Shifting of 1-PH Meters from inside to outside of premises, height meters to 5 to 6 ft range and as per requirement.	EA	15000	519.20	545.16	81.77	RC No 6200007115 Sr No 1.05
		Total			**519.20**	**545.16**	**81.77**	

Note

1. Existing Meter rent is already being recovered through Meter Rent.
2. 3 Nos New Polycarbonate Seals are installed during Meter shifting activity (1 Seal on Meter Terminal and 2 Seals on Meter Box).

ANNEXURE 16

Scheme Name: 3-Phase Smart Meter Installation on Agriculture LI Connections

Background

The Hon'ble Odisha Electricity Regulatory Commission (OERC) has mandated Odisha DISCOMs to modernize the metering infrastructure and prioritize the implementation of smart meters, in line with the Government of India's mission. This aligns with the national objective of improving energy efficiency, enhancing billing transparency, and reducing distribution losses through advanced metering infrastructure.

To address this, TPWODL initiated a phased smart meter rollout for agriculture LI consumers. As of FY 2025–26, **62761 smart meters** have been installed out of a total **104867 lakh** agriculture LI connections. The remaining **42106** connections are proposed to be covered in successive CAPEX cycles.

The current proposal for FY 2026–27 focuses on high-loss regions and critical feeders to further reduce technical and commercial losses and to bring the remaining agriculture LI consumers under smart metering.

Proposal

This proposal seeks **₹2.33 Cr** under CAPEX for **installation of 22000 Nos. of 3-Phase Smart Meters** on agriculture LI connections in high-loss pockets during FY 2026–27.

The primary objective of the proposal is to reduce AT&C losses through improved metering accuracy, real-time data access, and faster revenue realization. In the proposal no cost has been considered for HES System only installation cost of 3-PH Smart Meters along with accessories have been considered.

Requirement / Need of the Proposal

Existing System Deficiencies:

- Inaccessibility of agriculture meters due to remote locations leading to high Avg/Prov billing.
- Conventional meters are prone to tampering, bypassing, and delayed readings.
- Manual meter reading is labour-intensive and often inaccurate in remote LI installations.
- No real-time visibility into consumption, load pattern, or unauthorized usage.
- Agriculture feeders are major contributors to distribution losses.

Benefits of Proposed System:

- Real-time data for energy audit and loss analysis.
- Tamper-proof, accurate billing without manual intervention.
- Remote monitoring and control of individual LI connections.
- Compliance with Ministry of Power (MoP) guidelines for smart metering in agriculture.

Regulatory Alignment:

- Complies with the Government of India's smart metering roadmap.
- Supports OERC's directives on improving metering efficiency, energy accounting, and loss reduction.

Scope of Work (Quantifiable Terms with Location Back-up)

Activity	Quantity	Target Areas
Installation of 3-Phase Smart Meters	22000	Agriculture LI connections in high-loss rural zones across TPWODL licensee area i.e. Bargarh, Balangir, Kalahandi, Sambalpur & Rourkela]

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

Proposed Cost with Estimate Break-up

Proposal Description	Major work under proposals	UOM	MATERIAL/SUPPLY COST			ERECTION/ INSTALLATION COST		Total Cost (In Lakhs) (C=A+B)	REMARK	Priority Criteria
			Qty	Unit Price (In Rs.)	Total Cost (In Lakhs) (A)	Unit Price (In Rs.)	Total Cost (In Lakhs) (B)			
Loss Reduction Activity	3-PH WC Smart Meter installation (replacement of old static meters In LI Connections)	EA	22000	0	0	1058.18	232.80	232.80	Refer **Appendix II** for detail costing	High loss Division due to LI connections

Total Estimated Cost: 2.33 Cr.

Note:

- Meter Cost will be recovered through Meter Rent

Physical Target

Installation of 3-PH Smart Meters will be completed by Mar'27

The installations will be prioritized on area/division with:

- High technical & commercial losses
- Past theft/tampering records
- High consumption and billing discrepancies

Cost Benefit Analysis

Parameter	Before Smart Metering	After Smart Metering
Meter Reading Accuracy	Moderate (manual, error-prone)	High (remote, automated)
AT&C Loss in Agriculture Feeders	>40% in target areas	Expected reduction to <20%

Parameter	Before Smart Metering	After Smart Metering
Billing Efficiency	~40%	>60%
Theft & Tamper Detection	Manual, delayed	Real-time alerts

Benefit to the System and Consumers

Consumer-Level Benefits:

- Transparent and accurate billing based on actual consumption.
- Prompt resolution of billing complaints due to data availability.
- Enables future prepaid metering and ToD tariff applicability.
- Encourages responsible usage through consumption visibility.

System-Level Benefits:

- Enhanced visibility into high-load rural/agriculture consumers.
- Improved power scheduling, load management, and planning.
- Reduction in unauthorized usage and energy theft.
- Strengthened energy audit and feeder-level loss monitoring.

This proposal supports the utility's broader objective of reducing distribution losses and modernizing infrastructure in line with the **Government of India's smart metering mandate**, with specific focus on **agriculture LI connections**, which are both high-impact and high-priority under the loss reduction strategy.

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	3-PH WC Smart Meter installation (replacement of old static meters In LI Connections)	EA	104867	62761	42106	22000	20106	Non-Smart Static Meter to Smart Meter	High AT&C Loss Divisions

Appendix I

Division wise Scope of Work

Circle	DIVISION	Smart Meter Installation (FY 26-27)
SAMBALPUR	SED SAMBALPUR	30
	SEED SAMBALPUR	550
	DED DEOGARH	380
	BNEDBRAJRAJNAGAR	370
	JED JHARSUGUDA	1110
ROURKELA	RED ROURKELA	125
	RSED ROURKELA	500
	RED RAJGANGPUR	285
	SED SUNDARGARH	430
BARGARH	BED BARGARH	2100
	BWED BARGARH	8450
BALANGIR	BED BALANGIR	1990
	TED TITILAGARH	2290
	SED SONEPUR	520
KALAHANDI	KEED BHAWANIPATNA	860
	KWED BHAWANIPATNA	680
	NED NUAPADA	1330
	TOTAL	**22000**

Appendix II

Costing Sheet for replacement of 3-PH Static Meters with Smart Meters in LI Connections

MATERIAL COST

Proposal Description	Major work under proposals	Material	UOM	Quantity Phasing	Unit Price (Incl. GST)	Unit Price (Incl. GST)	Cost (in Lakh)
				FY27	Current	FY27	FY27
Loss Reduction Activity	3-PH WC Smart Meter installation (replacement of old static meters In LI Connections)	3-PH Smart Meter	EA	22000	0.00	0.00	0.00
		Meter Box	EA	22000	0.00	0.00	0.00
		Polycarbonate Meter Seals	EA	88000	0.00	0.00	0.00
		Total			**0.00**	**0.00**	**0.00**

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	
Loss Reduction Activity	3-PH WC Smart Meter installation (replacement of old static meters In LI Connections)	Meter Installation	EA	22000	743.40	780.57	171.73	RC No 6200007115 Sr No 1.09
		Old Meter Removal	EA	22000	236.00	247.80	54.52	RC No 6200007115 Sr No 1.010
		Transportation	EA	22000	28.39	29.81	6.56	RC No 6200007115 Sr No 1.040
		Total			**1007.79**	**1058.18**	**232.80**	

Note:

1. Meter Cost will be recovered through Meter Rent
2. 4 Nos New Polycarbonate Seals are installed during Meter replacement activity in 3-PH connections (2 Seals on Meter Terminal and 2 Seals on Meter Box)

ANNEXURE 17

Scheme Name: Installation of Meter for Energy Audit purpose inside PSS

Background

At the time of vesting, metering infrastructure in TPWODL's network was partially available and largely non-communicable. Several feeders, PSS incomers, and PTR locations were equipped with non-DLMS, defective, or non-communicable meters, which restricted effective energy accounting.

Since vesting, TPWODL has undertaken systematic initiatives to strengthen metering systems.

A. PSS incomer and outgoing metering

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	11 KV OG Feeder Metering	Nos.	1236	1176	60
2	33 KV IC Feeder Metering	Nos.	464	349	115

B. PTR metering

PTR metering is a new initiative proposed under CAPEX. Out of a total of 692 PTRs in service, 306 PTRs (under ODSSP) are selected for metering in the first phase. Since most of the existing meters are non-DLMS type, they will be replaced with DLMS-compliant communicable meters equipped with modems. The balance PTRs will be covered in a phased manner under subsequent CAPEX plans starting FY27

Proposal

The proposal aims to complete 100% metering coverage at PSS incomer, PSS outgoing, and PTR locations with communicable DLMS-compliant meters, PTs/CTs, and NB-IoT modems to ensure reliable integration with the AMR system in phase manner. This will enable accurate input energy calculation up to section level, enhance energy audit capabilities, and provide a robust basis for AT&C loss reduction initiatives.

Requirement / Need of the Proposal

- **Deficiency in Existing System**: Current metering is partially incomplete, with 20–25% points still pending. Many installed meters are non-DLMS or defective, leading to gaps in energy accounting. PTR metering is largely non-communicable.

- **Scope for Improvement:** Completing PSS and PTR metering will provide end-to-end visibility of energy flow, reduce reliance on manual data collection, and enable real-time monitoring.

- **Statutory Compliance**: Hon'ble OERC mandates accurate energy accounting and periodic reporting. Without 100% PSS/PTR metering, compliance gaps persist. The proposed scheme ensures full statutory compliance.

- **Organizational Benefit**: Improved energy balancing at PSS, feeder, and PTR level will directly support loss reduction targets, enhance system reliability, and protect revenue.

Scope of Work

1. **PSS Metering (33 kV Incomer/Outgoing)**

For effective input energy calculation up to the section level, PSS metering is critical. TPWODL has already completed metering on 351 out of 466 nos. of 33 kV Incomer and Outgoing points at PSS. To sustain accuracy and reliability of input energy, the metering system must remain fault-free.

- Completion of 100% PSS Incomer Metering, considering 10–20% defective meters and modems.
- For upcoming new PSS (both ODSSP and non-ODSSP), metering will be implemented during project execution.
- As per the field survey, 115 PSS Incomer/Outgoing metering points remain to be completed, including modem installation.
    - Installation of 33 kV PTs on main incomer and outgoing lines.
    - Installation of HTTV meters (DLMS-compliant) on CRP or separate panels (for RDS/non-RDS projects).
    - Installation of NB-IoT modems for AMR integration.
    - Qty: 115 nos. incomer/outgoing points.

2. **11 kV Outgoing Feeder Metering**

Accurate feeder-level energy accounting requires 11 kV feeder metering. TPWODL has completed metering at 1176 out of 1236 outgoing feeder points.

- Completion of 100% feeder metering, considering 10–20% defective meters and modems.
- For new upcoming PSS (both ODSSP and non-ODSSP), feeder metering will be implemented at project execution stage.
- As per the field survey, 60 nos. of 11 kV feeder metering points remain to be completed, including modem installation.
    - Installation of HTTV meters and modems.
    - Qty: 60 nos. feeders.

3. **33/11 kV PTR Metering**

To calculate and monitor energy, peak demand, and voltage profile of Power Transformers, metering at incoming locations is required.

- TPWODL currently operates 692 PTRs, of which 306 are already metered (under ODSSP).
- Existing meters are mostly non-DLMS and need to be replaced with communicable meters (AMR compatible).
- PTR metering is proposed in FY27 (Phase I), with the balance to be covered in the upcoming 5-Year Capex Plan.
    - Replacement of non-DLMS meters with DLMS-compliant, communicable meters.
    - Installation of NB-IoT modems for AMR.
    - Qty: 306 nos. PTRs.

Circle wise total quantity for metering (to be done)

Circle	33KV IC Feeder	11KV OG Feeder	PTR Metering	Grand Total
SEEC BALANGIR	27	33	64	124
SEEC BARGARH	16	-	46	62
SEEC KALAHANDI	23	3	44	70
SEEC ROURKELA	29	4	62	95
SEEC SAMBALPUR	20	20	90	130
Grand Total	115	60	306	481

Proposed Cost with Estimate Break-up

Description	Scope of Work	UoM	Qty	Unit Rate (in Cr)	Proposed Amount (in Cr)	Remark
Installation of Meter for Energy Audit purpose inside PSS	11 KV OG Feeder Metering	Nos.	60	0.0041	0.25	Refer Annexure 66 for costing details
	33 KV IC Feeder Metering	Nos.	115	0.0041	0.47	Refer Annexure 67 for costing details
	PTR Metering	Nos.	306	0.0041	1.25	Refer Annexure 68 for costing details
Total					**1.97**	

Physical Target

Completion of 115 Nos of PSS incomer/outgoing metering, 60 Nos of 11kV OG feeder metering and 306 Nos of PTR metering by Mar'27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

The proposed metering initiatives will create a transparent, reliable, and efficient energy accounting framework. This will provide significant advantages both at the **system level** and for **end consumers**.

System Benefits

- **Accurate Energy Accounting** – Enables precise measurement at all network levels, ensuring a robust energy audit system.

- **Monitoring of Asset & network health -** Monitors peak demand and voltage profile, improving system reliability, facilitates precise energy balancing across transformers, Supports identification of technical losses at transformer level.
- **Loss Reduction** – Helps identify and minimize technical and commercial losses, directly contributing to AT&C loss reduction targets.
- **Revenue Protection** – Prevents under-billing and revenue leakage through real-time monitoring of high-value consumers and critical network points.
- **Operational Efficiency** – Strengthens load management, peak demand monitoring, and system planning through reliable data insights.
- **Regulatory Compliance** – Ensures adherence to Hon'ble OERC guidelines and supports transparent reporting.

Consumer Benefits

- **Improved Reliability of Supply** – With better monitoring at each level, outages and technical issues can be identified and resolved faster.
- **Fair and Transparent Billing** – Accurate metering minimizes billing disputes and ensures consumers are charged only for actual consumption.
- **Enhanced Service Quality** – Smart metering enables quick response to consumer grievances related to billing and supply interruptions.

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	11 KV OG Feeder Metering	Nos.	1236	1176	60	60	-	100% metering activity will be cover for PSS IC and 11kV OG feeders
2	33 KV IC Feeder Metering	Nos.	464	349	115	115	-	
3	PTR Metering	Nos.	692	-	692	306	390	Non-DLMS meters and at HV side of PTR

ANNEXURE 18

Scheme Name: DT Smart Metering for Energy Audit

Background

At the time of vesting, Distribution Transformer (DT) level metering in TPWODL's license area was negligible, limiting visibility of energy consumption patterns at the last-mile level. This resulted in difficulties in performing **feeder-to-DT energy balancing** and identifying localized technical and commercial losses.

Since vesting, TPWODL has initiated large-scale DT Smart Metering, prioritizing DTs based on capacity and criticality. As of FY25-26:

- **8,216 DT Smart Meters have been installed**, covering major towns and high-revenue feeders.
- The installations were prioritized for **100 kVA & above DTs**, and for DTs connected to industrial, town, and high-revenue feeders.

Balance Work:

- A significant number of DTs (both **100 kVA & above** and below 100 kVA DTs) remain unmetered.
- These balance DTs are proposed to be covered in a phased manner under subsequent CAPEX plans to achieve **100% DT-level energy audit coverage**.

.

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	DTR Smart Metering 100KVA & above	Nos.	12312	8216	4096
2	DTR Smart Metering 100KVA & Below	Nos.	85072	-	85072

Proposal

The proposal aims to install **smart meters (LTCT and whole-current type)** on identified DTs across the TPWODL license area. The scheme includes meters with **DLMS compliance, AMR/AMI integration, Ring CT arrangements, control cables, and meter boxes**.

The installation will enable accurate energy accounting at the DT level, allowing for **feeder-to-DT loss analysis**, which is critical for targeted loss reduction initiatives.

Requirement / Need of the Proposal

Deficiency in Existing System:

- Incomplete DT metering coverage limits visibility of localized losses.
- Manual or sample-based energy audit at DT level is ineffective and often inaccurate.

Scope for Improvement:

- Comprehensive DT metering enables real-time monitoring of loss pockets, improves feeder segregation analysis, and enhances billing efficiency.
- Facilitates transformer health monitoring by identifying overloaded/underutilized DTs.

Statutory Compliance:

- Hon'ble OERC mandates reliable energy accounting for AT&C loss monitoring.
- Full DT metering ensures compliance by providing transparent and verifiable data down to the last mile.

Organizational Benefit:

- Supports AT&C loss reduction by identifying specific DTs contributing to higher losses.
- Enhances planning for network strengthening, load balancing, and Capex prioritization.

Scope of Work

DTs to be covered:

- 100 kVA & above DTs: All remaining unmetered DTs.
- <100 kVA DTs: Select DTs based on criticality (town feeders, industrial feeders, HRF feeders, high-input feeders).

Activities:

- Installation of DT meters (smart LTCT and whole-current types).
- Installation of Ring CTs, control cables, and meter boxes.
- Integration with AMR/AMI system through communicable modems.

Quantity (as per survey):

- 1000 nos. DTs (100 kVA & above)
- 1000 nos. DTs (<100 kVA, identified critical DTs)

Division wise total quantity for metering (to be done)

Division	>=100kVA				<100kVA			
	Total	Metered	FY27	Balance	Total	Metered	FY27	Balance
BED BALANGIR	1038	697	76	265	5556	-	55	5501
BED BARGARH	1025	792	92	141	5139	-	55	5084
BNED BRAJRAJNAGAR	362	292	12	58	1737	-	56	1681
BWED BARGARH	965	542	52	371	11103	-	55	11048
DED DEOGARH	353	280	11	62	3105	-	56	3049
JED JHARSUGUDA	761	553	42	166	5359	-	55	5304
KEED BHAWANIPATNA	912	614	80	218	6225	-	55	6170
KWED BHAWANIPATNA	574	394	11	169	5366	-	55	5311
NED NUAPADA	651	492	31	128	5896	-	55	5841
RED RAJGANGPUR	704	402	70	232	5503	-	55	5448
RED ROURKELA	486	302	89	95	923	-	93	830
RSED ROURKELA	837	493	110	234	4057	-	77	3980
SED SAMBALPUR	715	493	115	107	485	-	56	429
SED SONEPUR	644	434	41	169	6551	-	56	6495
SED SUNDARGARH	579	372	23	184	4620	-	55	4565
SEED SAMBALPUR	768	431	92	245	5183	-	56	5127
TED TITILAGARH	938	633	53	252	8264	-	55	8209
Grand Total	**12312**	**8216**	**1000**	**3096**	**85072**	**-**	**1000**	**84072**

Proposed Cost with Estimate Break-up

Description	Scope of Work	UoM	Qty	Unit Rate (in Cr)	Proposed Amount (in Cr)	Remark
DTR Metering	DTR Smart Metering 100KVA & above	Nos.	1000	0.00159	1.59	Refer Annexure 70 for costing details
	DTR Smart Metering 100KVA & below	Nos.	1000	0.00181	1.81	Refer Annexure 69 for costing details
	Total				**3.40**	

Physical Target

Completion of 2000 DT Smart Metering installations (1000 nos. of 100 kVA & above DTs and 1000 nos. of <100 kVA DTs) by Mar'27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

The proposed metering initiatives will create a transparent, reliable, and efficient energy accounting framework. This will provide significant advantages both at the **system level** and for **end consumers**.

Loss Reduction:

- Enables precise feeder-to-DT energy balancing, identifying high-loss DTs.
- Facilitates targeted actions (metering audits, theft control, network strengthening).

Revenue Protection:

- Prevents energy leakage and under-billing by pinpointing unaccounted consumption.
- Ensures billing efficiency for consumers connected to DTs under HRF/industrial feeders.

System Benefits:

- Improves planning of network reinforcement based on actual DT load data.
- Reduces transformer failures by monitoring load and imbalance trends.
- Strengthens energy audit capability at the last-mile level.
- Enhances loss identification and corrective planning.
- Provides reliable data for load forecasting and Capex prioritization.
- Improves transformer reliability and reduces downtime.

Consumer Benefits:

- Results in fair and transparent billing by reducing hidden technical and commercial losses.
- Enhances supply quality and reliability by preventing overloading of DTs.
- Builds consumer trust through data-driven service delivery improvements.

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	DTR Smart Metering 100KVA & above	Nos.	12061	8313	3748	1000	2748		DTs connected to industrial, town, and high-revenue feeders taken as priority
2	DTR Smart Metering 100KVA & Below	Nos.	85073	0	85073	1000	84073		

ANNEXURE 19

Scheme Name: High Value Industrial Audit Point Metering

Background

At the time of vesting, TPWODL had no dedicated **independent audit point metering** for monitoring industrial consumer groups or single high-value industrial consumers. Revenue billing relied solely on consumer-end meters, which created vulnerabilities due to possible CT/PT failures, meter inaccuracies, or tampering risks.

Since vesting, TPWODL has initiated audit point metering for select **industrial feeders and group consumers** to improve energy audit accuracy and strengthen revenue assurance. This has enabled detection of discrepancies between consumer billing and actual supply, contributing to improved accountability.

Current Status (as of FY25-26):

- Audit point metering has been initiated in a **limited number of high-value industrial locations**.
- However, coverage is still incomplete, with significant **balance work to be undertaken in phases** under subsequent CAPEX years.

Balance Work:

- 16 new High Value Industrial Audit Points identified through field survey require metering units to be installed.
- Additional audit points may be planned progressively under the **5-Year Capex Plan**.

.

Proposal

The proposal is to install **independent metering units at high-value industrial single and group audit points**, equipped with:

- 33 kV DP structures,
- Metering Units (MU),
- DLMS-compliant Meters,
- Communicable Modems,
- Associated accessories (cables, panels, etc.).

This arrangement will ensure **independent, verifiable measurement of industrial consumption** and support precise energy auditing for loss reduction.

Requirement / Need of the Proposal

Deficiency in Existing System:

- Lack of independent audit point metering for industrial loads increases vulnerability to billing inaccuracies.
- Current dependency on consumer-installed meters poses risk of under-billing, unaccounted energy, and disputes.

Scope for Improvement:

- Audit point metering provides a reference point for cross-verifying consumer billing.
- Enables identification of feeder/group-level energy losses and supports corrective actions.

Organizational Benefit:

- Protects revenue from potential under-billing.
- Provides a reliable mechanism for loss analysis, theft detection, and revenue protection in industrial segments.

Scope of Work

Activities:

- Installation of 33 kV DP structure with complete Metering Unit (MU).
- Installation of DLMS-compliant meters with NB-IoT/GPRS modems for AMR integration.
- Provision of all related accessories, including cables, panels, and site services.

Quantity (as per survey):

- 16 nos. High Value Industrial Audit Points to be completed in FY27.

Division wise total quantity for metering (to be done)

Division	High value industrial consumers			
	Total scope	Metered	FY27	Balance
RED RAJGANGPUR	32	28	4	-
RED ROURKELA	9	6	3	-
RSED ROURKELA	17	10	7	-
SED SUNDARGARH	5	3	2	-
Grand Total	**63**	**47**	**16**	**-**

Proposed Cost with Estimate Break-up

Description	Scope of Work	UoM	Qty	Unit Rate (in Cr)	Proposed Amount (in Cr)	Remark
High Value Industrial Audit Point Metering	33 KV DP with MU (OD) & Modem	Nos.	16	0.0659	1.05	Refer Annexure 71 for cost details

Physical Target

Completion of installation of 16 nos. High Value Industrial Audit Points as identified in field survey by Mar'27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

System Benefits:

- Provides a **robust independent reference point** for industrial consumption monitoring.
- Reduces commercial losses by strengthening HT consumer energy audit.
- Enhances transparency in energy flow and strengthens regulatory reporting.

Revenue Protection:

- Independent audit points provide a parallel measurement reference, reducing risk of under-billing.
- Ensures transparency and prevents revenue leakage from metering inaccuracies.

Loss Reduction:

- Identifies discrepancies at industrial feeder/group level.
- Enables targeted actions for reducing AT&C losses in industrial clusters.

Statutory Compliance:

- Strengthens adherence to OERC guidelines on energy audit of high-value consumers.

Consumer Benefits:

- Ensures **fair and transparent billing**, reducing chances of disputes.
- Builds consumer confidence by providing verifiable consumption data.
- Supports long-term service quality improvements through better system planning.

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	High Value Industrial Audit Point Metering	Nos.	63	47	16	16	0	Refer DTR high value costing sheet	100% metering activity will be cover for identified audit point

ANNEXURE 20

Scheme Name: Check Meter Installation at HT Consumers for Energy Audit and loss reduction

Background

At the time of vesting, TPWODL had limited visibility on the accuracy of billing energy supplied to High Tension (HT) consumers. Energy audit at the consumer transformer secondary side (LT) was absent, and reliance was only on consumer-installed meters. This created potential risks of **revenue leakage due to CT/PT failures, metering inaccuracies, or manipulation at consumer premises**.
Since vesting, TPWODL has initiated check metering at HT consumers to strengthen energy accounting and revenue assurance. As of FY25:

- **2,331 HT consumers have been provided with check meters** at the LT side of their transformers.
- These installations have helped detect discrepancies in billing, CT/PT ratio mismatches, and unaccounted energy leakage.

Balance Work:

- With ~200 new HT connections being released every month, the requirement for check meter installation is continuous.
- Additional check meters are required to cover all upcoming HT consumers and to replace defective/non-communicable meters.

Proposal

The proposal is to install **check meters with Ring CT arrangement, Control Cables, and Meter Boxes** at the LT side of transformers of all HT consumers.

- Installation of **190 Nos** of LTCT smart meter at LT side of HT consumers**.**

This will ensure **parallel energy measurement**, independent of consumer meters, thereby providing a reliable reference point for:

- Energy audit,
- Loss analysis, and
- Revenue protection.

Requirement / Need of the Proposal

- **Deficiency in Existing System:**
  - Sole reliance on consumer meters increases vulnerability to billing errors due to CT/PT failure or meter inaccuracy.
  - Lack of independent verification results in possible revenue leakage.
- **Scope for Improvement:**
  - Installing check meters provides an independent and verifiable reference point for billed energy.
  - Enables reconciliation of consumer billing with check meter data, closing gaps in HT–LT energy audit.
- **Statutory Compliance:**
  - Hon'ble OERC emphasizes accurate energy accounting and protection against commercial losses.
  - The proposed arrangement ensures compliance by eliminating gaps in consumer-level energy audit.

- **Organizational Benefit:**
    - Protects revenue from potential under-billing.
    - Strengthens consumer trust by ensuring transparent and verifiable billing.

Scope of Work

Activities:

- Installation of Check Metering Units including:
    - DLMS-compliant meters,
    - Ring CT arrangement,
    - Control cables,
    - Meter boxes.
- Integration of installed meters with AMR system for automated data collection.

Quantity (as per FY27 target):

- 190 nos. HT consumers to be covered in FY27.
- Provision to extend installation for ~200 new HT consumers every month under subsequent year's CAPEX.

Division wise total quantity for metering (to be done)

Division	HT Consumers			
	Total scope	Metered	FY27	Balance
BED BALANGIR	143	131	12	-
BED BARGARH	217	207	10	-
BNEDBRAJRAJNAGAR	57	57	-	-
BWED BARGARH	95	88	7	-
DED DEOGARH	29	29	-	-
JED JHARSUGUDA	174	174	-	-
KEED BHAWANIPATNA	149	136	13	-
KWED BHAWANIPATNA	88	80	8	-
NED NUAPADA	115	109	6	-
RED RAJGANGPUR	315	303	12	-
RED ROURKELA	108	97	11	-
RSED ROURKELA	210	149	61	-
SED SAMBALPUR	269	266	3	-
SED SONEPUR	114	106	8	-
SED SUNDARGARH	88	70	18	-
SEED SAMBALPUR	200	200	-	-
TED TITILAGARH	150	129	21	-
Grand Total	**2521**	**2331**	**190**	**-**

Proposed Cost with Estimate Break-up

Description	Scope of Work	UoM	Qty	Unit Rate (in Cr)	Proposed Amount (in Cr)	Remark
LT Check Metering on HT Consumers for Energy Audit	Ring CT, Meter, CC	Nos.	190	0.00159	0.30	Refer Annexure 72 for cost details

Physical Target

- Completion of installation of check meters at 190 identified HT consumer points by Mar'27

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

System Benefits:
- Provides reliable audit data for HT consumer billing.
- Strengthens revenue assurance and prevents unaccounted losses.
- Improves credibility of energy audit reports submitted to the regulator.

Revenue Protection:
- Prevents under-billing caused by CT/PT ratio errors, failures, or consumer meter inaccuracies.
- Independent check meters ensure correct billing and energy reconciliation.

Loss Reduction:
- Detects discrepancies between consumer meter and check meter, reducing commercial losses.
- Strengthens HT–LT energy audit for identifying leakage points.

Consumer Benefits:
- Ensures transparent and fair billing, reducing disputes.
- Enhances trust in utility by providing independent verification of billed energy.
- Enables faster grievance redressal related to metering and billing.

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	LT Check Metering on HT Consumers for Energy Audit	Nos.	2521	2331	190	190	-		100% check metering activity will be cover for identified HT consumers

ANNEXURE 21

Scheme Name: Replacement of LT Bare conductor with AB Cable

Background

Initially, most LT networks were constructed using bare conductors, which are prone to high technical losses, theft, safety hazards, and frequent interruptions due to tree contact and snapping.

Since vesting, AB cables have been introduced in theft-prone and congested areas, showing improved performance. However, a large portion of LT lines is still bare and will be progressively converted under subsequent 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.	LT Bare to AB 95 sq mm	CKM	2337.89	854.89	1483
2.	LT Bare to AB 120 sq mm	CKM	903.16	361.12	542.04

Proposal

Conversion of existing **LT bare conductors to Aerial Bunched (AB) Cable** in theft-prone, tree-lined, and congested stretches to improve safety, reliability, and efficiency.

Requirement/ Need of the Proposal

- Bare LT lines cause high theft, losses, and frequent interruptions.
- Non-compliance with CEA safety norms in congested and habitation areas.
- AB cables will improve reliability, reduce theft, improve safety, and ensure compliance with statutory guidelines.

Scope of Work

Replacement of LT Bare Conductor with AB Cable: -

Sl. No.	Activity	UOM	Proposed Qty
1.	LT Bare to AB 95 sq mm	CKM	100
2.	LT Bare to AB 120 sq mm	CKM	100.83
	Total		**200.83**

Refer Annexure 140 & 141 for location details.

Proposed Cost with Estimate Break-up

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
1.	LT Bare to AB 95 sq. mm	CKM	100	0.06890	6.89	Refer Annexure – 73 for detailed costing sheet

Sl. No.	Activity	UOM	Proposed Qty	Unit Rate (in Cr.)	Total cost (in Cr.)	Remarks
2.	LT Bare to AB 120 sq. mm	CKM	100.83	0.0812	8.19	Refer Annexure – 74 for detailed costing sheet
	Total		**200.83**		**15.08**	

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

Cost Benefit Analysis
Not applicable

Benefit to the System and Consumers

- **System:** Reduced AT&C losses, fewer outages, enhanced reliability, lower O&M costs, compliance with safety norms.
- **Consumers:** Improved power supply reliability, better power quality & fewer interruptions.

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.	LT Bare to AB 95 sq mm	CKM	2337.89	854.89	1483	100	1383		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.
2.	LT Bare to AB 120 sq mm	CKM	903.16	361.12	542.04	100.83	441.21		1.Sambalpur and Rourkela Main Town 2. Other Town of Rourkela & Sambalpur Circle.

ANNEXURE 22

Scheme Name: Installation/Replacement of 33kV & 11kV breaker/ Group Breaker

Background

At the time of inception, it was found that 33KV PSS Incomer Feeder, PTR & 11 KV O/G Feeders are in operation without proper protection (with HG Fuse only). Also, some circuit breakers have already completed ten thousand operations and spare parts are not available/OEM stops production/beyond repairable.

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	33 KV FDR VCB	No	178	127	51
2	33 KV PTR VCB	No	201	152	49
3	11 KV PTR VCB	No	232	129	103
4	11 KV Feeder VCB	No	423	289	134

Proposal

It is proposed to install VCBs to improve the supply reliability by strengthening the protection system.

Requirement/ Need of the Proposal

Installation of VCBs will ensure quick isolation of faulty section (improved SAIDI), protection of personnel and Power Transformers and sub transmission Lines from damage (increases the life of equipment)

Scope of Work

Scope include 33 & 11 KV bay consisting of VCB-CT-PT-CRP along with control cables.

Refer Annexure 142 for **PSS wise VCB installation / Replacement locations.**

Proposed Cost with Estimate Break-up

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Installation of 33 KV for Feeder Protection	Nos.	16	0.2961	4.74	Refer Annexure 75 costing sheet for details
Replacement of 33 KV for Feeder Protection	Nos.	20	0.1830	3.66	Refer Annexure 76 costing sheet for details
Installation of 33 KV VCB for PTR Protection	Nos.	24	0.2397	5.75	Refer Annexure 77 costing sheet for details

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Replacement of 33KV VCB for PTR Protection	Nos.	10	0.1936	1.94	Refer Annexure 78 costing sheet for details
Installation of 11 KV VCB for Feeder Protection	Nos.	30	0.1391	4.17	Refer Annexure 79 costing sheet for details
Replacement of 11 KV VCB for Feeder Protection	Nos.	20	0.1030	2.06	Refer Annexure 80 costing sheet for details
Installation of 11 KV VCB for PTR Protection	Nos.	20	0.1503	3.01	Refer Annexure 81 costing sheet for details
Replacement of 11 KV VCB for PTR Protection	Nos.	10	0.1030	1.03	Refer Annexure 82 costing sheet for details
TOTAL				**26.36**	

Physical Target:

Priorities were decided to install VCBs against no VCB cases first and then replacement of aged VCBs of high revenue and lengthy feeders

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

1. Fast and reliable fault clearing, prevents minor faults from escalating into widespread outages thereby improves SAIDI and SAIFI.
2. Quick restoration of power after interruptions improves SAIDI.
3. Rapid fault interruption minimizes the stress on transformers and other equipment by reducing the duration of fault current flow.
4. Reduces the risk of catastrophic equipment failure and extends the lifespan of transformers, avoiding costly replacements.
5. VCBs can be integrated with Supervisory Control and Data Acquisition (SCADA) systems for remote operation, minimizing the need for personnel to be near energized high-voltage equipment.

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	33 KV FDR VCB	No	178	127	51	36	15		1. To attend no VCB Cases
2	33 KV PTR VCB	No	201	152	49	34	15		

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		
3	11 KV PTR VCB	No	232	129	103	30	73		2. For protection of PTR bay 3. For critical Feeder bays
4	11 KV Feeder VCB	No	423	289	134	50	84		

ANNEXURE 23

Scheme Name: Installation of 33 KV & 11KV Lightning Arrestors in PSS

Background

At the time of inception, it was found that in large no of Non ODSSP PSS, LAs are missing at various locations inside PSS. Lightning Arresters (LAs) are essential for protecting electrical equipment from damage caused by lightning strikes. In Odisha, where lightning occurrences are frequent, it is necessary to provide LA protection for electrical installations to safeguard them against such natural events. Investing in effective lightning protection measures is a proactive step toward building a safer, more reliable, and disaster-resilient electrical network.

Proposal

It is being proposed to install LAs on both sides of PTRs on priority to protect expensive equipment like PTRs and to ensure the stability and reliability of the electrical system.

Requirement/ Need of the Proposal

Installation of Lightning arrestors are essential as they serve as the first line of defence against transient over voltages caused by lightning strikes and switching operations.

Scope of Work

Scope includes installation of 33KV & 11 KV LAs along with earthing. Installation of 158 Sets of 33kV LA and 311 Sets of 11kV LA on both sides of all the Power Transformers in entire TPWODL area.

Proposed Cost with Estimate Break

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Installation of 33kV LA	Set	158	0.0081	1.28	Refer Annexure 83 for costing sheet Details
Installation of 11kV LA	Set	311	0.0033	1.03	Refer Annexure 84 for costing sheet details
TOTAL				**2.31**	

Refer Appendix I & II for 33kV & 11kV LA locations respectively.

Physical Target:

The work will be completed by March 27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers:

Prevents insulation damage: Lightning can induce extremely high-voltage surges that can exceed the insulation's dielectric strength, causing it to break down.
An arrester diverts this energy to the ground before it can damage the transformer's delicate internal windings and insulation.

Avoids catastrophic failure: A direct hit or a surge can cause an internal flashover, which can lead to winding failure, oil ignition, and a transformer explosion. By diverting the surge, the arrester prevents these destructive events, protecting the rest of the substation infrastructure from collateral damage.

Extends equipment lifespan: Even surges that don't cause immediate failure can degrade a transformer's insulation over time. This premature aging shortens the equipment's useful life. Arresters mitigate this stress by clamping the voltage at a safe level.

Mitigates flashovers: A lightning strike on or near a sub-transmission line can cause a high-voltage surge that travels along the conductor. This surge can cause a flashover across the line's insulators, resulting in a line-to-ground or line-to-line fault. This can interrupt the power supply and trip circuit breakers.
Protects downline equipment: By clamping the surge on the line, arresters prevent the overvoltage from propagating toward sensitive equipment at the end of the line, such as distribution transformers and consumer meters. This coordinated protection prevents widespread damage and ensures a more reliable power supply for customers

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 LA inside PSS (PTR & Line)	No	4721	3161	1560	474	1086		Priorities were given to installation of LAs on both sides of PTRs
2	11KV LA inside PSS (PTR & Line)	No	7317	4266	3051	933	2118		

APPENDIX -I 33KV LA

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
SAMBALPUR	SED,SBP	AINTHAPALI	AINTHAPALI	AINTHAPALI	Non-ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	BALIBANDHA	CHERUAPADA	Non-ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	BADABAZAR	BADABAZAR	ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	AINTHAPALI	KAINSER	ODSSP
SAMBALPUR	SED,SBP	BURLA	BURLA-3	BURLA	Non-ODSSP
SAMBALPUR	SED,SBP	BURLA	BURLA-1	BURLA MEDICAL	Non-ODSSP
SAMBALPUR	SED,SBP	HIRAKUD	GOSALA	GOSALA	Non-ODSSP
SAMBALPUR	SED,SBP	HIRAKUD	GOSHALA	GOVINDPALI (CHIPILIMA)	ODSSP
SAMBALPUR	SEED	BHUTAPADA	DHANUPALI	PUTIBANDH	Non-ODSSP
SAMBALPUR	SEED	DHANUPALI	DHAMA	DHAMA	Non-ODSSP
SAMBALPUR	SEED	RENGALI	RENGALI	RENGALI	Non-ODSSP
SAMBALPUR	SEED	RAIRAKHOL	RAIRAKHOL	RAIRAKHOL	Non-ODSSP
SAMBALPUR	SEED	RAIRAKHOL	RAIRAKHOL	KADALIGARH	ODSSP
SAMBALPUR	SEED	RAIRAKHOL	HATIBARI	HATIBARI SBP	Non-ODSSP
SAMBALPUR	SEED	RENGALI	RENGALI	RENGALI NEW	ODSSP
SAMBALPUR	SEED	RENGALI	RENGALI	LAPANGA	ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	BEHERAMAL	SARASMAL	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	SAHAPADA	BADMAL	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	RN PALI	KOLABIRA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	RN PALI	SODAMAL	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KUCHINDA	LASHA	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KESEIBAHAL	ARDABAHL	ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	LAIKERA	JHARIABAHAL	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	KANDHAL	Non-ODSSP
ROURKELA	RED RKL	BISRA	BONDAMUNDA	BONDAMUNDA	ODSSP
ROURKELA	RED RKL	BISRA	BISRA	JAREIKELA	ODSSP
ROURKELA	RED RKL	BISRA	BISRA	DALPOSH	ODSSP
ROURKELA	RSED RKL	SDO-1	KALINGAVIHAR	KALINGA VIHAR	ODSSP
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	KUTRA	KUTRA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	BIRMITRAPUR	BIRMITRAPUR	RAIBOGA	ODSSP
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	BARGAON	JARANGLOI	ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-II	BALANDA	ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
ROURKELA	RED RAJGANGPUR	KUARMUNDA	HATIBARI	LENDRA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SECTION-I	SANKARA	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SEC-II	COLLEGE	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	MAJHAPADA	MAJHAPADA	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	TUMAPALI	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	LEPHRIPADA	LEPHRIPADA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	GOPLAPUR	GARJANBAHAL	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	SADAR	SADAR	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	KINJIRKELA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	SARGIPALI	DARLIPALI	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	SARGIPALI	MANGASPUR	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	GOPLAPUR	BILEIMUNDA	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	HEMGIRI	HEMGIRI	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	BONDEGA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	BEDABAHAL	KUNDUKELA	ODSSP
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-2	NAKTIGUDA	Non-ODSSP
KALAHANDI	KEED	KESINGA	UTEKELA	UTEKELA	Non-ODSSP
KALAHANDI	KEED	NARLA	NARLA	RUPRA ROAD	ODSSP
KALAHANDI	KEED	NARLA	MADANPUR	BANJAMUNDA	Non-ODSSP
KALAHANDI	KWED	JUNAGARH	JUNAGARH-2	JUNAGARH	Non-ODSSP
KALAHANDI	NUAPADA	KHARIAR	KHARIAR-2	BADI	ODSSP
KALAHANDI	NUAPADA	KHARIAR	SINAPALI	CHALNA	ODSSP
BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-I	POWER HOUSE BALANGIR	ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	DEOGAN	DEOGAON	Non-ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	TUSURA	GUDBHELA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	BAGABAHAL	ODSSP
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	BANGOMUNDA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	TUREIKELA	Non-ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 1	TENDAPADAR	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 2	THAKPADA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	KHAPRAKHOL	KHAPRAKHOL	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	KHAPRAKHOL	LATHORE	Non-ODSSP
BOLANGIR	SED,SONEPUR	BINKA	BINKA	BINKA	Non-ODSSP
BOLANGIR	SED,SONEPUR	BINKA	CHERUPALI	BHATABAHALI(RLTAP)	Non-ODSSP
BARGARH	BED, BARGARH	BARGARH NO.1	SECTION-1	DIVISION-I	Non-ODSSP
BARGARH	BED, BARGARH	ATTABIRA	ATTABIRA-1	ATTABIRA	Non-ODSSP
BARGARH	BED, BARGARH	BHEDEN	BHEDEN	BHEDEN	Non-ODSSP
BARGARH	BED, BARGARH	BHEDEN	THUAPALI	THUAPALI	Non-ODSSP
BARGARH	BED, BARGARH	BHEDEN	KHUNTLIPALI	KHUNTLIPALI	Non-ODSSP
BARGARH	BED, BARGARH	BHATLI	BHATLI	BHATLI	Non-ODSSP
BARGARH	BED, BARGARH	BHATLI	BHUKTA	DUNGRI	Non-ODSSP
BARGARH	BWED, BARGARH	SOHELA	SOHELA-1	SOHELA	Non-ODSSP
BARGARH	BWED, BARGARH	SOHELA	BIJEPUR	BIJEPUR	Non-ODSSP
BARGARH	BWED, BARGARH	PADAMPUR	PADAMPUR	PADAMPUR	Non-ODSSP
BARGARH	BWED, BARGARH	PADAMPUR	GAISILET	GAISILET	Non-ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	PAIKMAL	Non-ODSSP
BARGARH	BWED, BARGARH	BARPALI	BARPALI-3	CHARMUNDA	ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	MANDOSIL	ODSSP

APPENDIX -II 11 KV LA

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
SAMBALPUR	SED,SBP	AINTHAPALI	AINTHAPALI	AINTHAPALI	Non-ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	BALIBANDHA	CHERUAPADA	Non-ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	BADABAZAR	BADABAZAR	ODSSP
SAMBALPUR	SED,SBP	KHETRAJPUR	AINTHAPALI	KAINSER	ODSSP
SAMBALPUR	SED,SBP	BURLA	BURLA-3	BURLA	Non-ODSSP
SAMBALPUR	SED,SBP	BURLA	BURLA-1	BURLA MEDICAL	Non-ODSSP
SAMBALPUR	SED,SBP	HIRAKUD	HIRAKUD	HIRAKUD	Non-ODSSP
SAMBALPUR	SED,SBP	HIRAKUD	GOSALA	GOSALA	Non-ODSSP
SAMBALPUR	SED,SBP	HIRAKUD	GOSALA	CHOURPUR	ODSSP
SAMBALPUR	SEED	BHUTAPADA	DHANUPALI	PUTIBANDH	Non-ODSSP
SAMBALPUR	SEED	DHANUPALI	DHAMA	DHAMA	Non-ODSSP
SAMBALPUR	SEED	DHANUPALI	SAHASPUR	GUNDERPUR	ODSSP
SAMBALPUR	SEED	RENGALI	SASAN	SASON	Non-ODSSP
SAMBALPUR	SEED	RENGALI	RENGALI	RENGALI	Non-ODSSP
SAMBALPUR	SEED	RENGALI	LAIDA	LAIDA	Non-ODSSP
SAMBALPUR	SEED	RAIRAKHOL	HATIBARI	HATIBARI SBP	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	BAGDIHI	ARDA (JAMKANI)	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	KACHERY	DURLAGA(KACHERY)	ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	SARBAHAL	SARBAHAL	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KUCHINDA	HADIPALI(KHANDOKATA)	ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	JAMANKIRA	JAMANKIRA	Non-ODSSP
SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	LAKHANPUR	LAKHANPUR	ODSSP
SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	LAKHANPUR	GOVINDPUR	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	KANDHAL	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	BARKOTE	BARKOTE	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	REAMAL	RENGALBEDA	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	REAMAL	TELIMUNDA(REAMAL)	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	BARKOTE	BHAKATABADAKUDAR	ODSSP
ROURKELA	RED RKL	UDITNAGAR	POWER HOUSE ROAD	POWER HOUSE RKL	Non-ODSSP
ROURKELA	RED RKL	BASANTI	BASANTI	BASANTI	Non-ODSSP
ROURKELA	RED RKL	KOELNAGAR	KOELNAGAR	KOELNAGAR	Non-ODSSP
ROURKELA	RED RKL	BISRA	BISRA	DALPOSH	ODSSP
ROURKELA	RSED RKL	BONAI	LAHUNIPARA	K BALANGA	ODSSP
ROURKELA	RSED RKL	SDO-1	HOCKEY	HOCKEY	Non-ODSSP
ROURKELA	RSED RKL	BONAI	MAHULDIHA	BARSUAN	ODSSP
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	BARGAON	BARGAON	Non-ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-II	KUTRA	KUTRA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-I	RAJGANGPUR	RAJGANGPUR	Non-ODSSP
ROURKELA	RED RAJGANGPUR	RAJGANGPUR-I	KANSBAHAL	MANDIAKUDAR	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-I	VEDVYAS	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-II	IDC KALUNGA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-II	OTTO INDIA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KUARMUNDA	KUARMUNDA	KUARMUNDA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KUARMUNDA	HATIBARI	NUAGAON	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KUARMUNDA	HATIBARI	LENDRA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SECTION-I	SANKARA	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SEC-II	COLLEGE	Non-ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	KARAMDIHI	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	SUBDEGA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	TUMAPALI	ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	KINJIRKELA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	GOPLAPUR	BILEIMUNDA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	SUBDEGA	BONDEGA	ODSSP
ROURKELA	SED SUNDARGARH	SUNDARGARH	BEDABAHAL	KUNDUKELA	ODSSP
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-2	NAKTIGUDA	Non-ODSSP
KALAHANDI	KEED	POWER HOUSE	COLLEGE SQ.	KUSADUNGURI	ODSSP
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-3	KARLAPADA	ODSSP
KALAHANDI	KEED	KESINGA	UTEKELA	UTEKELA	Non-ODSSP
KALAHANDI	KEED	NARLA	NARLA	RUPRA ROAD	ODSSP
KALAHANDI	KEED	NARLA	BISWANATHPUR	BISWANATHPUR	Non-ODSSP
KALAHANDI	KEED	NARLA	BISWANATHPUR	BANDHAPARI	Non-ODSSP
KALAHANDI	KEED	NARLA	BISWANATHPUR	LANJIGARH	Non-ODSSP
KALAHANDI	KEED	KESINGA	NUNMATH	NUNMATH	ODSSP
KALAHANDI	KEED	NARLA	M.RAMPUR	M.RAMPUR	Non-ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-2	BANDOPALA	ODSSP
KALAHANDI	KEED	NARLA	MADANPUR	JURADUBRA(SISAKHAL)	ODSSP
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-2	MEDICAL COLLEGE	Non-ODSSP
KALAHANDI	KWED	JUNAGARH	JUNAGARH-2	JUNAGARH	Non-ODSSP
KALAHANDI	KWED	DHARAMGARH	GOLAMUNDA	KEGOAN	Non-ODSSP
KALAHANDI	KWED	CHARBAHAL	LADUGAON	LADUGAON	ODSSP
KALAHANDI	KWED	CHARBAHAL	JAIPATNA	JAIPATNA	Non-ODSSP
KALAHANDI	NUAPADA	KHARIAR	KHARIAR-2	BARGAON(KLHND)	ODSSP
BOLANGIR	BED,BOLANGIR	NO-II	REC	MADHIAPALI	ODSSP
BOLANGIR	BED,BOLANGIR	LOISINGHA	AGALPUR	AGALPUR	Non-ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	TUSURA	GUDBHELA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	KANTABANJI	TUREKELA	BANGOMUNDA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	BELPARA	DHUMABHATA	ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 1	TENDAPADAR	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 2	THAKPADA	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	KHAPRAKHOL	KHAPRAKHOL	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	KHAPRAKHOL	LATHORE	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 3	GHUMER	Non-ODSSP
BOLANGIR	TED, TITILAGARH	PATNAGARH	PATNAGARH 2	JHULENBAR	ODSSP
BOLANGIR	SED,SONEPUR	SONEPUR	TARBHA	DUBLA	Non-ODSSP
BOLANGIR	SED,SONEPUR	BINKA	BINKA	BINKA	Non-ODSSP
BOLANGIR	SED,SONEPUR	BMPUR	BMPUR	BMPUR	Non-ODSSP
BARGARH	BED, BARGARH	BARGARH NO.1	SECTION-1	DIVISION-I	Non-ODSSP
BARGARH	BED, BARGARH	ATTABIRA	GODBHAGA	GODBHAGA	Non-ODSSP
BARGARH	BED, BARGARH	BHEDEN	BHEDEN	BHEDEN	Non-ODSSP
BARGARH	BED, BARGARH	BHATLI	BHUKTA	DUNGRI	Non-ODSSP
BARGARH	BWED, BARGARH	BARPALI	BARPALI-1	BARPALI	Non-ODSSP
BARGARH	BWED, BARGARH	SOHELA	SOHELA-2	DASMILE	ODSSP
BARGARH	BWED, BARGARH	PADAMPUR	GAISILET	KUNDAKHAI	ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	JHARBANDH	DOVA	ODSSP
BARGARH	BWED, BARGARH	PADAMPUR	PADAMPUR-2	LAKHAMARA	ODSSP
BARGARH	BWED, BARGARH	PADAMPUR	PADAMPUR-2	DAHITA	ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
BARGARH	BWED, BARGARH	PAIKMAL	JHARBANDH	DUNGURIPALI	ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	JHITKI	ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	MANDOSIL	ODSSP

ANNEXURE 24

Scheme Name: Replacement of Feeder/Transformer protection Relays (O/C & E/F)

Background

As we move towards complete automation and SCADA-enabled Primary Substations (PSS), it is critical to ensure that all protective relays are compatible with future operational and communication protocols. Currently, several PSS installations are equipped with outdated, malfunctioning, or non-IEC 61850-compatible relays. These legacy devices are either no longer supported by their OEMs or are prone to operational issues such as display failures, communication errors, or frequent system hangs. Such limitations hinder remote operation through SCADA and mobile operating crew systems, reducing reliability and increasing operational risk. To enable seamless operation under the future automation framework—including SCADA integration and remote operation—it is essential to replace these outdated devices with modern numerical relays that fully support IEC 61850 protocol. These relays will be fully compatible with SCADA systems and support IEC 61850 communication protocols, ensuring reliable operation and future readiness.

Proposal

To achieve the desired level of automation and ensure reliable protection and control, it is proposed to procurement and installation of the following:

- 50 Nos. of Numerical Overcurrent Relays
- 10 Nos. of Numerical Transformer Differential Relays

Requirement/ Need of the Proposal:

- Several PSS are currently operating with outdated relays for which OEM support, service, and spare parts are no longer available. These need immediate replacement with modern numerical relays.
- Display failure, Communication card malfunction, System hangs during operation These issues compromise system reliability and require urgent resolution.
- Several installed relays are static type and do not support IEC 61850 protocol, making them incompatible with SCADA systems. To align with our long-term digital automation goals, these must be replaced.

Scope Of Work

It is proposed to procurement and installation of the following:

- 50 Nos. of Numerical Overcurrent Relays
- 10 Nos. of Numerical Transformer Differential Relays

Refer below table for PSS location.

PSS	O/C & E/F	Differential
Jyoti Vihar PSS	11	0
Civil Town Ship PSS	11	0
Bhakabadakudar PSS	2	0
Capacitor Bank PSS	1	0
Titalgarh PSS	4	0
Pradhanpali PSS	1	0
Bherapali PSS	1	0
Majhapada ,kaamdihi PSS	4	0

PSS	O/C & E/F	Differential
sohela PSS	1	0
Kasabahal PSS	1	0
Govindpur PSS	6	0
Sarbahal	6	0
Brajarjanagar	1	0
Laltikra	0	4
Purna	0	2
Dhulanda	0	2
Durlaga	0	2

Proposed Cost with Estimate Break-up: Total Cost 75.60 Lakhs

PSS	O/C & E/F	Differential	Unit Rate	Total Cost
Jyoti Vihar PSS	11	0	1,25,000	1375000
Civil Town Ship PSS	11	0	1,25,000	1375000
Bhakabadakudar PSS	2	0	1,25,000	250000
Capacitor Bank PSS	1	0	1,25,000	125000
Titalgarh PSS	4	0	1,25,000	500000
Pradhanpali PSS	1	0	1,25,000	125000
Bherapali PSS	1	0	1,25,000	125000
Majhapada ,kaamdihi PSS	4	0	1,25,000	500000
sohela PSS	1	0	1,25,000	125000
Kasabahal PSS	1	0	1,25,000	125000
Govindpur PSS	6	0	1,25,000	750000
Sarbahal	6	0	1,25,000	750000
Brajarjanagar	1	0	1,30,000	130000
Laltikra	0	4	1,30,000	520000
Purna	0	2	1,30,000	260000
Dhulanda	0	2	1,30,000	260000
Durlaga	0	2	1,30,000	260000
			Total	**7555000**
			In CR	**0.76**

Physical Target:

The procurement and installation of relays will be completed by March 2027.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

- Numerical Relays are very Sensitive can protect the system from low fault
- Easy to automate and Scada Operation

- Better Analysis for any unwanted interruptions
- Esay to access the Relay in remote Mode

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.	Numerical Relay for Transformer Feeder and O/G , I/C Feeder's	EA	536	476	60	60	0	For Protection and Automation of Transformer Feeder and outgoing Incoming feeders	To complete balance relay replacement work: 1. Outgoing feeders 2. Transformer feeders

ANNEXURE 25

Scheme Name: Installation of 33/0.4 KV 100 KVA Station Transformer

Background

At the time of inception, it was observed that 11/0.4 KV Station Transformers of Capacity 25 KVA/63 KVA are provided for station power supply. These station transformers are vulnerable to failure/breakdown due to age/poor health condition.

Proposal

It is proposed to install 6 nos. 100 KVA 33/0.4 KV Station Transformers in PSS to ensure reliability of station power supply.

Requirement/ Need of the Proposal

Station Transformers are essential to provide auxiliary power to control and protection system, switch gears and circuit breakers, switch yard and control room illumination, monitoring and communication equipment, charging station batteries, enabling black start capabilities.

Scope of Work

Scope includes installation of 100 KVA 33/0.4 KV Station Transformers along with foundation and other accessories like LA, Isolators, LT Distribution Box, earthing etc.

Refer below table for PSS locations:

Sl No	Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
1	SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	LAIKERA	LAIKERA	Non-ODSSP
2	SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	RN PALI	KOLABIRA	Non-ODSSP
3	ROURKELA	RSED RKL	IND ESTATE	CHHEND	CHHEND	Non-ODSSP
4	ROURKELA	RSED RKL	BONAI	KOIRA	KOIRA	Non-ODSSP
5	ROURKELA	RSED RKL	BONAI	KOIRA	TENSA	Non-ODSSP
6	BOLANGIR	SED,SONEPUR	BINKA	SRAMPUR	PANKITAL	Non-ODSSP

Proposed Cost with Estimate Break-up

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Installation of 33/0.4 KV 100 KVA Station Transformer	Nos.	6	0.1461	0.88	Refer Annexure 85 11kV costing sheet
TOTAL				**0.88**	

Physical Target:

To replace all 6 left out cases (11/0.4 KV) by March 2027.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

- Providing auxiliary power to control and protection system (switch gears and circuit breakers),
- Providing reliable power for lighting arrangement of Switch yard and control room.
- Providing reliable power to monitoring and communication equipments.
- Providing reliable power to charge station batteries, enabling black start capabilities and overall improvement of system 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	Station Transformer	No	59	53	6	6	0		To complete balance work

ANNEXURE 26

Scheme Name: Installation of ACDB & DCDB inside PSS

Background

Currently, ACDB & DCDBs are partially damaged (like multiple front doors & bottom covers are missing/ MCCBs found bypassed) in large number of non-ODSSP PSS. Therefore, to ensure safe and efficient power distribution in PSS, protecting equipment from overloads and surges, managing both AC and DC power flows, to ensure grid-connected operations are reliable, and facilitating O&M work ACDB & DCDB installation is essential.

Proposal

It is proposed to install ACDB & DCDB inside 33/11 KV PSS control room for segregation of AC & DC supply to all the equipment in PSS (Switch gear and control circuit, Spring charging motors, relays, Yard illumination, communication equipment).

Requirement/ Need of the Proposal

ACDBs and DCDBs are essential in primary substations for safety, control, and efficient power management. The ACDB safely distributes and protects AC power, managing issues like overloads and short circuits in the grid-connected AC systems. The DCDB is crucial for managing and protecting DC power, especially in systems with batteries or solar panels, by providing isolation, preventing dangerous arcs, and ensuring stable DC supply to control circuits.

Scope of Work

Scope includes installation of ACDB & DCDB in 10 nos. PSS. List of identified PSS are given below:

ACDB:

SL No	Circle	Division	Subdivision	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
1	SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	RN PALI	KOLABIRA	Non-ODSSP
2	SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	BAMRA	Non-ODSSP
3	SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	BANDHBAHAL	BANDHBAHAL	Non-ODSSP
4	ROURKELA	RSED RKL	IND ESTATE	INDUSTRIAL ESTATE	INDUSTRIAL ESTATE RKL	Non-ODSSP
5	ROURKELA	RSED RKL	PANPOSH	LATHIKATA	LATHIKATA	Non-ODSSP
6	KALAHANDI	KEED	KESINGA	KESINGA	KESINGA	Non-ODSSP
7	BOLANGIR	SED, SONEPUR	BMPUR	BMPUR	BMPUR	Non-ODSSP
8	BARGARH	BED, BARGARH	BARGARH NO.1	SECTION-1	DIVISION-I	Non-ODSSP
9	BARGARH	BED, BARGARH	BARGARH NO. II	BARHAGODA	PRADHANPALI	Non-ODSSP
10	BARGARH	BWED, BARGARH	PADAMPUR	MELCHHAMUNDA	MELCHHAMUNDA	Non-ODSSP

DCDB:

SL No	Circle	Division	Subdivision	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
1	SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	BAMRA	Non-ODSSP
2	SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	DEOGARH	Non-ODSSP
3	ROURKELA	RSED RKL	PANPOSH	PANPOSH	PANPOSH	Non-ODSSP
4	ROURKELA	RSED RKL	BONAI	KOIRA	KOIRA	Non-ODSSP
5	ROURKELA	RSED RKL	BONAI	KOIRA	TENSA	Non-ODSSP
6	KALAHANDI	KEED	NARLA	M.RAMPUR	M.RAMPUR	Non-ODSSP
7	BOLANGIR	SED, SONEPUR	BINKA	BINKA	BINKA	Non-ODSSP
8	BOLANGIR	SED, SONEPUR	BMPUR	BMPUR	BMPUR	Non-ODSSP
9	BARGARH	BED, BARGARH	BARGARH NO. II	BARHAGODA	PRADHANPALI	Non-ODSSP
10	BARGARH	BWED, BARGARH	PADAMPUR	MELCHHAMUNDA	MELCHHAMUNDA	Non-ODSSP

Proposed Cost with Estimate Break-up

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount	Remark
				(in CR.)	
Replacement of ACDB Panel	Nos.	10	0.0379	0.38	Refer Annexure 88 costing sheet for details
Replacement of DCDB Panel	Nos.	10	0.0148	0.15	Refer Annexure 89 costing sheet for details
TOTAL				**0.53**	

Physical Target:
Installation of ACDB / DCDB in 10 nos. PSS will be completed by March 2027.

Cost Benefit Analysis
Not applicable.

Benefit to the System and Consumers

- **Safety & Protection:** ACDB Protects the AC side of the system from electrical hazards such as short circuits and voltage surges, which can damage equipment.
- **Distribution:** ACDB distributes AC power safely from the main supply to various outgoing feeders and auxiliary loads within the substation.
- **Control:** ACDB houses circuit breakers (MCBs) and surge protection devices (SPDs) that can quickly disconnect power to prevent damage and ensure continuous operation.
- **DC Power Management: DCDB** manages the DC power generated from battery banks or other DC sources used to supply control systems.
- **Safety & Isolation:** DCDB houses switches and fuses to safely isolate sections of the DC system for maintenance or in emergencies, preventing hazardous DC arcs.
- **Reliability:** DCDB ensures a reliable and stable DC power supply to critical control circuits, which require DC to operate sensitive electronic components (relays) and displays.

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.	Installation of ACDB	No	69	45	24	10	14		PSS are identified in Town and industrial areas as P1
2	Installation of DCDB	No	55	37	18	10	8		

Scheme Name: Replacement of Battery and Battery & chargers.

Background

Battery and Battery chargers are important component of reliable protection system in PSS and hence planned to replace the defective battery and battery charges in a phased manner. This will ensure coordinated tripping of bays during fault condition and ensure safe operation of switching devices inside PSS.

Proposal

It is proposed to procure Battery set (24V and 48V) and Battery Charger set (24V and 48V). Replacement of 15 nos. of battery and 13 nos. of battery chargers will be done in FY26-27.

Requirement/ Need of the Proposal

Battery and chargers are required for healthiness of protection system inside PSS.

Scope of Work

To replace 15 nos. of battery and 13 nos. of battery chargers. List of identified PSS are given below:

Battery:

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non-ODSSP)
SAMBALPUR	SED,SBP	BURLA	BURLA-1	BURLA MEDICAL	Non-ODSSP
SAMBALPUR	SEED	DHANUPALI	DHAMA	DHAMA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	KACHERY	AIRPORT JHARSUGUDA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-I, JHARSUGUDA	KACHERY	DHH, JHARSUGUDA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	KUCHINDA	KUCHINDA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	BAMRA	BAMRA	Non-ODSSP
SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	GUMADERA	MUCHBAHAL	Non-ODSSP
ROURKELA	RED RKL	BISRA	BISRA	BISRA	Non-ODSSP
ROURKELA	RSED RKL	PANPOSH	PANPOSH	PANPOSH	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-II	IDC KALUNGA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	KINJIRKELA	Non-ODSSP
KALAHANDI	KEED	NAKTIGUDA	NAKTIGUDA-3	BHANGABARI	Non-ODSSP
KALAHANDI	KWED	JUNAGARH	KALAMPUR	TH.RAMPUR	Non-ODSSP
BOLANGIR	SED,SONEPUR	SONEPUR	SONEPUR	SONEPUR	Non-ODSSP
BARGARH	BED, BARGARH	BHATLI	BHATLI	BHATLI	Non-ODSSP
TOTAL					

Battery charger:

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
SAMBALPUR	JED, JHARSUGUDA	KUCHINDA	JAMANKIRA	BHOJPUR	ODSSP
SAMBALPUR	BNED BRAJRAJNAGAR	BELPAHAR	PANCHGAON	DHULUNDA	ODSSP
SAMBALPUR	DEOGARH	DEOGARH	BUDHAPAL	BUDHAPAL	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	TILEIBANI	PARPOSHI	ODSSP
ROURKELA	RED RAJGANGPUR	KALUNGA	KULUNGA-II	OTTO INDIA	Non-ODSSP
ROURKELA	RED RAJGANGPUR	KUARMUNDA	KUARMUNDA	KUARMUNDA	Non-ODSSP
KALAHANDI	KEED	NARLA	NARLA	RUPRA ROAD	ODSSP

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
KALAHANDI	KWED	DHARAMGARH	DHARMAGARH-1	KASHIBAHAL	ODSSP
BOLANGIR	BED,BOLANGIR	NO-I	BALANGIR SEC-III	LALTIKIRA	Non-ODSSP
BOLANGIR	BED,BOLANGIR	NO-II	CHUDAPALI	CHUDAPALI(BAR PUDIGIA)	Non-ODSSP
BOLANGIR	SED,SONEPUR	BINKA	BINKA	BINKA	Non-ODSSP
BOLANGIR	SED,SONEPUR	BMPUR	ULUNDA	ULLUNDA	Non-ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	JHITKI	ODSSP

Proposed Cost with Estimate Break-up

Description	Unit	Qty	Rate	Cost (Cr)
Replacement of Battery	**Nos**	**15**	**0.0132**	**0.20**
Replacement of Battery Charger	**Nos**	**13**	**0.0321**	**0.42**
Total				**0.62**

Physical Target:

The work will be completed by March 27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers:

- *Determination of fault record, logs and data after tripping.*
- *Healthy protection system.*
- *Easy restoration of power supply after breakdown.*
- *Reliable Power Supply by ensuring tripping on fault.*
- *Ensuring safety of operator by providing safe and remote operation of PSS equipments.*

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	BATTERY SET	No	194	179	15	15	0		To complete balance work
2	FLOAT CUM BOOST BATTERY CHARGER	No	130	117	13	13	0		

ANNEXURE 27

Scheme Name: Refurbishment of 33/11KV PSS Switch Yard

Background

Presently, in large number of non-ODSSP PSS, there is no Toe wall & Gravelling, trenches are filled with dust, trench covers are found damaged/missing. There were multiple joints in bus conductors, more over bus conductors found under sized. No fencing available on the periphery of switch yard posing a threat to human. PTRs are kept at ground level (insufficient plinth height), no statutory ground clearance was being maintained.

Proposal

It is proposed to refurbish 33/11KV Switch Yard to improve safety and reliability of electrical network.

Requirement/ Need of the Proposal

33/11KV switchyard refurbishment is necessary to address safety risks, improve operational reliability, and extend the lifespan of equipment due to aging, wear, and environmental exposure. Refurbishment ensures compliance with new safety standards, mitigates failures caused by factors like flashovers and aging equipment, and maintains a stable power supply by replacing outdated components with modern, more efficient technology.

Scope of Work

Construction of Toe wall, spreading gravel inside switch yard, construction of trench and trench covers, reconfiguration of bus conductor from 55 SQ MM to 148 SQ MM and 232 SQ MM AAAC conductor. Construction of fencing surrounding the switch yard. Installation/replacement of 33KV & 11KV isolators.

List of PSS under scope of work are as follows:

Circle	Division	Sub Division	Section	Name of PSS	Type of PSS (ODSSP/Non ODSSP)
SAMBALPUR	SEED	RENGALI	LAIDA	LAIDA	Non-ODSSP
SAMBALPUR	JED, JHARSUGUDA	NO-II JHARSUGUDA	LAIKERA	LAIKERA	Non-ODSSP
SAMBALPUR	DEOGARH	DEOGARH	DEOGARH	DEOGARH	Non-ODSSP
ROURKELA	RSED RKL	BONAI	BONAI	GURUNDIA	Non-ODSSP
ROURKELA	RSED RKL	BONAI	MAHULDIHA	MAHULDIHA	Non-ODSSP
ROURKELA	SED SUNDARGARH	UJALPUR	UJALPUR	KINJIRKELA	Non-ODSSP
KALAHANDI	KEED	KESINGA	BORDA	BORDA	Non-ODSSP
KALAHANDI	KEED	NARLA	NARLA	NARLA	Non-ODSSP
BOLANGIR	BED,BOLANGIR	TUSURA	TUSURA	TUSURA	Non-ODSSP
BOLANGIR	SED,SONEPUR	BINKA	BINKA	BINKA	Non-ODSSP
BARGARH	BWED, BARGARH	PAIKMAL	PAIKMAL	PAIKMAL	Non-ODSSP

Proposed Cost with Estimate Break-up

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount (in CR.)	Remark
Refurbishment of PSS (Switchyard fencing, Bus heightening, Bus conductor re-configuration, installation of 33 & 11KV isolators, water supply arrangement for earthing pit, Trench, Trench cover, Toe wall,)	Nos.	11	0.303	3.33	Refer Annexure 90 for Costing sheet details
TOTAL				**3.33**	

Physical Target:

Refurbish 11 numbers of 33/11KV PSS Switch Yard by March 27.

Cost Benefit Analysis

Not applicable

Benefit to the System and Consumers

1. **Refurbishment of 33/11 kV switchyard** is a critical activity to ensure the substation's long-term reliability, safety, and operational efficiency. As infrastructure ages, these components can degrade, compromising the entire system.
2. **Toe wall** holds the gravel in place and prevents the gravel layer in the switchyard from spreading out over time. This maintains the gravel's uniform depth, which is crucial for safety.
   It acts as a physical boundary, clearly separating the high-voltage gravel-filled area from surrounding areas, enhancing safety for personnel.
3. It helps manage the flow of rainwater, preventing erosion of the substation's foundation and maintaining the integrity of the earth mat.

4. **The gravel** provides a high-resistivity surface layer that increases the resistance between a person's feet and the ground during an earth fault. This significantly **reduces the risk of electric shock from step and touch potential,** which is a major safety concern in high-voltage areas.
5. A dense layer of gravel **suppresses the growth of weeds and grass, reduces the fire risks and prevent electrical hazards,** especially when dry.
6. In case of an oil spill from a transformer, the porous gravel layer can absorb the oil, helping to contain and suppress fire.

7. **Cable trenches** are crucial for organizing and protecting the vast network of control and power cables in a switchyard. Refurbishment is often required for the following reasons:
   Over time, concrete trenches and covers can crack and crumble due to age, weather, and physical stress. Refurbishment ensures **cables are protected from mechanical damage, water ingress, and animal intrusion.**
   Cracked or broken trench covers are a significant tripping hazard for personnel. Reconstructing the covers ensures a safe, level surface for walking and access to cables for maintenance.
   New trenches and covers can provide better organization for a growing number of cables, preventing clutter and making future maintenance and cable replacement easier

8. **Bus conductors** connect the various circuit breakers, transformers, and lines within the switchyard. Reconfiguration improves reliability and flexibility as a substation's load demands change, its bus configuration become outdated or insufficient. Reconfiguring the bus, provide greater operational flexibility and higher reliability.
9. To accommodates new equipment bus conductor must be reconfigured to higher capacity.
10. Installation/replacement of 33KV & 11KV Isolators for increased O&M flexibility.

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.	Refurbishment of PSS	No	317	243	74	11	63		Priority of PSS which were having large no. of high revenue feeder and catering the load of city, town and industrial areas

ANNEXURE 28

Scheme Name: Automation of Non-ODSSP & SCADA integration in PSS

Background

Most of the existing Primary Sub-Stations (PSS) under Non-ODSSP schemes are presently operated manually, with limited remote monitoring and control facilities. This restricts real-time visibility of system parameters and delays in fault identification, isolation, and restoration of supply. With the growing demand for reliable and uninterrupted power supply, automation of these PSS has become essential. By implementing automation and integrating them with the central SCADA system, the non-ODSSP PSS will be enabled with advanced features such as remote operation, data acquisition, event logging, and alarm management. This will improve operational efficiency, enhance grid reliability, and facilitate faster decision-making, thereby aligning the substations with modern utility practices and ensuring preparedness for future smart grid initiatives.

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	Automation of Non-ODSSP & SCADA integration in PSS	No	317	274	43

Proposal

It is proposed to implement Automation of Non-ODSSP & SCADA integration in PSS (43 Nos.) in FY27. Details of PSS are given in appendix – I.

Requirement/ Need of the Proposal

As part of PSS modernization, 43 substations are planned for FY27. It is therefore proposed to procure two Ethernet switches along with the CRP and VCB for each PSS. Additionally, LAN cables will be required to enable communication between these switches and the RTU.

Scope of Work

It is proposed to procure two Ethernet switches per PSS, along with the new VCB and CRP for modernization of PSS, to ensure network redundancy for all IEDs and enable easier remote control and monitoring.

Proposed Cost-

Description	UoM	Qty	Unit Rate (in Cr.)	Proposed Amount	Remark
				(in CR.)	
Automation of Non-ODSSP & SCADA integration in PSS	Nos.	43	0.0355	1.53	Refer Annexure 91 costing sheet for details
TOTAL				**1.53**	

Physical Target:

The work of automation for 43 Nos. PSS will be completed by March 27.

Cost Benefit Analysis

Not applicable.

Benefit to the System and Consumers:

1. Improved Reliability of Power Supply
1. Faster fault detection and isolation reduces outage duration.
2. Redundant network ensures continuity even if one link fails.
2. Better Power Quality- Real-time monitoring helps maintain stable voltage and frequency, reducing flickers or interruptions.
3. Reduced Downtime & Faster Restoration- Automation enables quicker fault response, minimizing consumer inconvenience.
4. Enhanced Transparency- Accurate event logging and monitoring allow utilities to respond more effectively to complaints and billing disputes.

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	Grid Modernization of PSS	No	317	274	43	43	0		To complete balance work

Appendix - I

Sr. No	SUBSTATION NAME	Circle	Division	Sub division	Scheme
1	GOSALA	Sambalpur	SED,SBP	Hirakud	Non ODSSP
2	Chipilima	Sambalpur	SED,SBP	Hirakud	ODSSP
3	HATIBARI SBP	Sambalpur	SEED	Rairakhol	Non ODSSP
4	Purna	Sambalpur	JED,jharsuguda	JED-1	ODSSP
5	LAIKERA	Sambalpur	JED,jharsuguda	JED-2	Non ODSSP
6	KOLABIRA	Sambalpur	JED,jharsuguda	JED-2	Non ODSSP
7	KESIABAHAL	Sambalpur	JED,jharsuguda	Kuchinda	Non ODSSP
8	Garposh	Sambalpur	JED,jharsuguda	Kuchinda	ODSSP
9	BANDHBAHAL	Sambalpur	BNED,brajrajnagar	Belpahar	Non ODSSP
10	DEOGARH	Sambalpur	Deogarh	Deogarh	Non ODSSP
11	BARKOTE	Sambalpur	Deogarh	Deogarh	Non ODSSP
12	TILEIBANI	Sambalpur	Deogarh	Deogarh	Non ODSSP
13	PHULSERNALI	Sambalpur	Deogarh	Deogarh	Non ODSSP
14	Buromal	Sambalpur	JED,jharsuguda	JED-1	ODSSP
15	Maneswar	Sambalpur	SEED	Dhanupali	ODSSP
16	BASANTI	Rourkela	RED,RKL	Basanti	IPDS
17	BISRA	Rourkela	RED,RKL	Bisra	Non ODSSP
18	PILOT PROJECT	Rourkela	RSED,RKL	Industrial esate	Non ODSSP
19	GURUNDIA	Rourkela	RSED,RKL	Bonai	Grid
20	RAJAMUNDA	Rourkela	RSED,RKL	Bonai	Non ODSSP
21	KOIRA	Rourkela	RSED,RKL	Bonai	Non ODSSP
22	TENSA	Rourkela	RSED,RKL	Bonai	Non ODSSP
23	MAHULDIHA	Rourkela	RSED,RKL	Bonai	Non ODSSP
24	OTTO INDIA	Rourkela	RED,RAJGANPUR	Kalunga	Non ODSSP
25	TURUNGA	Bargarh	BED,BARGARH	Bargarh no.6	IPDS
26	GODBHAGA	Bargarh	BED,BARGARH	Attabira	Non ODSSP
27	JHARBANDH	Bargarh	BWED,Bargarh	Paikmal	Non ODSSP
28	LALTIKIRA	Bolangir	BED,Bolangir	SDO-1	Non ODSSP
29	Madhiapali	Bolangir	BED,Bolangir	SDO-2	ODSSP
30	REC	Bolangir	BED,Bolangir	SDO-2	Non ODSSP
31	BEHERAPALI	Bolangir	BED,Bolangir	SDO-2	Non ODSSP
32	CHHATAMAKHANA	Bolangir	BED,Bolangir	SDO-2	Non ODSSP
33	KHOLAN	Bolangir	TED,Titlagarh	Titlagarh	Non ODSSP
34	KHAPRAKHOL	Bolangir	TED,Titlagarh	Patnagarh	Non ODSSP
35	LARAMBHA(ODSSP)	Bolangir	TED,Titlagarh	Patnagarh	Non ODSSP
36	SONEPUR	Bolangir	SED,Sonepur	Sonepur	Non ODSSP
37	KHARI	Bolangir	SED,Sonepur	Sonepur	Non ODSSP
38	CHARVATA	Bolangir	SED,Sonepur	Sonepur	Non ODSSP
39	Bishalpali	Bolangir	SED,Sonepur	Binka	ODSSP
40	PANDKITAL	Bolangir	SED,Sonepur	Binka	Non ODSSP
41	CHERUPALI	Bolangir	SED,Sonepur	Binka	Non ODSSP
42	BHATABAHALI(RLTAP)	Bolangir	SED,Sonepur	Binka	Non ODSSP
43	BMPUR	Bolangir	SED,Sonepur	B.MPUR	Non ODSSP

Proposal for reliability improvement and Mitigation of overloading for 33kV Melchhamunda Feeder:

***Proposal*:**

33kV Line Augmentation Agalpur feeder from Barpali GSS to T-off of Charmunda PSS to improve reliability and mitigate overloading.

Requirement/ Need of the proposal:

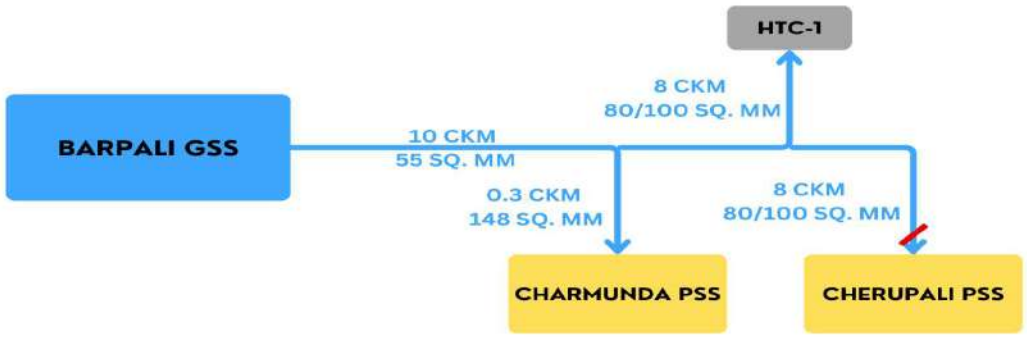
Objective: To ensure reliable power supply, strengthening of the existing network and mitigating overloading of Melchhamunda Feeder.

Existing Scenario:

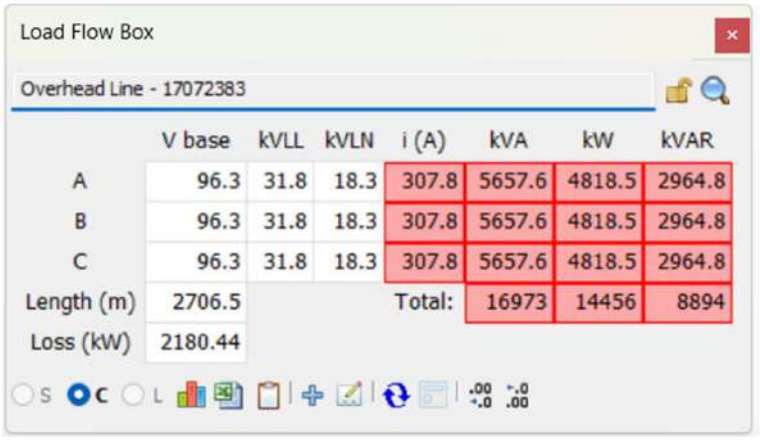
- At present, 33kV Melchhamunda feeder has a total feeder length of 53 Ckm emanating from Barpali GSS and is feeding power to Charmunda and Agalpur PSS and HT Consumers. It also provides N-1 connectivity to Cherupali and Bharsuja PSS as well.
- Overloading of 308 A was observed at feeder head and an undervoltage of 25.4 kV was observed at the tail end of Agalpur Feeder.
- 33kV Melchhamunda Feeder has conductor size of 55/100/148/232 sq.mm AAAC and peak load at summer'25 is 17.6MVA.
- Considering load growth for 1 year @8.6% per year, 33kV Melchhamunda feeder will experience overloading as well low voltage issues.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Agalpur (Melchhamunda)	15000	35	2724.6	Overloading (308 A at 55sqmm conductor which has a capacity of 186 A) Undervoltage (25.4kV at tail end)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



33kV Melchhamunda Feeder

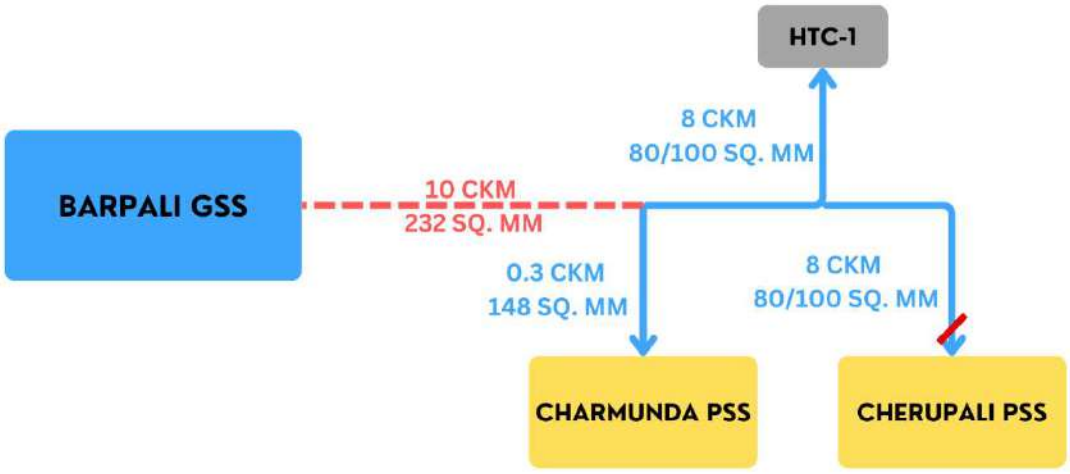
33kV Melchhamunda Feeder

Proposed Scenario:

- Upgradation of 10Ckm of 55sqmm Conductor from Barpali GSS to Charmunda tapping to 232 sqmm Bare conductor.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Barpali	Agalpur (Melchhamunda)	19364	53	1765.5	Overloading mitigated Undervoltage (26.9kV)

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 26457631

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	100.0	33.0	19.0	402.2	7661.5	6453.9	4128.7
B	100.0	33.0	19.0	402.2	7661.5	6453.9	4128.7
C	100.0	33.0	19.0	402.2	7661.5	6453.9	4128.7
Length (m)	35.1			Total:	22984	19362	12386
Loss (kW)	1763.35						

33kV Melchhamunda Feeder

Load Flow Box

Overhead Line - 12730777

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	81.6	26.9	15.6	0.0	0.0	0.0	0.0
B	81.6	26.9	15.6	0.0	0.0	0.0	0.0
C	81.6	26.9	15.6	0.0	0.0	0.0	0.0
Length (m)	47542.8			Total:	0	0	0
Loss (kW)	0.00						

33kV Melchhamunda Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 10Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE-A1			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**BWED(Bargarh)**	
Name of the Work :-		***Reliability improvement of Charmunda Area:*** Upgradation of 33kV Agalpur (Melchhamunda) Feeder from Barpali GSS to Charmunda PSS to mitigate overloading and improve reliablity.	
Scope of work:-		Proposal for upgradation of 10Ckm 33kV line using 232 Sq.mm. AAAC Bare conductor (Refer Annexure-93)	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	2.42
		Total Amount (In Cr)	**2.42**
Total estimated cost is Rs. 2.42 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 2.42 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**	Agalpur (Melchhamunda)	15000	2725	**451**	**3948807**	**162.1**	31.1 kV at tail end
After Proposal	**Barpali**	Agalpur (Melchhamunda)	19364	1765.5				30.8 kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	241.65	Rs. Lac
B	Load due to load growth	-	4364.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	3819	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	22712591	kWH
E	Power Purchase cost per unit	-	4.105	Rs.

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
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)	323.65	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	162.10	Rs. Lac
J	Net Revenue Collected	H+I	485.75	Rs. Lac
K	% revenue return	(J/A)*100	201.0	%
L	Pay Back Period	100/K	0.50	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Agalpur (Melchhamunda) Feeder.
- Ensuring reliable power supply to the Charmunda Area.
- Overloading mitigation of 33kV Agalpur (Melchhamunda) Feeder.
- Undervoltage mitigation of 33kV Agalpur (Melchhamunda) Feeder.

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

***Proposal*:**

33kV Line Augmentation Thuapali feeder from Thuapali to Bheden to improve reliability and mitigate undervoltage.

Requirement/ Need of the proposal:

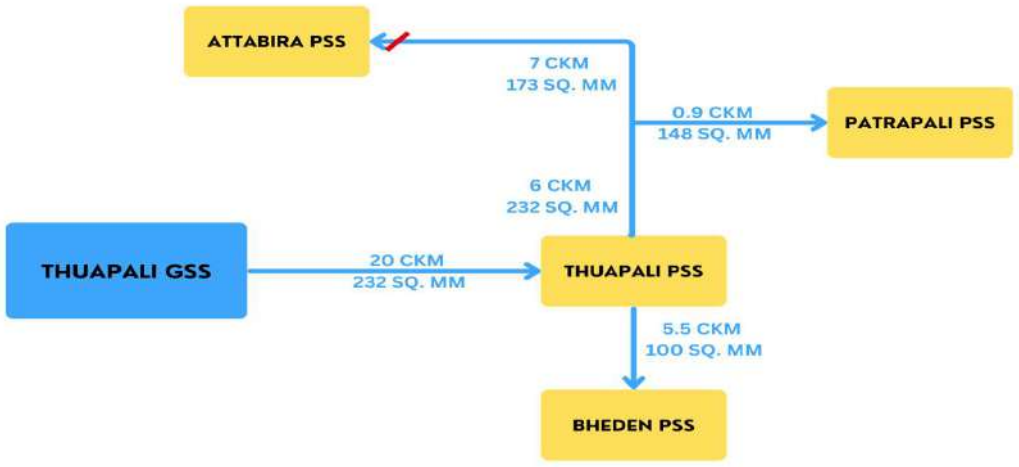
Objective: To ensure reliable power supply, strengthening of the existing network and improve N-1 connectivity of 33kV Thuapali Feeder.

Existing Scenario:

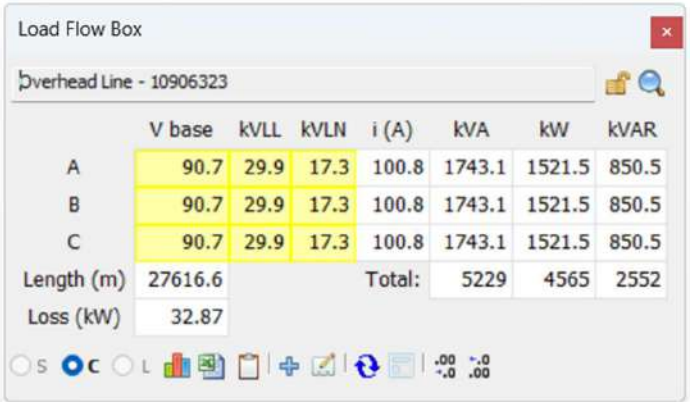
- At present, Bheden PSS has a single source fed from 33kV Thuapali feeder having a total feeder length of 46.3 Ckm with conductor size of 100/148/173/232 sq.mm AAAC is emanating from Thuapali GSS.
- This feeder is very old and in worst condition hence there is a need to upgrade the line. This also aims to provide N-1 connectivity to Tora PSS.
- It feeds Thuapali, Bheden and Patrapali PSS. With a summer peak'25 of 11.5 MVA and experiences a minimum voltage of 29.9 kV at tail end.
- Considering load growth for 1 year @8.6% per year, 33kV Thuapali feeder will experience a projected load of 12.5 MVA and voltage of 30.6 at tail end.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Thuapali	Thuapali	9891	46.3	524.2	29.9 kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



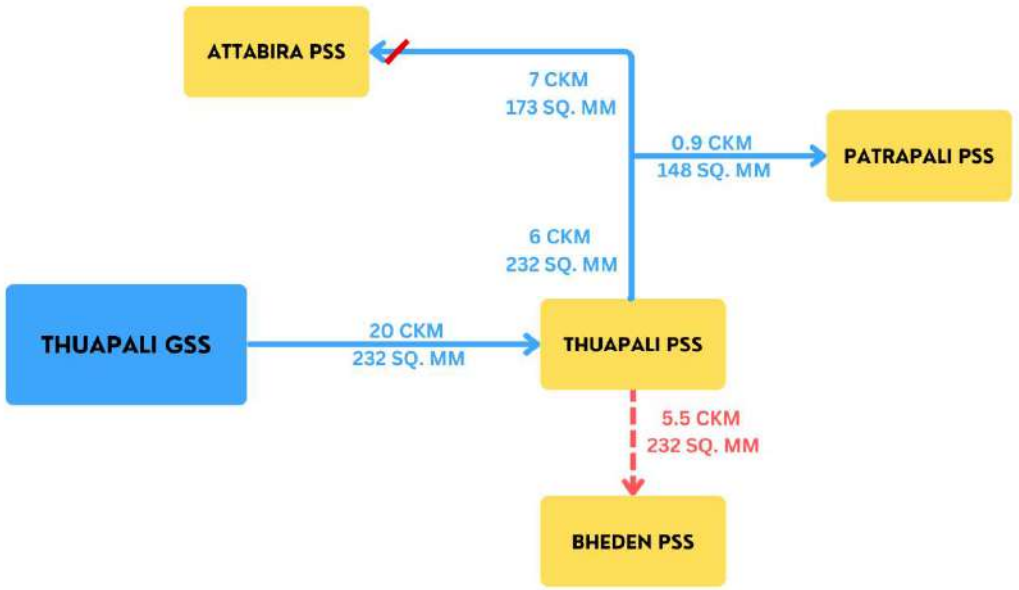
33kV Thuapali Feeder

Proposed Scenario:

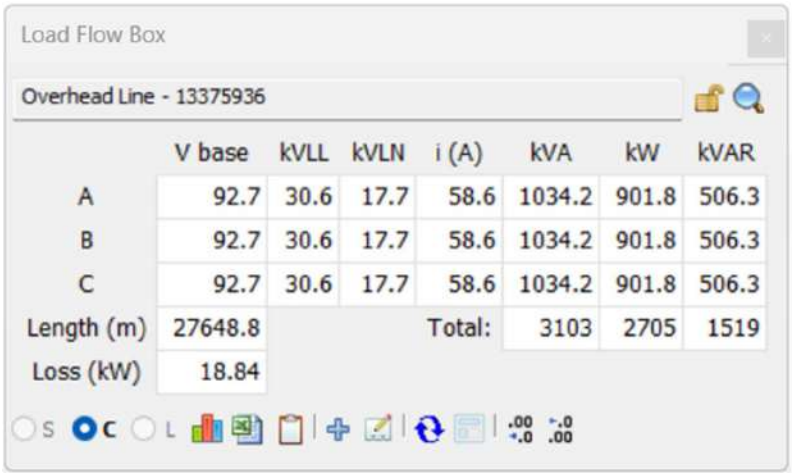
- Upgradation of 11Ckm of 100sqmm Conductor from Thuapali PSS to Bheden PSS to 232 sqmm Bare conductor.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Thuapali	Thuapali	10786	53	464.8	30.6kV at tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	92.7	30.6	17.7	58.6	1034.2	901.8	506.3
B	92.7	30.6	17.7	58.6	1034.2	901.8	506.3
C	92.7	30.6	17.7	58.6	1034.2	901.8	506.3
Length (m)	27648.8			Total:	3103	2705	1519
Loss (kW)	18.84						

33kV Thuapali Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 11Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor.

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 Bheden Area:*** Upgradation of 33kV Thuapali Feeder from Thuapali PSS to Bheden PSS to improve reliablity.	
Scope of work:-		Proposal for upgradation of 11Ckm 33kV line using 232 Sq.mm. AAAC Bare conductor	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 100 sqmm 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	2.66
		Total Amount (In Cr)	**2.66**
Total estimated cost is Rs. 2.66 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 2.66 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	**Thuapali**	Thuapali	9891	524	**27.92**	**244561.68**	**10.04**	29.9 kV at tail end
After Proposal	**Thuapali**	Thuapali	10786	465				30.6 kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	265.80	Rs. Lac
B	Load due to load growth	-	965.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	844	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	5022376	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)	71.57	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	10.04	Rs. Lac
J	Net Revenue Collected	H+I	81.61	Rs. Lac
K	% revenue return	(J/A)*100	30.7	%
L	Pay Back Period	100/K	3.26	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Thuapali Feeder.
- Ensuring reliable power supply to the Bheden Area by replacement of aged circuit.
- Availing N-1 to Tora PSS.

Proposal for reliability improvement and mitigation of overloading of 33kV Patnagarh Feeder:

***Proposal*:**

33kV Line Augmentation Patnagarh feeder from Patnagarh GSS to improve reliability and mitigate overloading.

Requirement/ Need of the proposal:

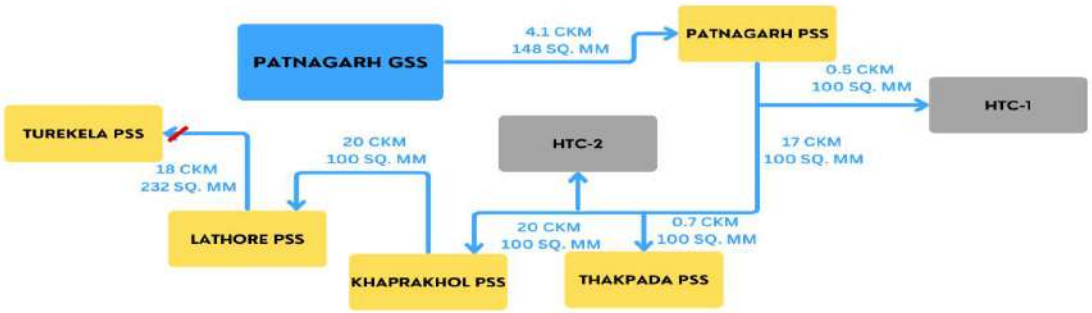
Objective: To ensure reliable power supply, strengthening of the existing network, mitigation of overloading and improve N-1 connectivity of 33kV Patnagarh Feeder.

Existing Scenario:

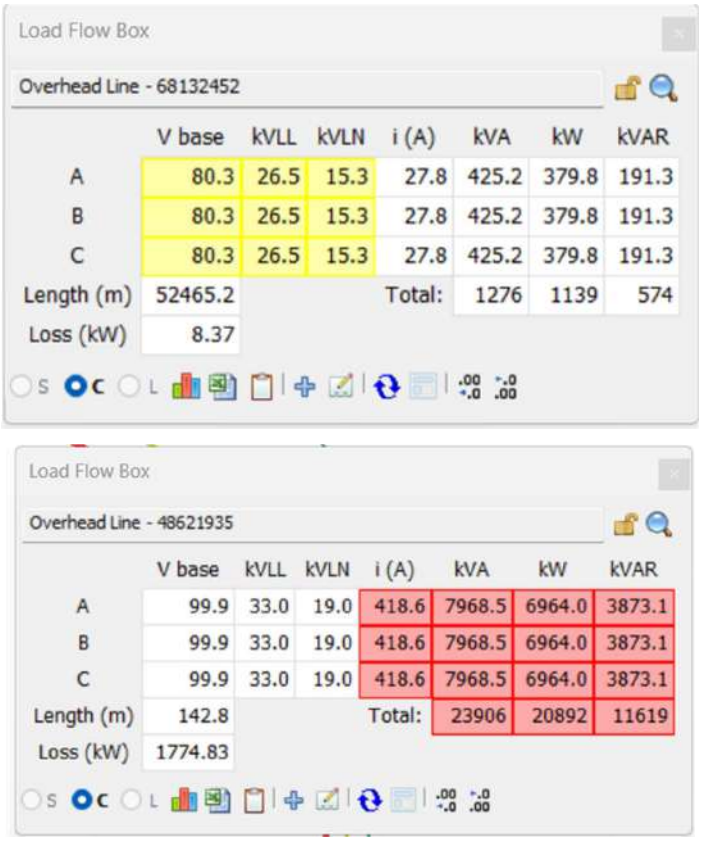
- At present, 33kV Patnagarh feeder having a total feeder length of 54 Ckm with conductor size of 100/148 sq.mm AAAC is emanating from Patnagarh GSS.
- Load of Patnagarh feeder from Patnagarh GSS was observed to be 419A on 148 sqmm which has capacity of 350A leading to overloading.
- It feeds Patnagarh, Thakpada, 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	20892	54	1774.8	Overloading (419A on 148 sqmm which has capacity of 350A) Undervoltage (26.5kV at tail end)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



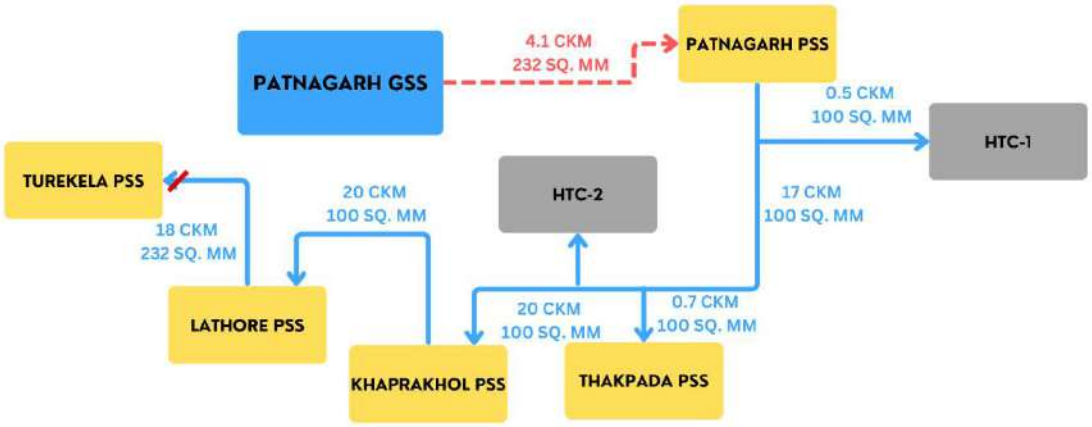
33kV Patnagarh Feeder

Proposed Scenario:

- Upgradation of 4.1Ckm of 148sqmm Conductor from Thuapali PSS to Bheden PSS to 232 sqmm Bare conductor.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Patnagarh	Patnagarh	20863	54	1594.3	Overloading Mitigated. Undervoltage (26.7kV at tail end)

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

Load Flow Box

Overhead Line - 68132437

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	81.0	26.7	15.4	16.6	256.7	230.7	112.5
B	81.0	26.7	15.4	16.6	256.7	230.7	112.5
C	81.0	26.7	15.4	16.6	256.7	230.7	112.5
Length (m)	52465.2			Total:	770	692	338
Loss (kW)	4.69						

S C L

33kV Patnagarh Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 4.1Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor.

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 Patnagarh Area:*** Upgradation of 33kV Patnagarh Feeder from Patnagarh GSS to Patnagarh PSS to mitigate overloading.	
Scope of work:-		Proposal for upgradation of 4.1Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 148 sqmm 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	0.99
		Total Amount (In Cr)	**0.99**
Total estimated cost is Rs. 0.99 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 0.99 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	**Patnagarh**	Patnagarh	20892	1775	**84.84**	**743154.60**	**30.51**	Overloading (419A on 148 sqmm which has capacity of 350A) Undervoltage (26.5kV at tail end)
After Proposal	**Patnagarh**	Patnagarh	20863	1594				Overloading Mitigated. Undervoltage (26.7kV at tail end)

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	99.08	Rs. Lac
B	Load due to load growth	-	1362.16	kVA
C	Total kW due to load growth	1.732*33*B*Pf	1192	kW

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	7089401	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)	101.02	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	30.51	Rs. Lac
J	Net Revenue Collected	H+I	131.53	Rs. Lac
K	% revenue return	(J/A)*100	132.8	%
L	Pay Back Period	100/K	0.75	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Patnagarh Feeder.
- Ensuring reliable power supply to the Patnagarh Area.
- Mitigating Undervoltage and Overloading of 33kV Patnagarh Feeder.

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

***Proposal*:**

33kV Line Augmentation Dharamgarh New Feeder from Brundabahal GSS to Dharamgarh PSS to improve reliability and mitigate undervoltage.

Requirement/ Need of the proposal:

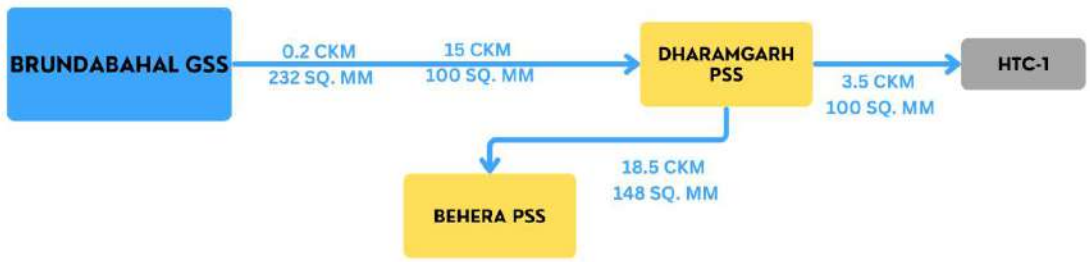
Objective: To ensure reliable power supply, strengthening of the existing network and mitigation of undervoltage of 33kV Dharamgarh New Feeder.

Existing Scenario:

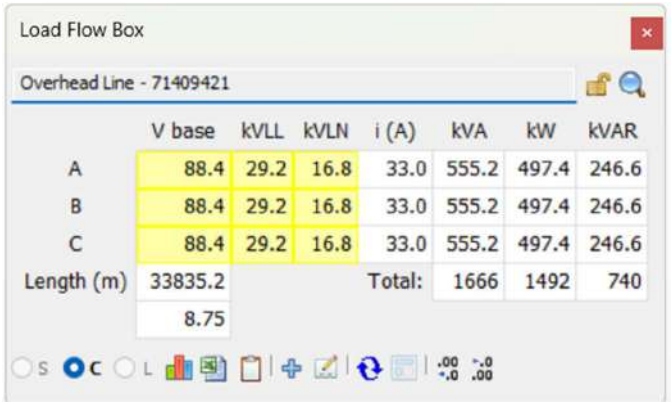
- At present, 33kV Dharamgarh New feeder having a total feeder length of 75.5 Ckm with conductor size of 100/148/232 sq.mm AAAC is emanating from Brundabahal GSS.
- It feeds Dharamgarh, Kashibahal, and Lathore PSS with a total summer peak'25 of 12.4 MVA and experiences a minimum voltage of 29.2kV at tail end.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Brundabahal	Dharamgarh New	10818	75.5	611.26	Undervoltage (29.2kV at tail end)

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	88.4	29.2	16.8	33.0	555.2	497.4	246.6
B	88.4	29.2	16.8	33.0	555.2	497.4	246.6
C	88.4	29.2	16.8	33.0	555.2	497.4	246.6
Length (m)	33835.2			Total:	1666	1492	740
	8.75						

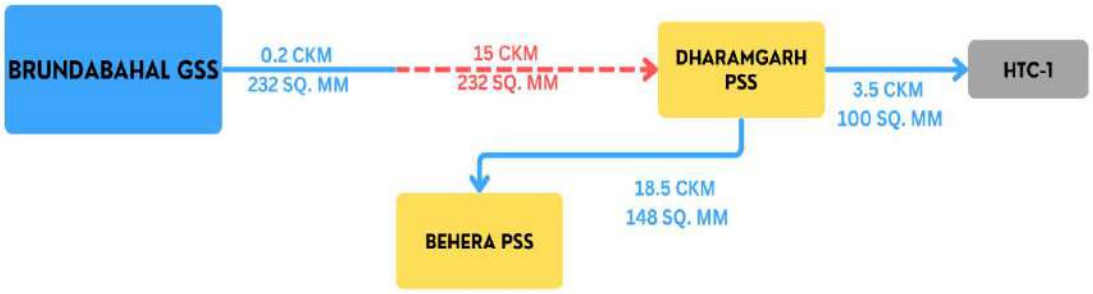
33kV Dharamgarh New Feeder

Proposed Scenario:

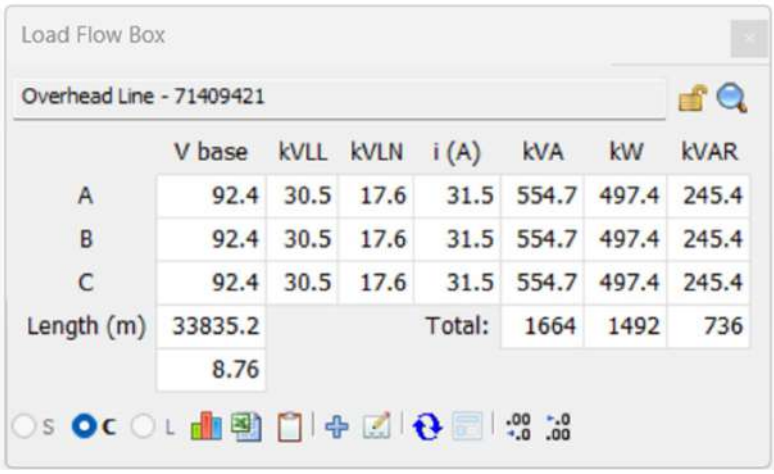
- Upgradation of 15Ckm of 100sqmm Conductor from Brundabahal GSS to Dharamgarh PSS to 232 sqmm Bare conductor.
- Considering load growth for 1 year @6.10% per year, 33kV Dharamgarh New feeder will experience a projected load of 13.5 MVA and voltage of 30.5kV.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Brundabahal	Dharamgarh New	10185	37.6	444.52	30.5kV at Tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	92.4	30.5	17.6	31.5	554.7	497.4	245.4
B	92.4	30.5	17.6	31.5	554.7	497.4	245.4
C	92.4	30.5	17.6	31.5	554.7	497.4	245.4
Length (m)	33835.2			Total:	1664	1492	736
	8.76						

33kV Dharamgarh New Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 15Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE			
TP WESTERN ODISHA DISTRIBUTION LIMITED			
Name of the Division :-		**KWED(Kalahandi)**	
Name of the Work :-		***Reliability improvement of Dharamgarh Area:*** Upgradation of 33kV Dharamgarh New Feeder from Brundabahal GSS to Dharamgarh PSS to mitigate undervoltage.	
Scope of work:-		Proposal for upgradation of 15Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 100 sqmm 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	3.62
		Total Amount (In Cr)	**3.62**
Total estimated cost is Rs. 3.62 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 3.62 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	**Brundabahal**	Dharamgarh New	10818	611	**78.37**	**686501.93**	**28.18**	30.7kV at tail end
After Proposal	**Brundabahal**	Dharamgarh New	10185	445				30.5kV at tail end

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	362.50	Rs. Lac
B	Load due to load growth	-	659.90	kVA
C	Total kW due to load growth	1.732*33*B*Pf	577	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	3434462	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)	48.94	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	28.18	Rs. Lac
J	Net Revenue Collected	H+I	77.12	Rs. Lac
K	% revenue return	(J/A)*100	21.3	%
L	Pay Back Period	100/K	4.70	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Dharamgarh New Feeder.
- Ensuring reliable power supply to the Dharamgarh Area.
- Mitigating Undervoltage of 33kV Dharamgarh New Feeder.

Proposal for reliability improvement of 33kV Bhawanipatna-2 Feeder:

***Proposal*:**

33kV Bhawanipatna-2 Feeder Aug from tapping of Utkela Airport to Raisinghpur PSS for reliability improvement .

Requirement/ Need of the proposal:

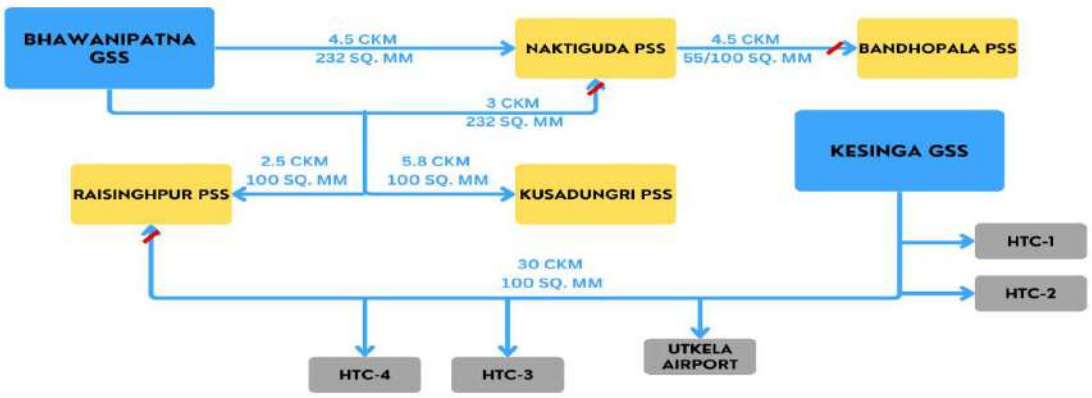
Objective: To ensure reliable power supply and strengthening of the existing network of 33kV Bhawanipatna-2 Feeder.

Existing Scenario:

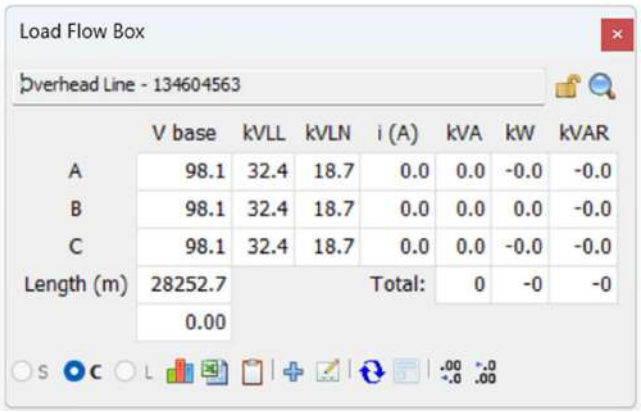
- At present, 33kV Bhawanipatna-2 Feeder having a total feeder length of 36.2 Ckm with conductor size of 100 sq.mm AAAC is emanating from Kesinga GSS.
- Bhawanipatna-2 is an industrial feeder and the existing infrastucture of the feeder is in damaged condition and it also passes through private plantation area due to which power supply to the HT consumer is hampered.
- 33kV Bhawanipatna-2 Feeder comes under Kalahandi constituency; any fault here leads to complete blackout of Kesinga Industrial Area.
- This proposal improves the reliability of 33kV Bhawanipatna-2 Feeder and improves the reliability of industrial consumers.
- It feeds HT Consumers and has N-1 connectivity to Raisinghpur PSS with a total summer peak'25 of 2.4 MVA and experiences a minimum voltage of 32.4kV at tail end.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-2	2118	36.2	28.2	32.4kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



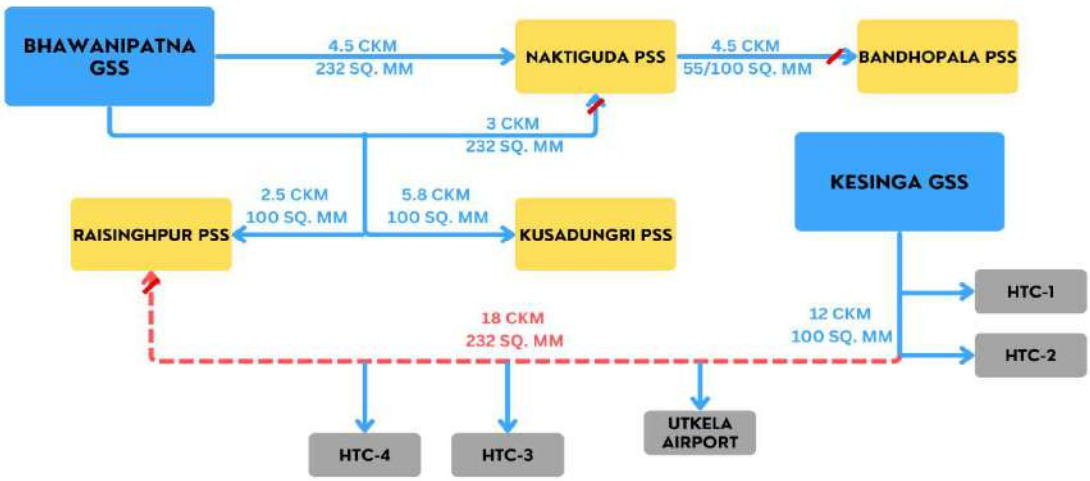
33kV Bhawanipatna-2 Feeder

Proposed Scenario:

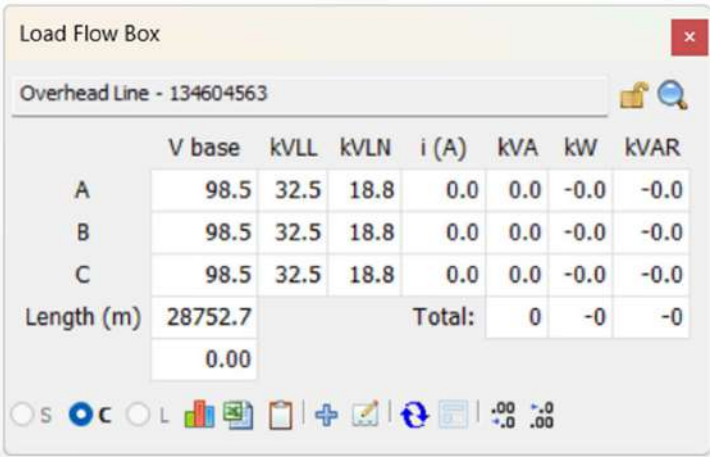
- Upgradation of 18Ckm of 100sqmm Conductor from from Tapping of Utkela Airport to Raisinghpur PSS to 232 sqmm Bare+Insulated conductor.
- Considering load growth for 1 year @6.10% per year, 33kV Bhawanipatna-2 feeder will experience a projected load of 2.4 MVA and voltage of 32.5kV.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-2	2113	36.2	23.2	32.5kV at Tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Bhawanipatna-2 Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 9Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor.
2. Proposal for upgradation of 9Ckm 33kv line using 232 Sq.mm. AAAC Insulated conductor.

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 Industrial Area:*** Upgradation of 33kV Bhawanipatna-2 Feeder from Tapping of Utkela Airport to Raisinghpur PSS to improve reliability.	
Scope of work:-		1. Proposal for upgradation of 9Ckm 33kv line using 232 Sq.mm. AAAC Bare conductor. 2. Proposal for upgradation of 9Ckm 33kv line using 232 Sq.mm. AAAC Insulated conductor.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	2.17
2	B	Upgradation of 33kV Line with 232 sqmm AAAC Insulated conductor (Refer Annexure-56)	2.74
		Total Amount (In Cr)	**4.91**
Total estimated cost is Rs. 4.91 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 4.91 Cr.

Cost Benefit Analysis:

- Bhawanipatna-2 is an industrial feeder and the existing infrastucture of the feeder is in damaged condition and it also passes through private plantation area due to which power supply to the HT consumer is hampered.
- 33kV Bhawanipatna-2 Feeder comes under Kalahandi constituency; any fault here leads to complete blackout of Kesinga Industrial Area.
- This proposal improves the reliability of 33kV Bhawanipatna-2 Feeder and improves the reliability of industrial 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 improvement of 33kV Bhawanipatna-2 Feeder.
- Ensuring reliable power supply to the Kesinga Industrial Area.

Proposal for reliability improvement of 33kV Bhawanipatna-2 Feeder:

***Proposal*:**

33kV Bhawanipatna-2 Feeder Augmentation from Kesinga GSS to Christian House for reliability improvement.

Requirement/ Need of the proposal:

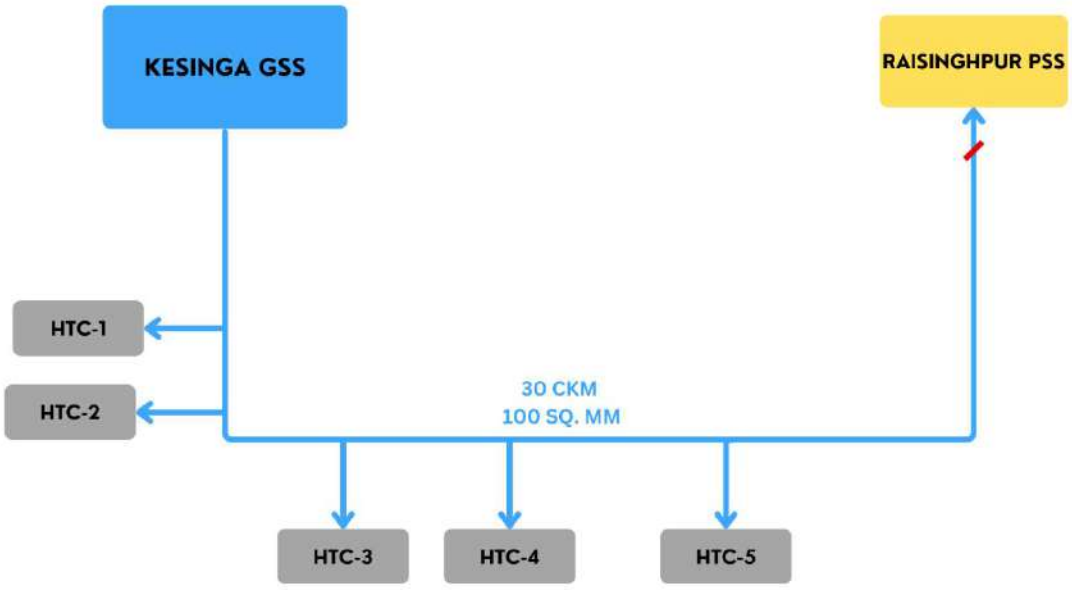
Objective: To ensure reliable power supply, strengthening of the existing network of 33kV Bhawanipatna-2 Feeder.

Existing Scenario:

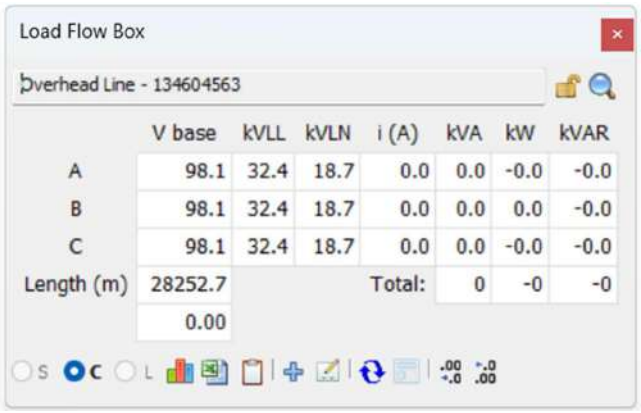
- At present, 33kV Bhawanipatna-2 New feeder having a total feeder length of 30Ckm with conductor size of 100 sq.mm AAAC is emanating from Kesinga GSS.
- It feeds 6nos. of HT Consumers and is with N-1 with Raisingpur PSS total summer peak'25 of 2.4 MVA and experiences a minimum voltage of 32.4kV at tail end.
- Part of trunk feeder is in deteriorated condition with damaged pole. Feeder is passing over residential area for which u/g cable is proposed.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-2	2118	36.2	28.2	32.4kV at tail end

Existing SLD:



Load Flow Study of existing scenario in Cyme Software:



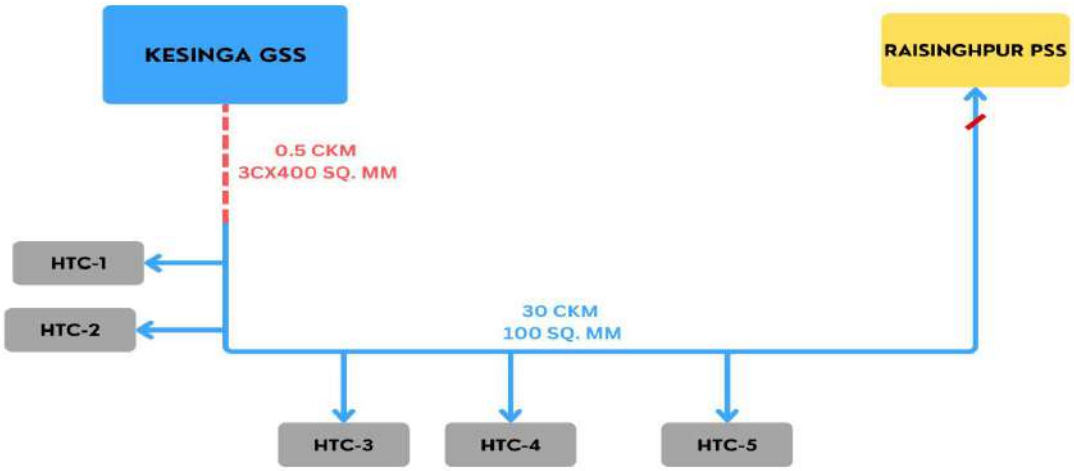
33kV Bhawanipatna-2 Feeder

Proposed Scenario:

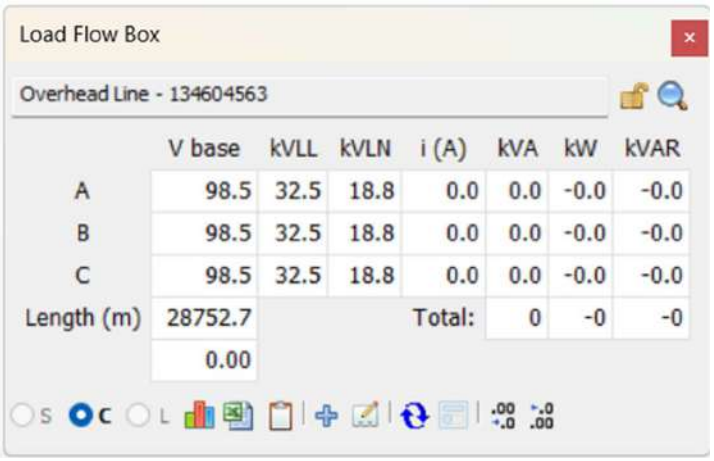
- Upgradation of 100sqmm Conductor to 3Cx400sqmm. UG cable from Kesinga GSS to Christian House.
- Considering load growth for 1 year @6.10% per year, 33kV Bhawanipatna-2 New feeder will experience a projected load of 2.4 MVA and voltage of 32.5kV.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-2	2113	36.2	23.2	32.5kV at Tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



33kV Bhawanipatna-2 Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 0.5Ckm 33kv line using 3C,400sqmm. UG cable.

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 Kesinga Area:*** Upgradation of 33kV Bhawanipatna-2 Feeder from Kesinga GSS to Christian House for reliability improvement.	
Scope of work:-		Proposal for upgradation of 0.5Ckm 33kv line using 3C,400sqmm. UG cable.	
Names of Schemes: -		***TPWODL CAPEX (FY 26-27)***	
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 33kV Line with 3CX400 sqmm UG cable (Refer Annexure-167)	0.45
		Total Amount (In Cr)	**0.45**
Total estimated cost is Rs. 0.45 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 0.45 Cr.

Cost Benefit Analysis:

- 33kV Bhawanipatna-2 Feeder comes under Kalahandi constituency; any fault here leads to complete blackout of Kesinga Industrial Area.
- This proposal improves the reliability of 33kV Bhawanipatna-2 Feeder and helps address the safety concerns in the area.
- Increasing load demand without redundancy increases stress on existing infrastructure.

Benefit to the system and consumers:

- Reliability improvement of 33kV Bhawanipatna-2 Feeder.
- Ensuring reliable power supply to the HT consumers.
- Mitigation of safety hazards in residential area.

Proposal for reliability improvement of 33kV Bhawanipatna-1 Feeder:

***Proposal*:**

33kV Bhawanipatna-2 Feeder Augmentation from Kesinga Chowk to Karlapada Tapping for reliability improvement.

Requirement/ Need of the proposal:

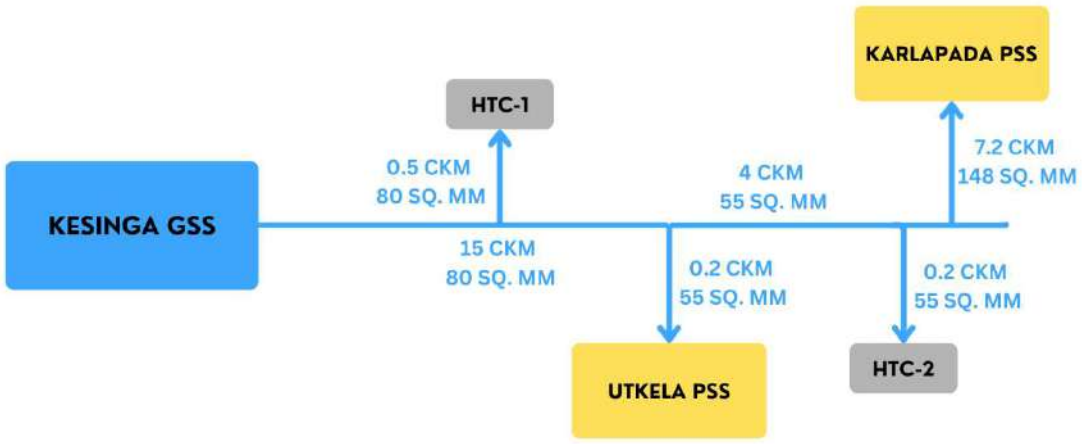
Objective: To ensure reliable power supply, strengthening of the existing network of 33kV Bhawanipatna-1 Feeder.

Existing Scenario:

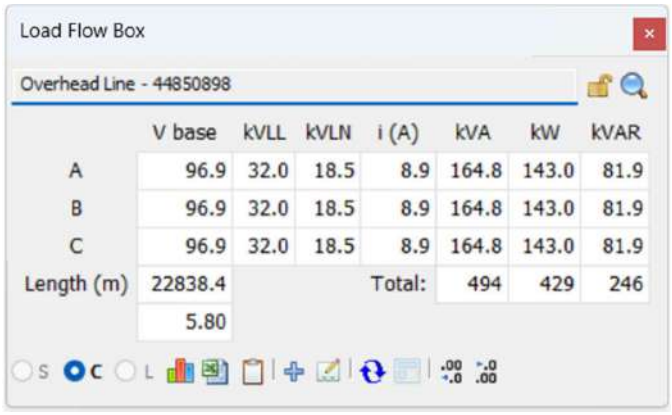
- At present, 33kV Bhawanipatna-1 New feeder having a total feeder length of 24 Ckm with conductor size of 55/80/148 sq.mm AAAC is emanating from Kesinga GSS.
- This is an old feeder and the existing infrastucture of the feeder is in damaged condition and it also passes through private plantation area due to which power supply is hampered.
- 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.

Existing Condition					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-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	8.9	164.8	143.0	81.9
B	96.9	32.0	18.5	8.9	164.8	143.0	81.9
C	96.9	32.0	18.5	8.9	164.8	143.0	81.9
Length (m)	22838.4			Total:	494	429	246
	5.80						

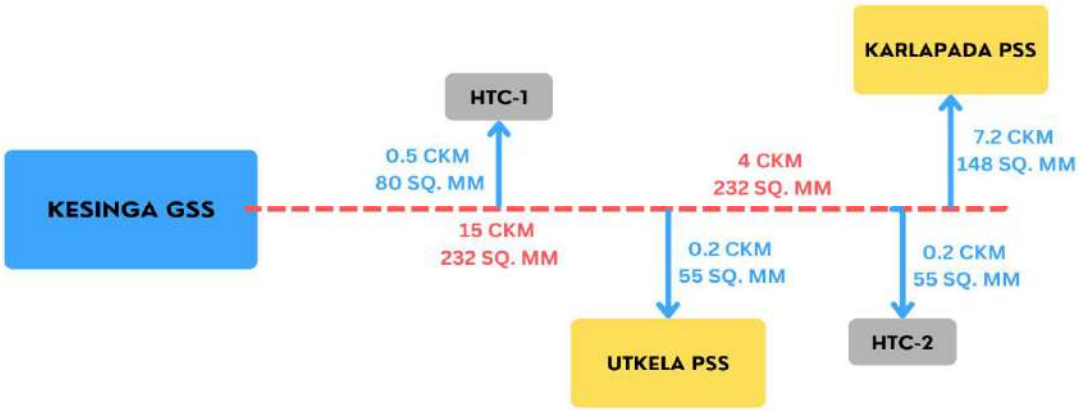
33kV Bhawanipatna-1 Feeder

Proposed Scenario:

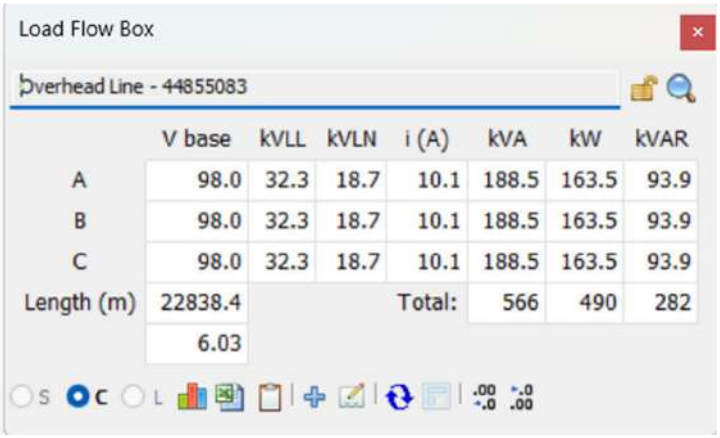
- Upgradation of 100sqmm Conductor to 3Cx400sqmm. UG cable from Kesinga GSS to Christian House.
- Considering load growth for 1 year @6.10% per year, 33kV Bhawanipatna-1 New feeder will experience a projected load of 4.3 MVA and voltage of 32.3kV.

Proposed Condition after one year					
Name of the GSS	**33kV feeder Name**	**Feeder Peak (KW)**	**Feeder Length (CKM)**	**Loss (KW)**	**Remarks**
Kesinga	Bhawanipatna-1	3745	24	61.3	32.3kV at Tail end

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	98.0	32.3	18.7	10.1	188.5	163.5	93.9
B	98.0	32.3	18.7	10.1	188.5	163.5	93.9
C	98.0	32.3	18.7	10.1	188.5	163.5	93.9
Length (m)	22838.4			Total:	566	490	282
	6.03						

33kV Bhawanipatna-1 Feeder

Detailed Scope of Work:

1. Proposal for upgradation of 19Ckm 33kV line using 232 sqmm AAAC conductor.

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 Bhawanipatna-1 Feeder:*** Upgradation of 33kV Bhawanipatna-1 Feeder from Kesinga Chowk to Karlapada tapping for reliability improvement.		
Scope of work:-	Proposal for upgradation of 19Ckm 33kv line using 232 sqmm AAAC conductor.		
Names of Schemes: -	***TPWODL CAPEX (FY 26-27)***		
ABSTRACT OF ESTIMATE			
Sl. No.	**Part**	**Description**	**Amount (in Cr.)**
1	A	Upgradation of 33kV Line with 232 sqmm AAAC Bare conductor (Refer Annexure-93)	3.62
2	B	Upgradation of 33kV Line with 232 sqmm AAAC Insulated conductor (Refer Annexure-56)	1.22
		Total Amount (In Cr)	**4.84**
Total estimated cost is Rs. 4.84 Crore. (On TPWODL Capex Scheme)			

Cost Estimate: ₹ 4.84 Cr.

Cost Benefit Analysis:

- 33kV Bhawanipatna-1 Feeder comes under Kalahandi constituency; any fault here leads to complete blackout of Kesinga Industrial Area.

- This proposal improves the reliability of 33kV Bhawanipatna-2 Feeder and improves the reliability of industrial consumers.
- Potential penalties or compensation claims from industrial consumers due to unscheduled outages.
- Increasing load demand on the feeder 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 Bhawanipatna-1 Feeder.
- Ensuring reliable power supply to the HT consumers.
- Replacement of old and damaged infrastructure.

Mitigation of 33kV Feeder Under Voltage Issue

Proposal for reliability improvement and Mitigation of undervoltage for 33kV Rourkela-I.

PROPOSAL:

33kV Rourkela-1 feeder trunk line Aug Mandiakudar PSS to Bajrang Steel to improvement

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 100 sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

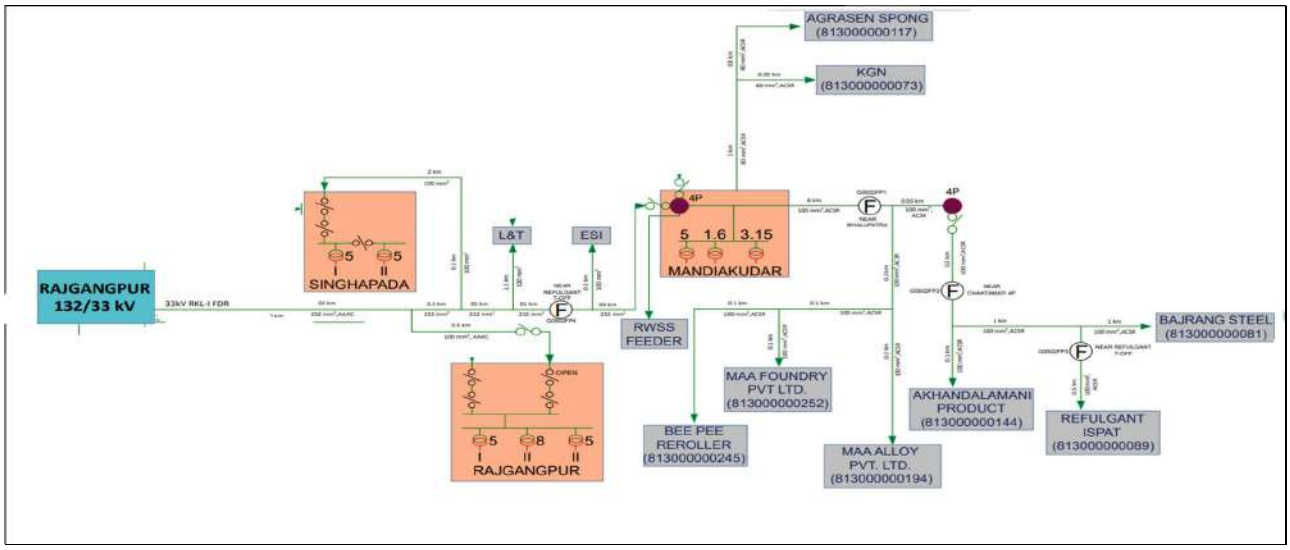
EXISTING SCENARIO: -

- Presently 33kV Rourkela-I feeder emanating from Rajgangpur GSS & feeding power supply up to Bajrang Steel.
- From Rajgangpur GSS up to Mandiakudar PSS the conductor size of trunk line is with AAAC 232Sqmm. But after Mandiakudar PSS up to Bajrang Steel, the conductor size of trunk line is with AAAC 100Sqmm.
- This proposal pertains to a **High Revenue Feeder**.
- Presently, an undervoltage of 29.4 kV has been observed at M/s. Bajrang Steel & Alloy Pvt. Ltd. (HTC), which is located at the tail end of the RKL-I feeder emanating from Rajgangpur GSS.
- To mitigate the low voltage issue, it is proposed to upgrade the conductor size of the line from Mandiakuar PSS to M/s. Bajrang Steel & Alloy Pvt. Ltd. (HTC) from 100 sq.mm to 232 sq.mm.
- After augmentation, the voltage at the tail end is expected to improve from 29.4 kV to 29.9 kV.

Existing Peak (FY25-26) Loading and projected load of Rourkela-1 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**
Rajgangpur	RKL-1	26	23.9	92%	Ok	24.554	94.4%	Ok

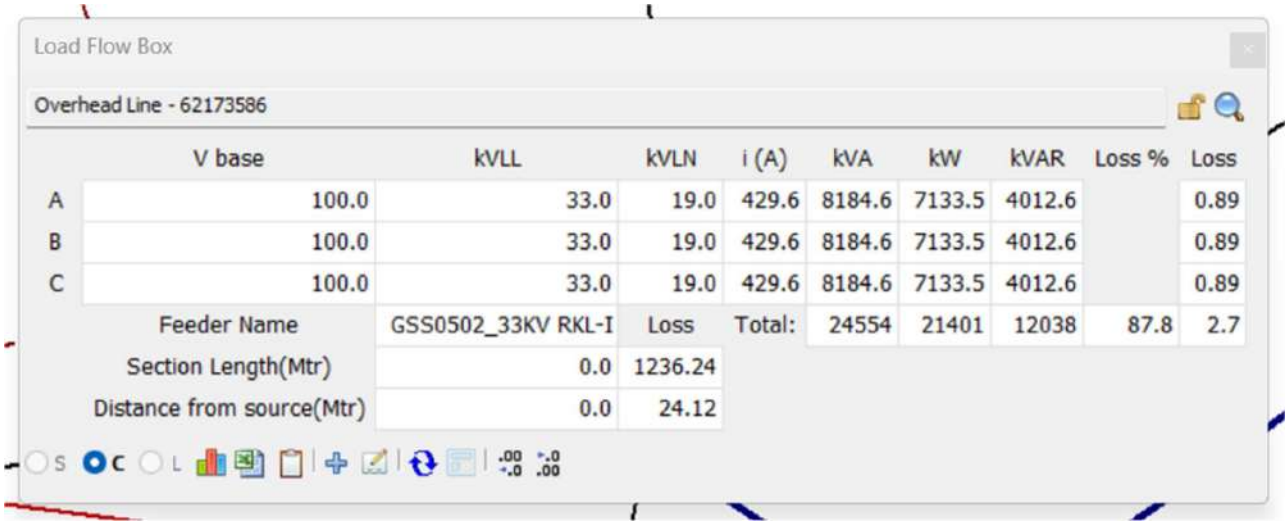
Existing SLD:



Load Flow Study of existing scenario in Cyme Software

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	418.2	7967.8	6950.8	3895.2		0.84
B	100.0	33.0	19.0	418.2	7967.8	6950.8	3895.2		0.84
C	100.0	33.0	19.0	418.2	7967.8	6950.8	3895.2		0.84
Feeder Name		GSS0502_33KV RKL-I	Loss	Total:	23903	20852	11685	85.5	2.5
Section Length(Mtr)		0.0	1194.86						
Distance from source(Mtr)		0.0	24.18						

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



Load Flow Box

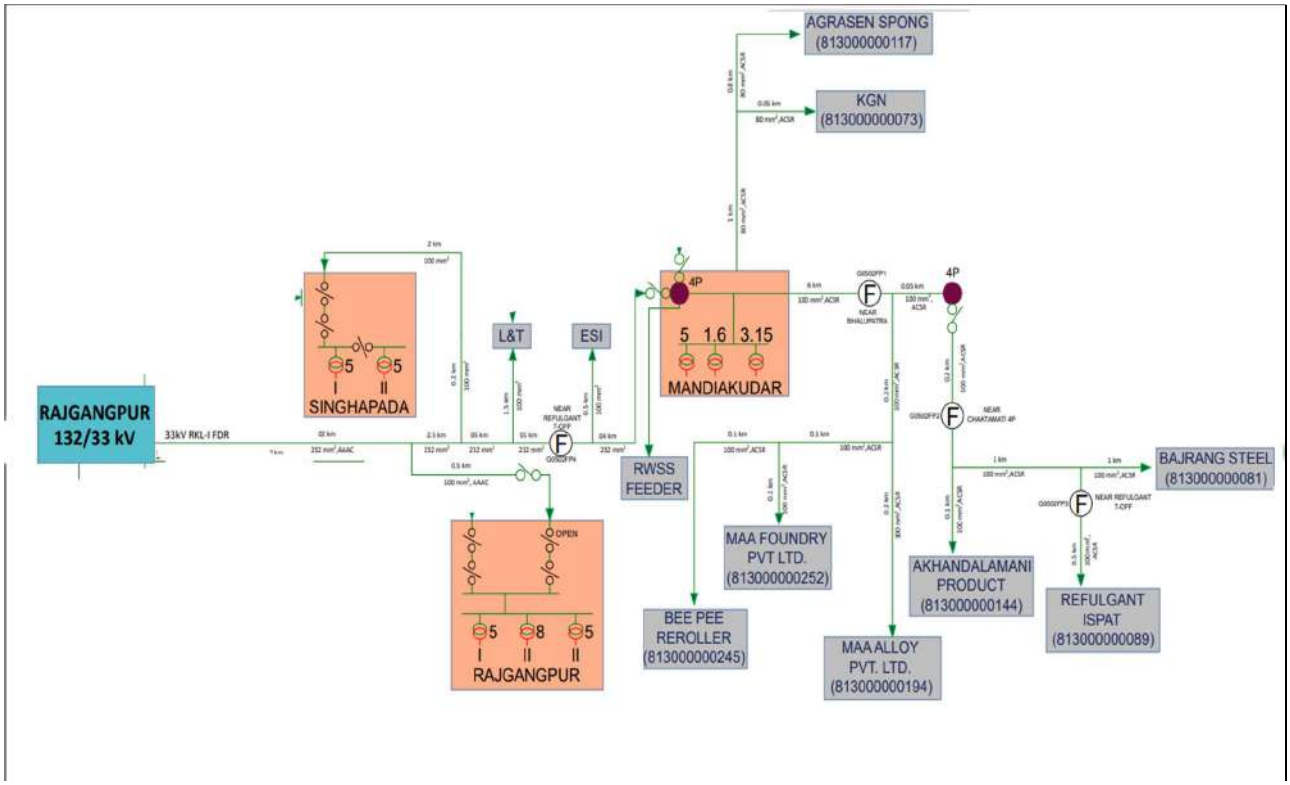
Overhead Line - 62173586

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	429.6	8184.6	7133.5	4012.6		0.89
B	100.0	33.0	19.0	429.6	8184.6	7133.5	4012.6		0.89
C	100.0	33.0	19.0	429.6	8184.6	7133.5	4012.6		0.89
Feeder Name		GSS0502_33KV RKL-I	Loss	Total:	24554	21401	12038	87.8	2.7
Section Length(Mtr)		0.0	1236.24						
Distance from source(Mtr)		0.0	24.12						

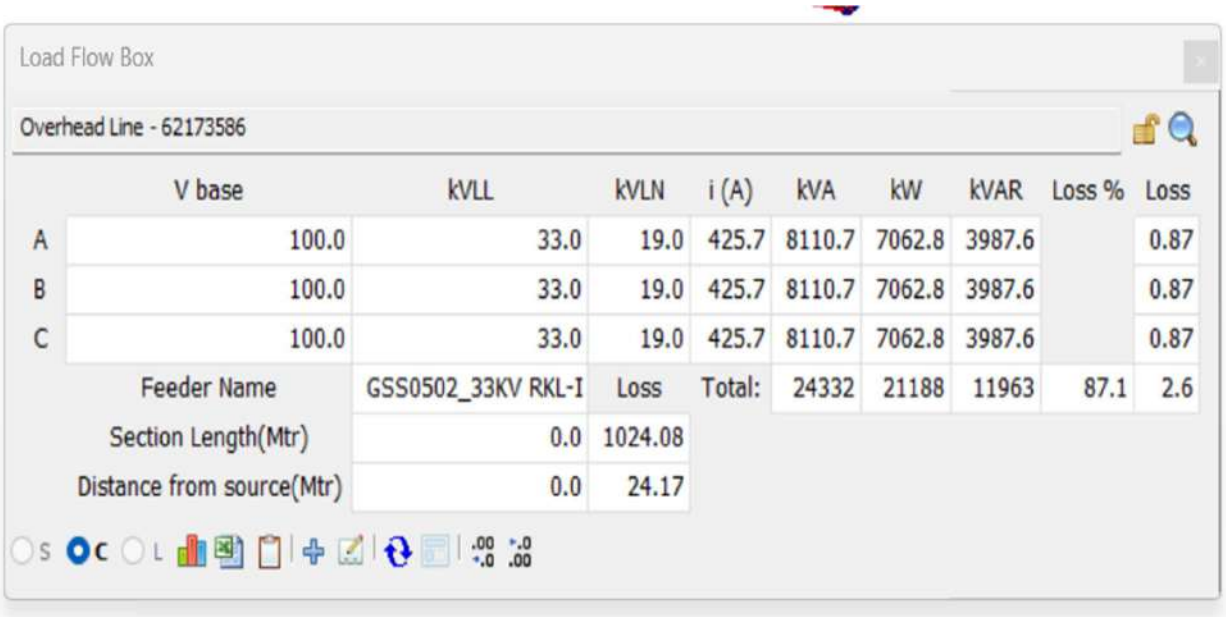
Proposed Scenario:

- It is proposed 6.57Ckm augmentation 33kV trunk line of Rourkela-I feeder from Mandiakudar PSS to Bajrang Steel (HTC) using 13Mtr WPB Poles & AAAC 232Sqmm.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 62173586

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	425.7	8110.7	7062.8	3987.6		0.87
B	100.0	33.0	19.0	425.7	8110.7	7062.8	3987.6		0.87
C	100.0	33.0	19.0	425.7	8110.7	7062.8	3987.6		0.87
Feeder Name		GSS0502_33KV RKL-I	Loss	Total:	24332	21188	11963	87.1	2.6
Section Length(Mtr)		0.0	1024.08						
Distance from source(Mtr)		0.0	24.17						

Scope of Work:

- 6.57 Ckm of 33kV link line using 232 sq.mm Bare conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED-RAJGANGPUR**	
Name of the Sub-Division:	SDO-I RAJGANGPUR	
Name of Section: -	KANSHBAHAL	
Name of the Work: -	33KV Rourkela-I feeder trunk line conductor augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM -6.57 Ckm (Refer Annexure-93)	1.587635901
	Total Amount	**1.587635901**
	Total Amount (In Cr.)	**1.59**
Total estimated cost is Rs.1.59 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.59 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	**Rajgangpur**	RKL-I	21401	1236	**99.38**	**870540.77**	**35.74**
After Proposal	**Rajgangpur**	RKL-I	21188	1025			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	158.76	Rs. Lac
B	Load due to load growth	-	549.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	480	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2857290	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	40.72	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	35.74	Rs. Lac
J	Net Revenue Collected	H+I	76.46	Rs. Lac
K	% revenue return	(J/A)*100	48.2	%
L	Pay Back Period	100/K	2.08	Years

Benefit to the system and consumers:

- Upgrading from 100sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

Mitigation of 33kV Feeder Under Voltage Issue

Proposal for reliability improvement and Mitigation of undervoltage for 33kV Garjanbahal Feeder.

PROPOSAL:

33kV Line Augmentation of Lephripada feeder Kalobahal 4 pole to Garjanbahal PSS

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 55 sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

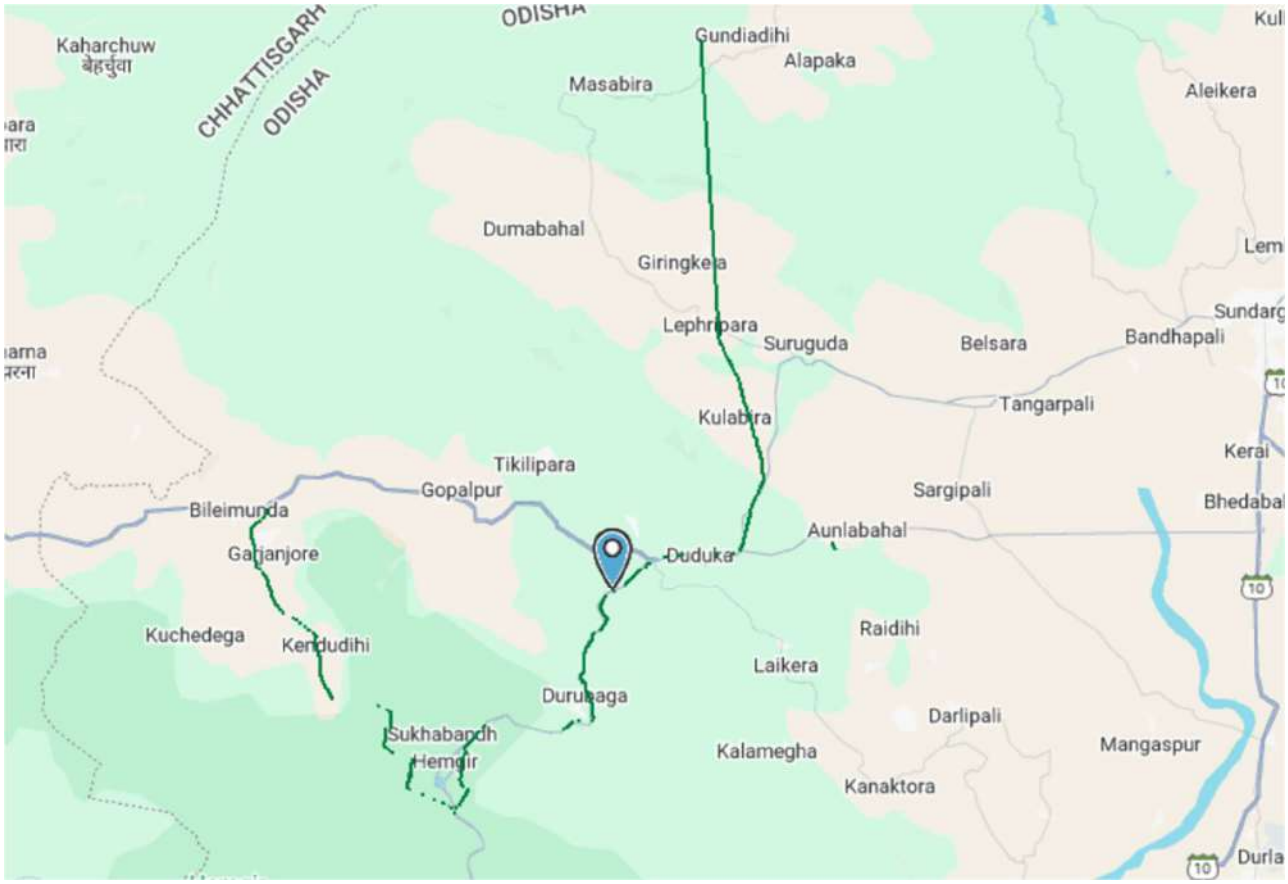
EXISTING SCENARIO: -

- Undervoltage of **29.8 kV** has been observed at **Beleimunda PSS**, which is located at the tail end of the newly proposed **Hemgiri feeder** from **Anulabahal GSS** (46.3 Ckm).
- To mitigate this issue, it is proposed to **upgrade the line from Kalobahal 4 Pole to Garjanbahal PSS** from 55 **sqmm to 232 sqmm conductor**.
- This upgradation will improve the voltage at the tail end (Beleimunda PSS) to **30.1 kV**, thereby addressing the low voltage problem.
- The feeder is of **high revenue importance**, as it supplies power to **Aryan Coal Field area**, and also feeds **Garjanbahal, Hemgiri, and Beleimunda PSS**.

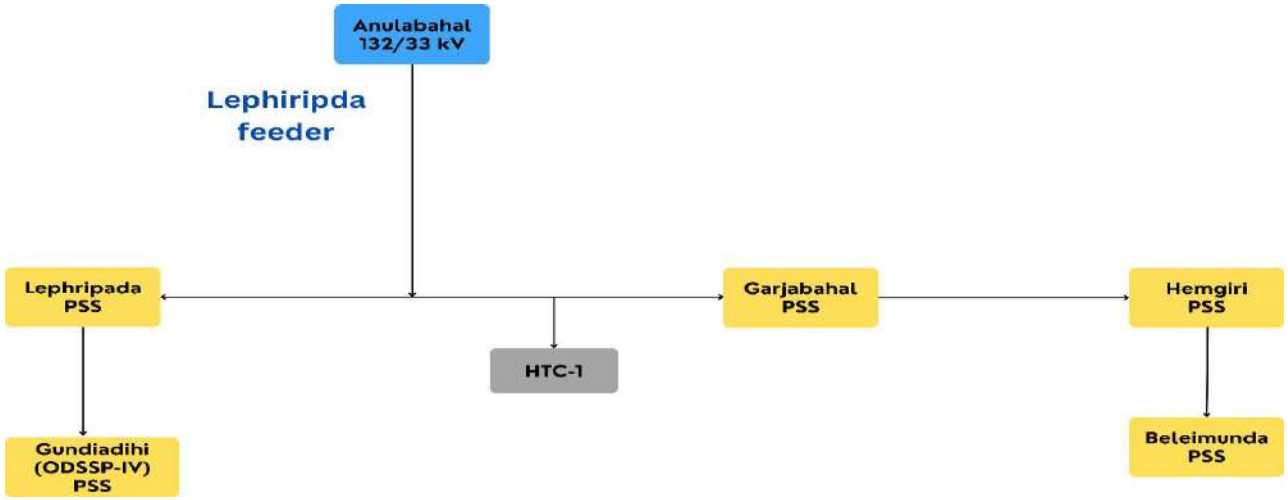
Existing Peak (FY25-26) Loading and projected load of 33kV Lephiripada Feeder:

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
Remja	OPGC	15.5	5.6	36%	Ok	5.98	38.6%	Ok

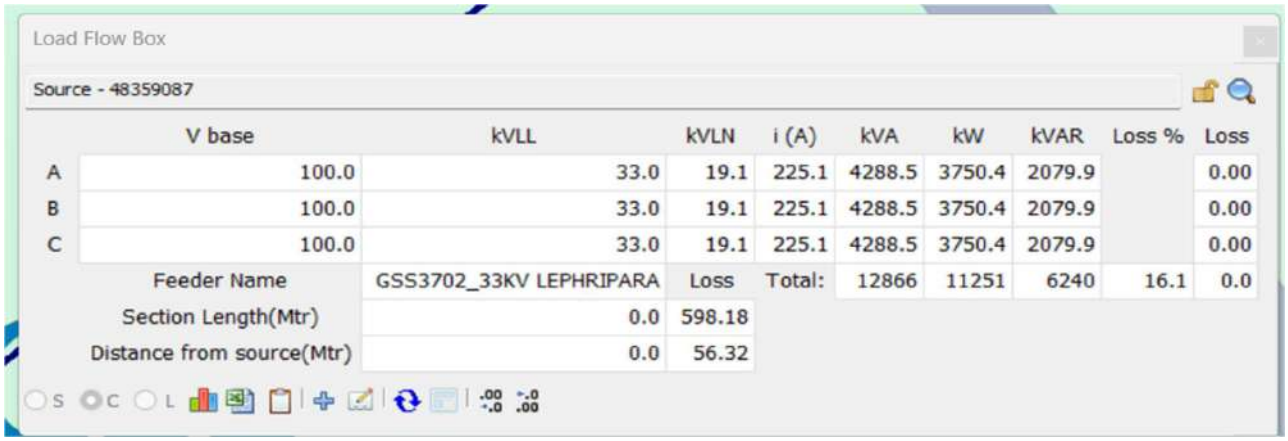
GIS MAP



Existing SLD:



Load Flow Study of existing scenario in Cyme Software

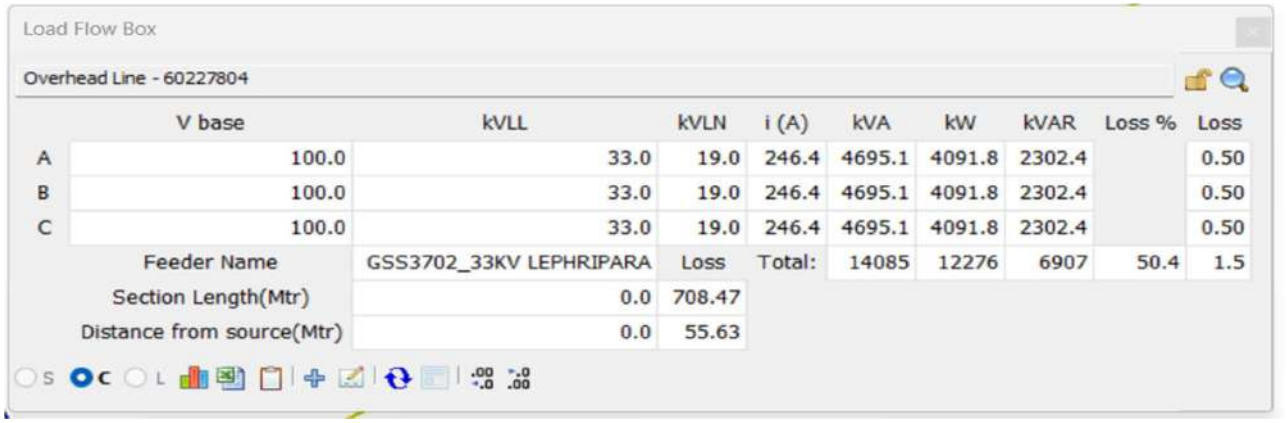


Load Flow Box

Source - 48359087

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	225.1	4288.5	3750.4	2079.9		0.00
B	100.0	33.0	19.1	225.1	4288.5	3750.4	2079.9		0.00
C	100.0	33.0	19.1	225.1	4288.5	3750.4	2079.9		0.00
Feeder Name		GSS3702_33KV LEPHRIPARA	Loss	Total:	12866	11251	6240	16.1	0.0
Section Length(Mtr)		0.0	598.18						
Distance from source(Mtr)		0.0	56.32						

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



Load Flow Box

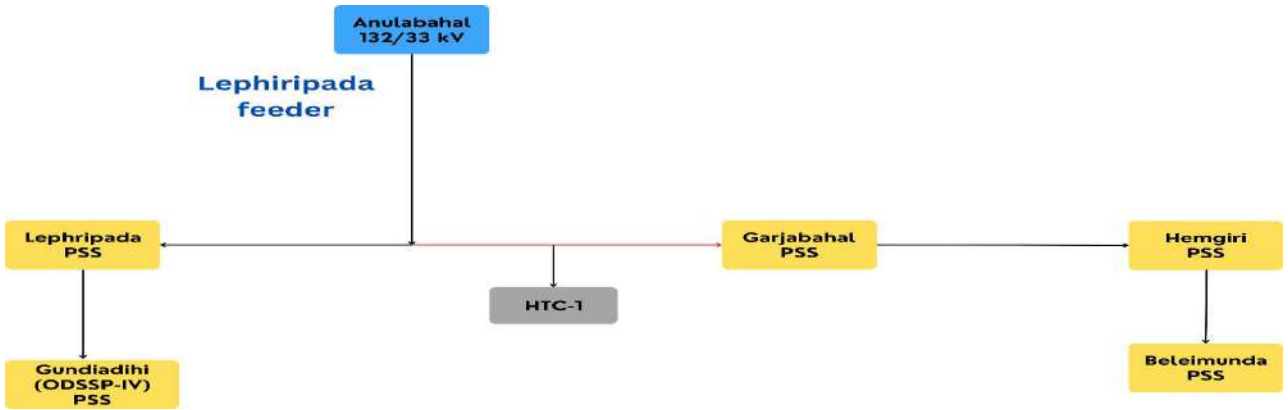
Overhead Line - 60227804

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	246.4	4695.1	4091.8	2302.4		0.50
B	100.0	33.0	19.0	246.4	4695.1	4091.8	2302.4		0.50
C	100.0	33.0	19.0	246.4	4695.1	4091.8	2302.4		0.50
Feeder Name		GSS3702_33KV LEPHRIPARA	Loss	Total:	14085	12276	6907	50.4	1.5
Section Length(Mtr)		0.0	708.47						
Distance from source(Mtr)		0.0	55.63						

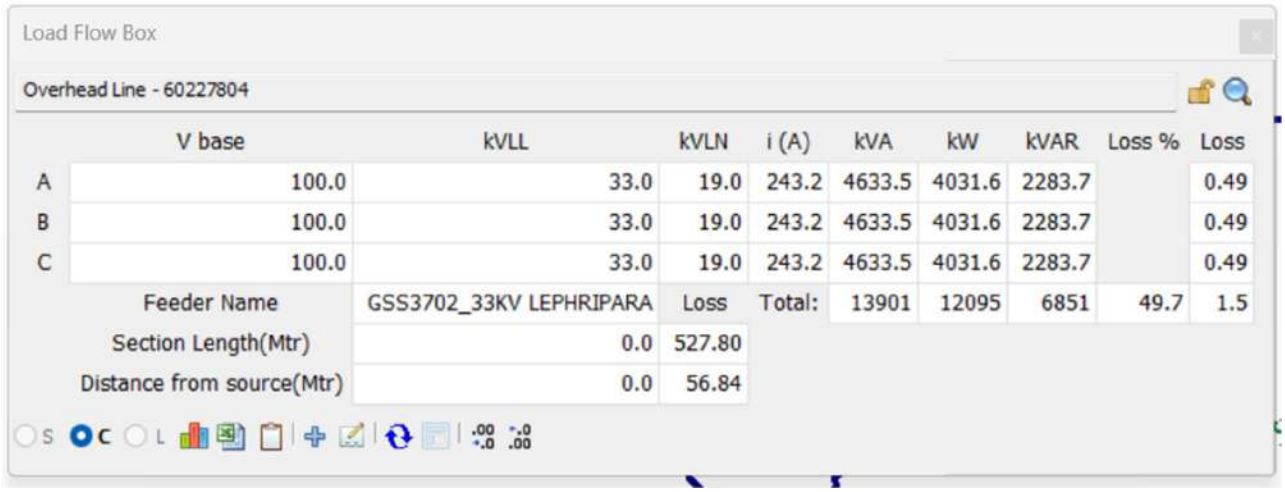
<u>Proposed Scenario:</u>

- It is proposed 6Ckm augmentation 33kV trunk line of Garjanbahal feeder from Kalobahal Chowk to Garjanbahal PSS using 13Mtr WPB Poles & AAAC 232Sqmm.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 60227804

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	243.2	4633.5	4031.6	2283.7		0.49
B	100.0	33.0	19.0	243.2	4633.5	4031.6	2283.7		0.49
C	100.0	33.0	19.0	243.2	4633.5	4031.6	2283.7		0.49
Feeder Name		GSS3702_33KV LEPHRIPARA	Loss	Total:	13901	12095	6851	49.7	1.5
Section Length(Mtr)		0.0	527.80						
Distance from source(Mtr)		0.0	56.84						

Scope of Work:

- 6Ckm of 33kV link line using 232 sq.mm Bare conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**SED-SUNDARGARH**	
Name of the Sub-Division:	UJJALPUR	
Name of Section: -	GOPALPUR	
Name of the Work: -	33KV Garjanbahal feeder trunk line conductor augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (In Cr.)**
1	**PART A:** 33KV CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM (Refer Annexure-93)	1.4498958
	Total Amount	**1.4498958**
	Total Amount (In Cr.)	**1.45**
Total estimated cost is Rs.1.45 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.45 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	33kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF – 0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Anulabahal**	Lephiripada	12276	708	**84.91**	**743854.52**	**30.54**
After Proposal	**Anulabahal**	Lephiripada	12095	528			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	144.99	Rs. Lac
B	Load due to load growth	-	1025.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	897	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	5334648	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	76.02	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	30.54	Rs. Lac
J	Net Revenue Collected	H+I	106.56	Rs. Lac
K	% revenue return	(J/A)*100	73.5	%
L	Pay Back Period	100/K	1.36	Years

Benefit to the system and consumers:

- Upgrading from 55sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

Reliability Improvement of 33kV PGCIL O/G line (NIT feeder)

Proposal for Augmentation of 33kV Line from 55 sq.mm Bare Conductor to 232 sq.mm Covered Conductor (NIT PSS to PGCIL):

33kV PGCIL-O/G trunk line augmentation.

Proposal

33kV Line Augmentation of PGCIL outgoing feeder from NIT PSS to PGCIL

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 55 sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

EXISTING SCENARIO: -

- The existing 33 kV feeder between NIT PSS and PGCIL is currently laid using 55 sq.mm bare ACSR conductor.
-

Existing Peak (FY25-26) Loading and projected load of 33kV NIT 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
Chhend	NIT	26	14.9	57%	Ok	15.86	61%	Ok

Existing SLD:

Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 13084805

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	260.4	4961.4	4323.0	2434.6		0.14
B	100.0	33.0	19.1	260.4	4961.4	4323.0	2434.6		0.14
C	100.0	33.0	19.1	260.4	4961.4	4323.0	2434.6		0.14
	Feeder Name	GSS0107_33KV NIT	Loss	Total:	14884	12969	7304	53.3	0.4
	Section Length(Mtr)	0.0	594.30						
	Distance from source(Mtr)	0.0	40.18						

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

Load Flow Box

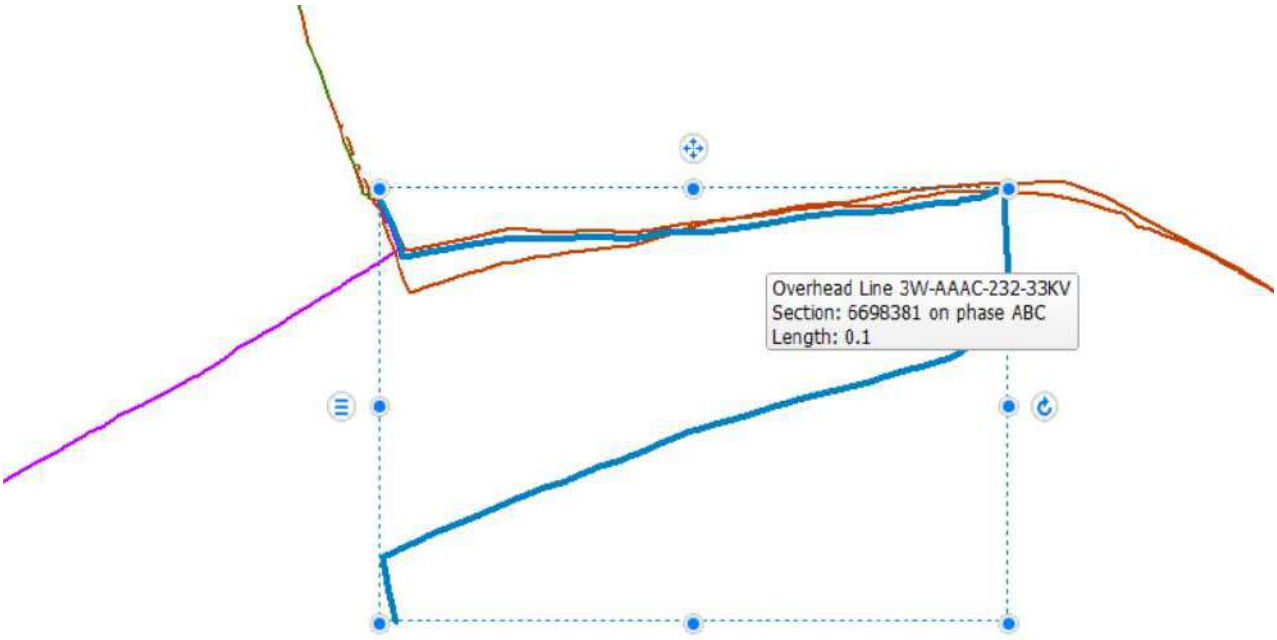
Overhead Line - 13084805

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	277.5	5287.9	4592.5	2621.2		0.16
B	100.0	33.0	19.1	277.5	5287.9	4592.5	2621.2		0.16
C	100.0	33.0	19.1	277.5	5287.9	4592.5	2621.2		0.16
Feeder Name		GSS0107_33KV NIT	Loss	Total:	15864	13778	7864	56.8	0.5
Section Length(Mtr)		0.0	669.03						
Distance from source(Mtr)		0.0	39.78						

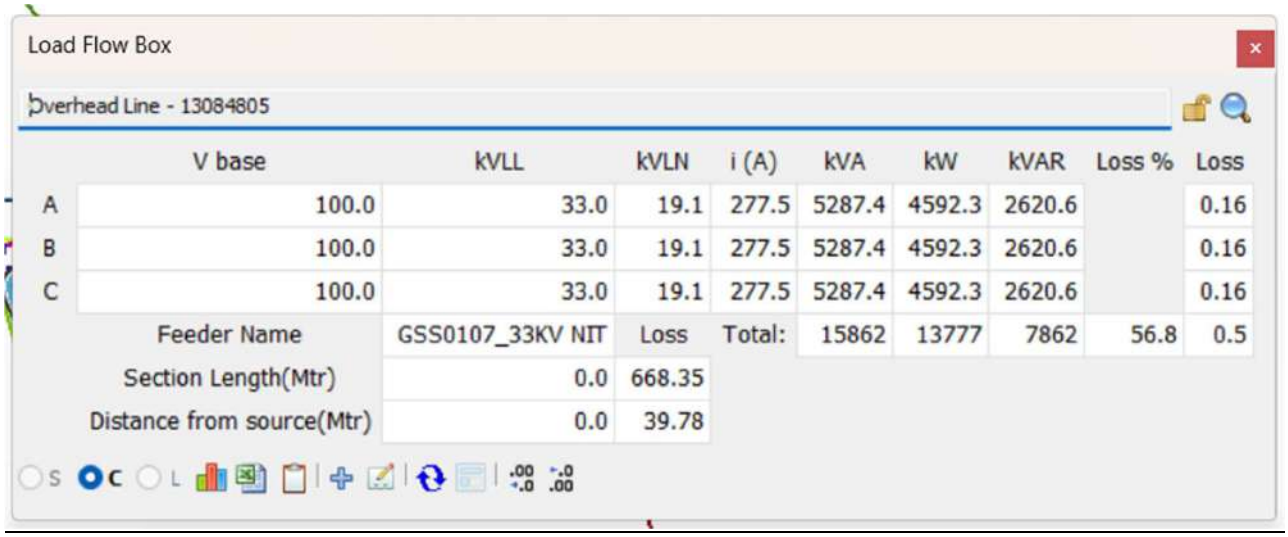
Proposed Scenario:

- It is proposed 3 Ckm augmentation PGCIL feeder from NIT PSS to PGCIL using 13Mtr WPB Poles & AAAC 232Sqmm insulated.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 13084805

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	277.5	5287.4	4592.3	2620.6		0.16
B	100.0	33.0	19.1	277.5	5287.4	4592.3	2620.6		0.16
C	100.0	33.0	19.1	277.5	5287.4	4592.3	2620.6		0.16
Feeder Name		GSS0107_33KV NIT	Loss	Total:	15862	13777	7862	56.8	0.5
Section Length(Mtr)		0.0	668.35						
Distance from source(Mtr)		0.0	39.78						

Scope of Work:

- 3 Ckm of 33kV link line using 232 sq.mm cover conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division:	Koel Nagar	
Name of Section: -	Shakti Nagar	
Name of the Work: -	33kV Augmentation from NIT PSS to PGCIL	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV Cover CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM cover conductor- 3 Ckm (Refer Annexure-56)	0.9132
	Total Amount	**0.9132**
	Total Amount (In Cr.)	**0.91**
Total estimated cost is Rs.0.91 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.91 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	**Chhend**	NIT	13778	669	**0.32**	**2799.70**	**0.11**
After Proposal	**Chhend**	NIT	13777	668			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	91.32	Rs. Lac
B	Load due to load growth	-	924.57	kVA
C	Total kW due to load growth	1.732*33*B*Pf	809	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	4811964	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	68.57	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.11	Rs. Lac
J	Net Revenue Collected	H+I	68.68	Rs. Lac
K	% revenue return	(J/A)*100	75.2	%
L	Pay Back Period	100/K	1.33	Years

Benefit to the system and consumers:

- Upgrading from 55sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

Augmentation of 33kV Feeder For Reliable Power Supply

Proposal for reliability improvement and 33kV Line Augmentation of Basanti Feeder.

PROPOSAL:

33kV Line Augmentation of Basanti feeder from Chhend GSS(Near By) to Ring road

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 100 sq. mm to 232 sq. mm AAAC to provide Reliable power supply and increases current carrying capacity and reduces line losses and voltage drop.

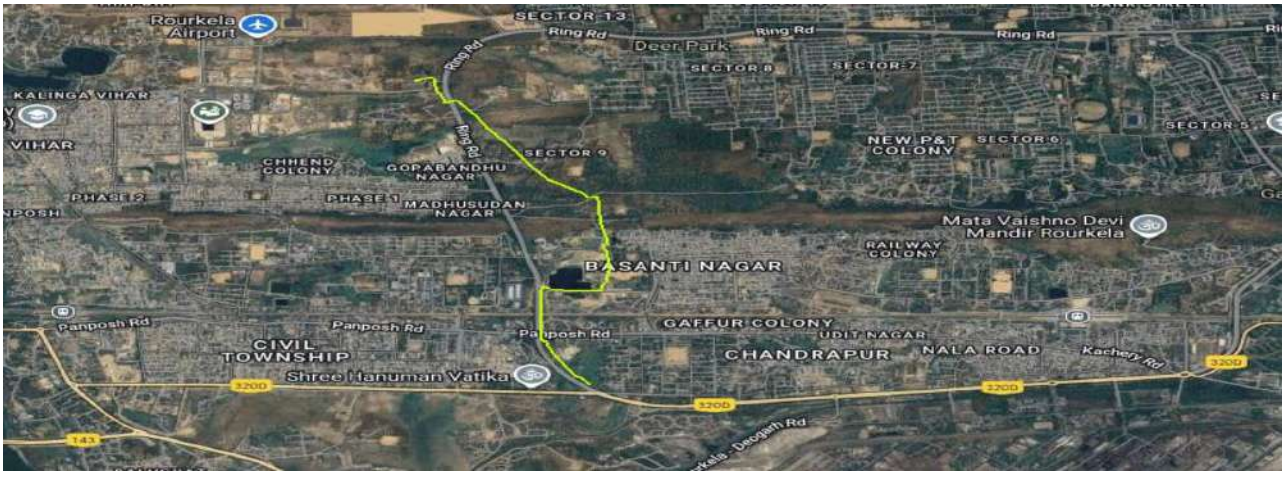
EXISTING SCENARIO: -

- The Basanti feeder is a critical 33 kV power corridor supplying key load centres in the area. Most of the feeder has already been augmented with **232 sq.mm covered conductor**, except for a specific stretch near the **Ring Road crossing**, which still uses a smaller conductor (presumably **100 sq.mm** or similar).
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Existing poles are in deteriorated conditions which results mechanical failure of lines as well as Higher risk of trippings and breakdowns

Existing Peak (FY25-26) Loading and projected load of 33kV Basanti Feeder:

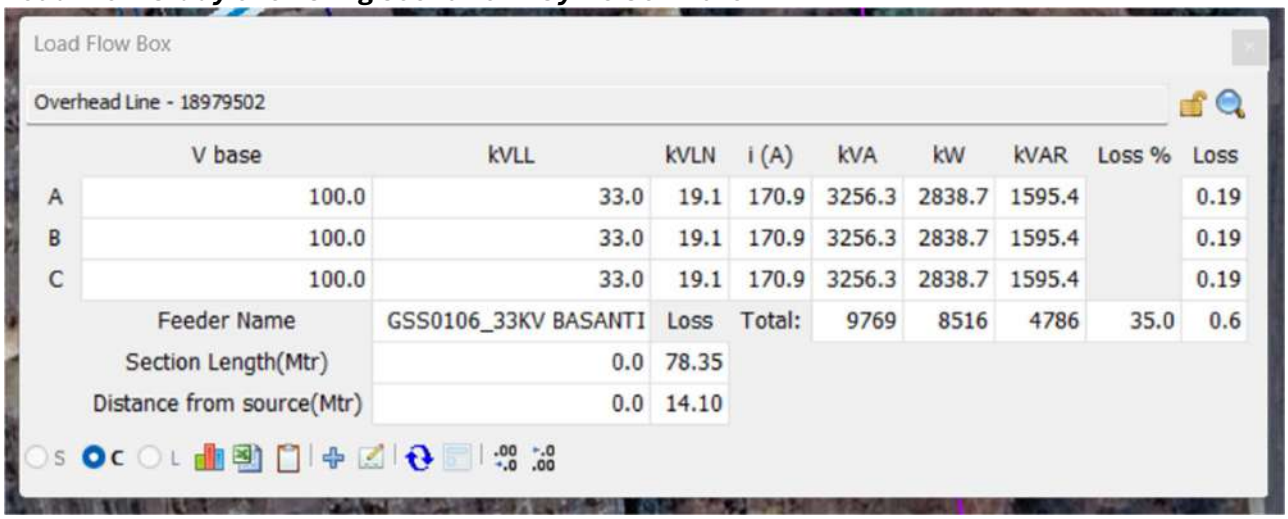
Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY25 (MVA)**	**% Loading**	**Feeder Overloading Status**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Chhend	Basanti	26	9.8	38%	Ok	10.7	41%	Ok

GIS MAP



Existing SLD:

Load Flow Study of existing scenario in Cyme Software

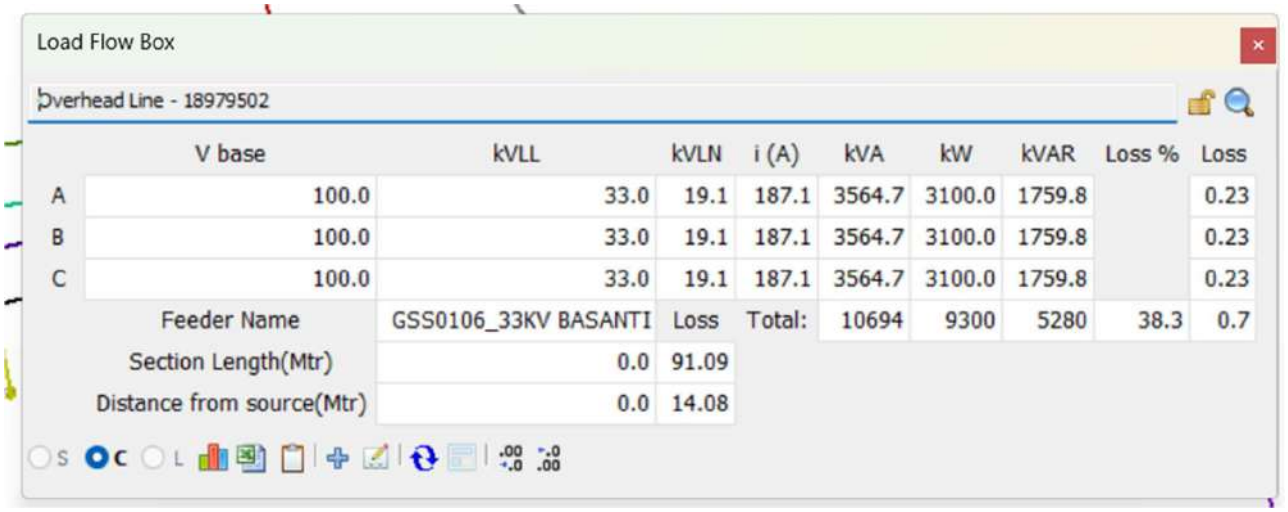


Load Flow Box

Overhead Line - 18979502

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	170.9	3256.3	2838.7	1595.4		0.19
B	100.0	33.0	19.1	170.9	3256.3	2838.7	1595.4		0.19
C	100.0	33.0	19.1	170.9	3256.3	2838.7	1595.4		0.19
	Feeder Name	GSS0106_33KV BASANTI	Loss	Total:	9769	8516	4786	35.0	0.6
	Section Length(Mtr)	0.0	78.35						
	Distance from source(Mtr)	0.0	14.10						

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



Load Flow Box

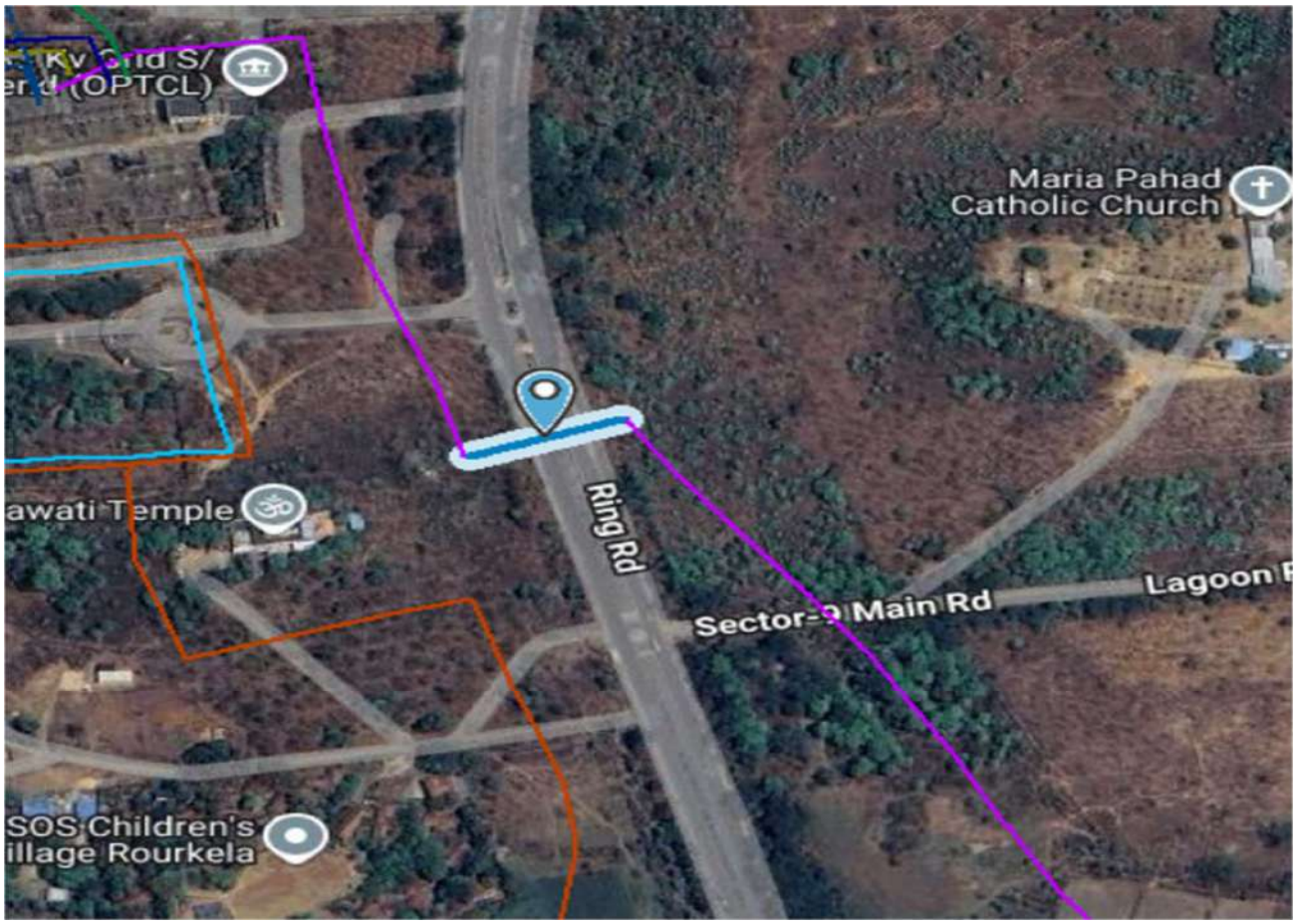
Overhead Line - 18979502

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	187.1	3564.7	3100.0	1759.8		0.23
B	100.0	33.0	19.1	187.1	3564.7	3100.0	1759.8		0.23
C	100.0	33.0	19.1	187.1	3564.7	3100.0	1759.8		0.23
	Feeder Name	GSS0106_33KV BASANTI	Loss	Total:	10694	9300	5280	38.3	0.7
	Section Length(Mtr)	0.0	91.09						
	Distance from source(Mtr)	0.0	14.08						

Proposed Scenario:

- It is proposed 0.2 Ckm augmentation 33kV trunk line of Basanti feeder, ring road crossing near Chhend GSS using 13Mtr WPB Poles & AAAC 232Sqmm.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software

Load Flow Box

Overhead Line - 18979502

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	187.1	3564.2	3099.5	1759.7		0.23
B	100.0	33.0	19.1	187.1	3564.2	3099.5	1759.7		0.23
C	100.0	33.0	19.1	187.1	3564.2	3099.5	1759.7		0.23
	Feeder Name	GSS0106_33KV BASANTI	Loss	Total:	10693	9298	5279	38.3	0.7
	Section Length(Mtr)	0.0	89.49						
	Distance from source(Mtr)	0.0	14.09						

Scope of Work:

- 0.2 Ckm of 33kV link line using 232 sq.mm Bare conductor.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division:	SDO-I	
Name of Section: -	Basanti	
Name of the Work: -	33KV Rourkela-I feeder trunk line conductor augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM (Refer Annexure-93)	0.04832986
	Total Amount (In Cr.)	**0.04832986**
	Total Amount (In Cr.)	**0.05**
Total estimated cost is Rs.0.05 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.05Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

- Reliability improvement of 33kV Basanti feeder

Benefit to the system and consumers:

- Upgrading from 100sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

------End-----

Reliability improvement of 33kV Feeder

1.0 Proposal for reliability improvement for 33KV Industrial Estate feeder.

PROPOSAL:

33KV Line Augmentation of Industrial Estate fdr from Kachrapulia to Utkal flour Mill

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

33KV Industrial Estate feeder trunk line conductor augmentation.

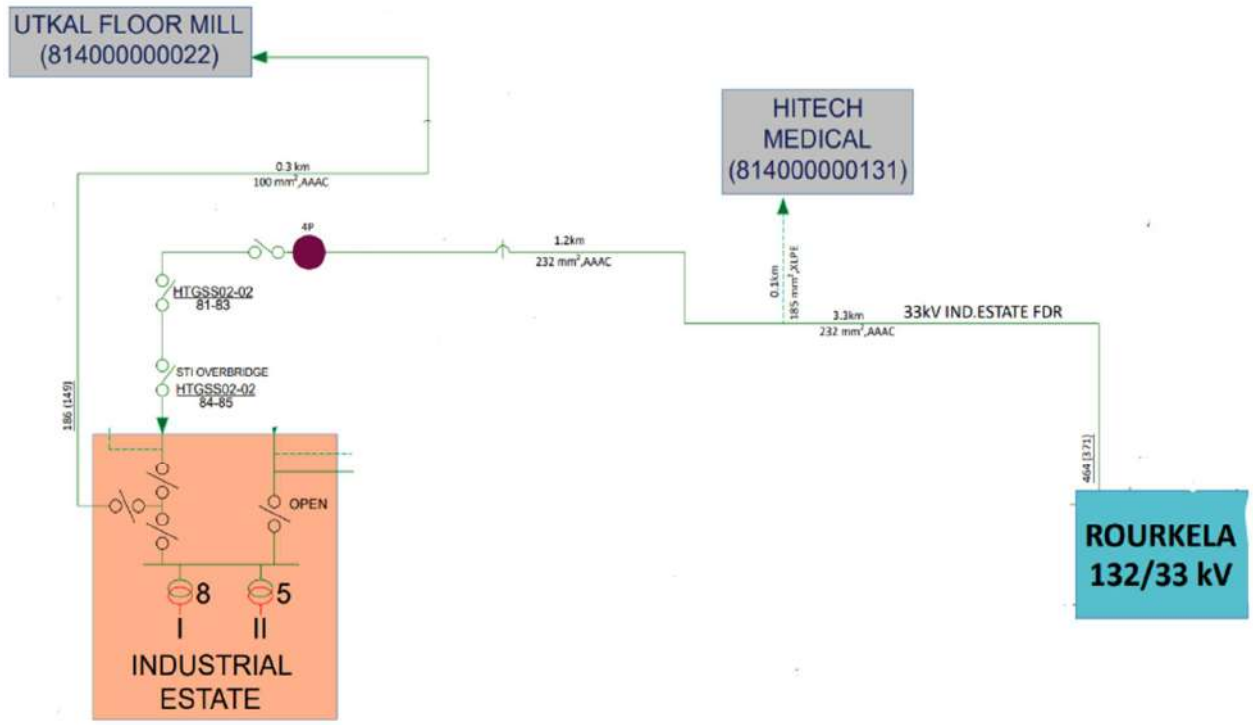
EXISTING SCENARIO: -

- In present Scenario from Kachrapulia to Utkal Flour part of the 33KV Industrial Estate feeder is more than **20 years old**, resulting in severe deterioration of physical condition.
- At multiple locations, the feeder has inadequate ground clearance, long spans, bent and broken 33kV V-cross arms, and low phase-to-phase clearance, which leads to frequent tripping and unplanned outages.
- Additionally, this section of the feeder passes through slum areas, where the risk of accidents is significantly high. In case of conductor snapping, there is a serious safety hazard to human lives and property.

Existing Peak (FY25-26) Loading and projected load of 33kV Industrial Estate 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	Industrial Estate	26	5.77	22%	Ok	6.25	24%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 3290902

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	101.1	1926.1	1681.6	939.1		0.02
B	100.0	33.0	19.1	101.1	1926.1	1681.6	939.1		0.02
C	100.0	33.0	19.1	101.1	1926.1	1681.6	939.1		0.02
Feeder Name		GSS0202_33KV_INDUSTRIAL ESTATE	Loss	Total:	5778	5045	2817	20.7	0.1
Section Length(Mtr)		0.0	47.29						
Distance from source(Mtr)		0.0	12.61						

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

Load Flow Box

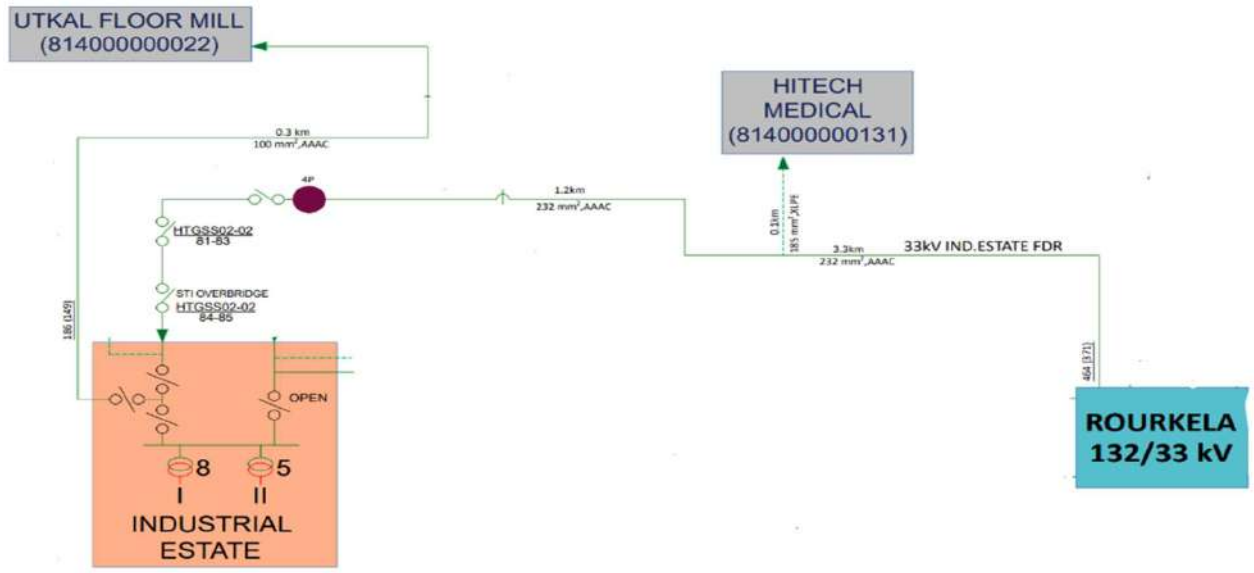
Overhead Line - 3290902

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	109.4	2084.0	1816.8	1020.9		0.02
B	100.0	33.0	19.1	109.4	2084.0	1816.8	1020.9		0.02
C	100.0	33.0	19.1	109.4	2084.0	1816.8	1020.9		0.02
Feeder Name		GSS0202_33KV_INDUSTRIAL ESTATE	Loss	Total:	6252	5450	3063	22.4	0.1
Section Length(Mtr)		0.0	53.64						
Distance from source(Mtr)		0.0	12.60						

<u>Proposed Scenario:</u>

- It is proposed 2.5 Ckm augmentation 33kV trunk line of Industrial Estate feeder from Kachrapulia to Utkal Flour mill using 13Mtr WPB Poles & AAAC 232Sqmm insulated conductor.
- It is proposed 1 km UG cable using 3C-400Sqmm Xlpe cable. As, one section is ow-lying wet land with grassy vegetation, so it is proposed UG cable.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	109.1	2077.9	1816.2	1009.7		0.00
B	100.0	33.0	19.1	109.1	2077.9	1816.2	1009.7		0.00
C	100.0	33.0	19.1	109.1	2077.9	1816.2	1009.7		0.00
	Feeder Name	GSS0202_33KV_INDUSTRIAL ESTATE	Loss	Total:	6234	5448	3029	22.3	0.0
	Section Length(Mtr)	0.0	51.76						
	Distance from source(Mtr)	0.0	12.61						

Scope of Work:

- 1 Km of 33kV Line using 400SQmm xlpe cable.
- 2.5 Ckm of 33kV link line using 232 sq.mm insulated conductor(due to presence of Vegetation)

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: -	INDUSTRIAL ESTATE	
Name of the Work: -	33KV Industrial Estate feeder trunk line conductor augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (in Cr.)**
1	**PART A:** 33KV insulated CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM (Refer Annexure-56)	0.761
2	33KV XLPE UG CABLE (3C-400SQMM) (Refer Annexure-167)	0.896424
	Total Amount (in Cr.)	**1.657424**
	Total Amount (In Cr.)	**1.66**
Total estimated cost is Rs.1.66 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.66 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	**Rourkela**	Industrail Estate	5450	54	**0.88**	**7740.34**	**0.32**
After Proposal	**Rourkela**	Industrail Estate	5448	52			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	165.74	Rs. Lac
B	Load due to load growth	-	405.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	354	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2107837	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	30.04	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.32	Rs. Lac
J	Net Revenue Collected	H+I	30.36	Rs. Lac
K	% revenue return	(J/A)*100	18.3	%
L	Pay Back Period	100/K	5.46	Years

Benefit to the system and consumers:

- Upgrading from 80sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, hot spots) and maintenance costs; replacing them with underground cable improves reliability and safety.

Reliability Improvement of 33kV Feeder

1.0 Proposal for reliability improvement for 33KV Pilot Project feeder.

PROPOSAL:

33KV Line Augmentation Pilot Project feeder from Kachrapulia to STI Overbridge

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

33KV Pilot Project feeder trunk line conductor augmentation.

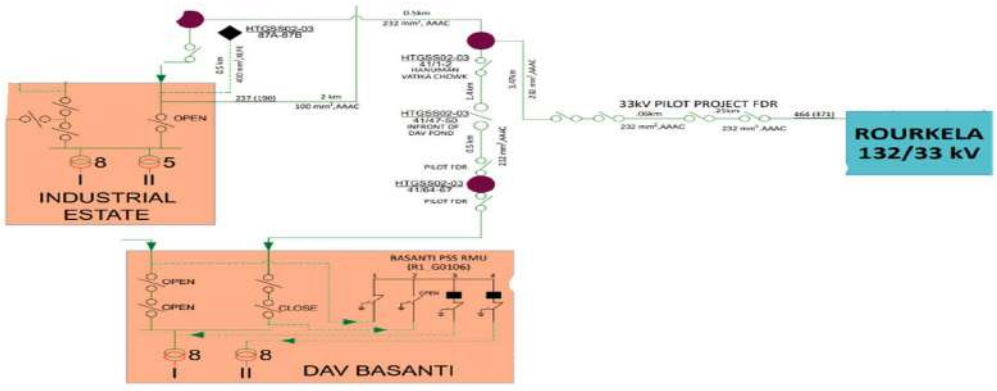
EXISTING SCENARIO: -

- In present Scenario from Kachrapulia to STI Over Bridge of the 33KV Pilot Project feeder is more than **20 years old**, resulting in severe deterioration of physical condition.
- At multiple locations, the feeder has inadequate ground clearance, long spans, bent and broken 33kV V-cross arms, and low phase-to-phase clearance, which leads to frequent tripping and unplanned outages.
- Additionally, this section of the feeder passes through slum areas, where the risk of accidents is significantly high. In case of conductor snapping, there is a serious safety hazard to human lives and property.

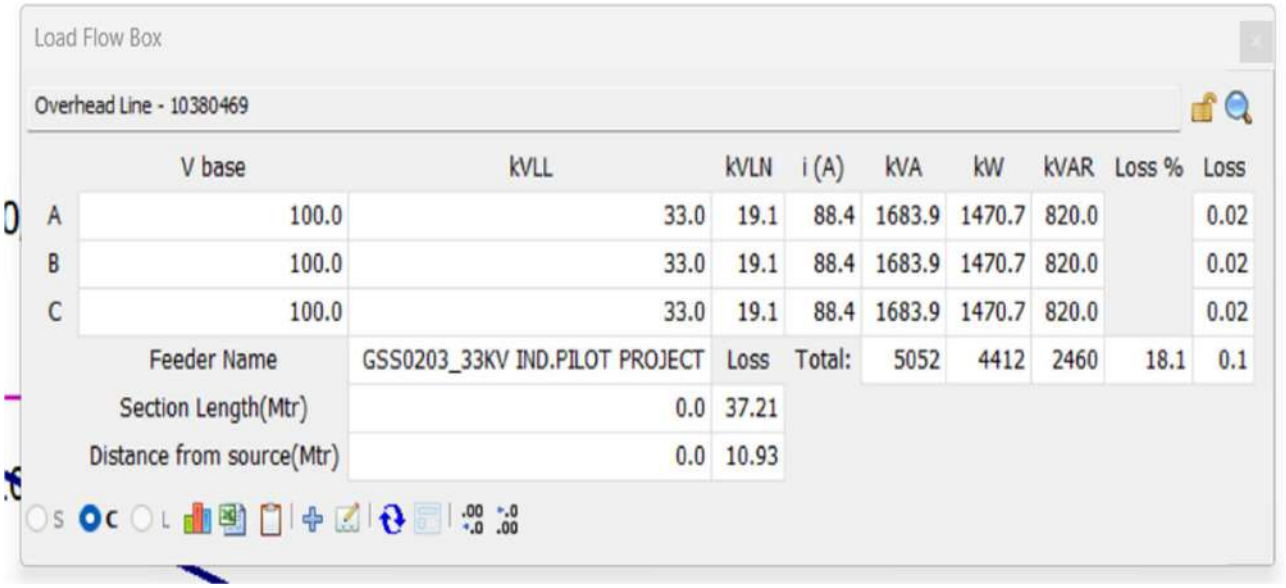
Existing Peak (FY25-26) Loading and projected load of 33kV Pilot Project Feeder:

Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Rourkela	Pilot Project	26	5.05	19%	Ok	5.5	21%	Ok

Existing SLD:

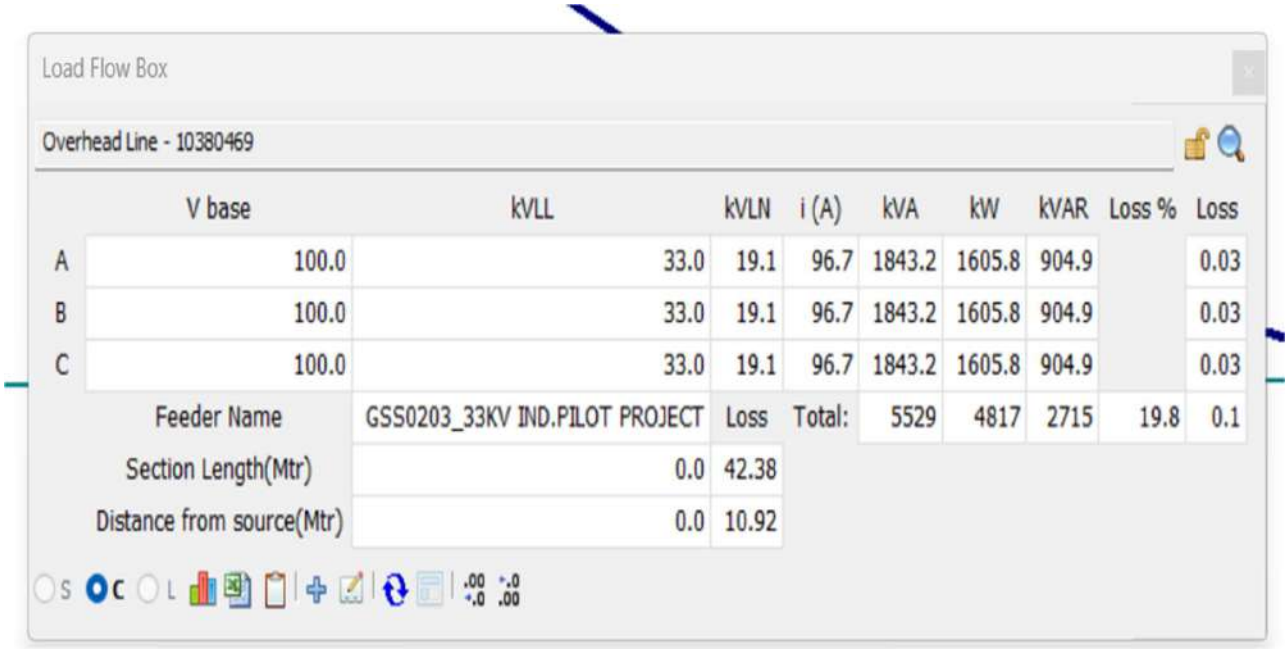


Load Flow Study of existing scenario in Cyme Software



	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		0.02
B	100.0	33.0		19.1	88.4	1683.9	1470.7	820.0		0.02
C	100.0	33.0		19.1	88.4	1683.9	1470.7	820.0		0.02
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:		5052	4412	2460	18.1	0.1
Section Length(Mtr)		0.0	37.21							
Distance from source(Mtr)		0.0	10.93							

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

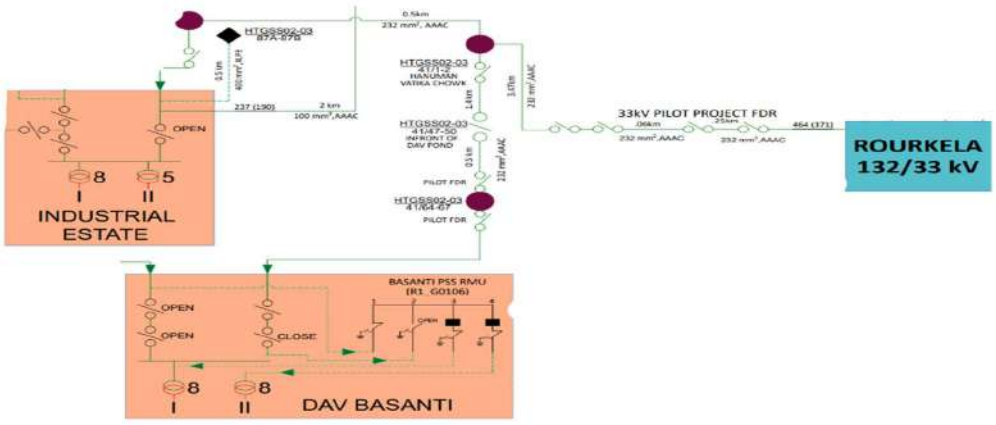


	V base	kVLL		kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0		19.1	96.7	1843.2	1605.8	904.9		0.03
B	100.0	33.0		19.1	96.7	1843.2	1605.8	904.9		0.03
C	100.0	33.0		19.1	96.7	1843.2	1605.8	904.9		0.03
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:		5529	4817	2715	19.8	0.1
Section Length(Mtr)		0.0	42.38							
Distance from source(Mtr)		0.0	10.92							

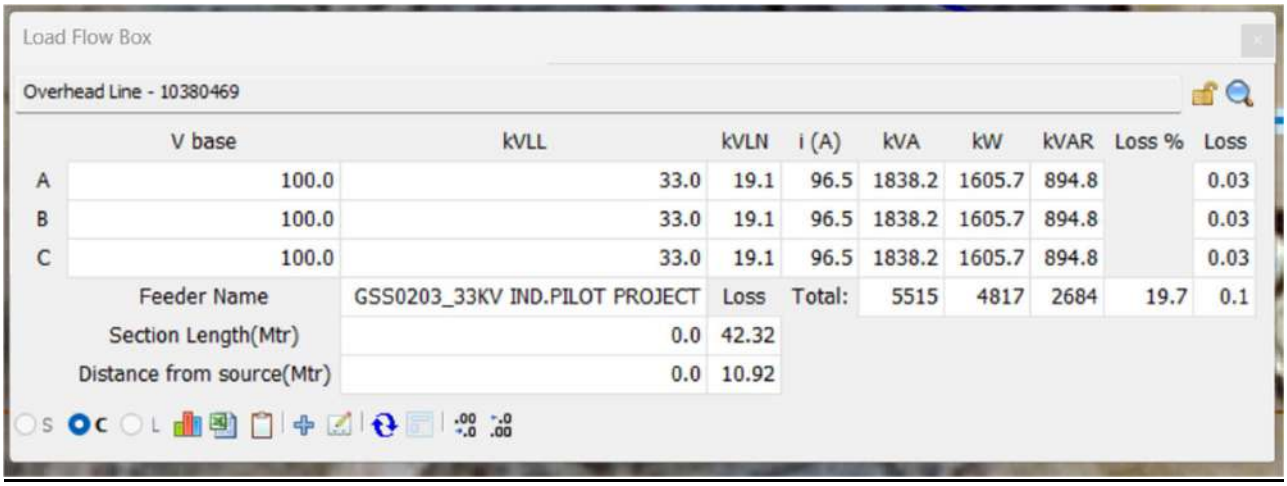
<u>Proposed Scenario:</u>

- It is proposed 1 km UG cable using 3C-400Sqmm Xlpe cable. As, one section is low-lying wet land with grassy vegetation, so it is proposed UG cable.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software



Load Flow Box

Overhead Line - 10380469

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	96.5	1838.2	1605.7	894.8		0.03
B	100.0	33.0	19.1	96.5	1838.2	1605.7	894.8		0.03
C	100.0	33.0	19.1	96.5	1838.2	1605.7	894.8		0.03
Feeder Name		GSS0203_33KV IND.PILOT PROJECT	Loss	Total:	5515	4817	2684	19.7	0.1
Section Length(Mtr)		0.0	42.32						
Distance from source(Mtr)		0.0	10.92						

Scope of Work:

- 1 Km of 33kV Line using 400SQmm xlpe cable.

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: -	INDUSTRIAL ESTATE
Name of the Work: -	33KV Pilot Project feeder trunk line conductor augmentation.
Names of Schemes: -	TPWODL CAPEX (FY 26-27)

ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (in Cr.)**
1	33KV XLPE UG CABLE (3C-400SQMM) (Refer Annexure-167)	0.896424
	Total Amount (in Cr.)	**0.896424**
	Total Amount (In Cr.)	**0.9**
Total estimated cost is Rs.0.9 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.9 Cr. (For detailed BoQ refer Annexure)

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	**Rourkela**	Pilot Project	4817	42	**0.03**	**247.03**	**0.01**
After Proposal	**Rourkela**	Pilot Project	4817	42			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	89.64	Rs. Lac
B	Load due to load growth	-	405.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	354	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2107837	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	30.04	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.32	Rs. Lac
J	Net Revenue Collected	H+I	30.36	Rs. Lac
K	% revenue return	(J/A)*100	33.9	%
L	Pay Back Period	100/K	2.95	Years

Benefit to the system and consumers:

- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them underground cable improves system reliability and safety

Augmentation of 33kV Feeder For Reliable Power Supply

1.0 Proposal for reliability improvement and 33kV Line Augmentation of Purnapani Feeder.

PROPOSAL:

33kV line Augmentation Purnapani fdr from Akanksha Hostel to Sarvesh factory

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Reliability improvement of Kalinga Vihar PSS through N-1 source from 33kV Purnapani feeder
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

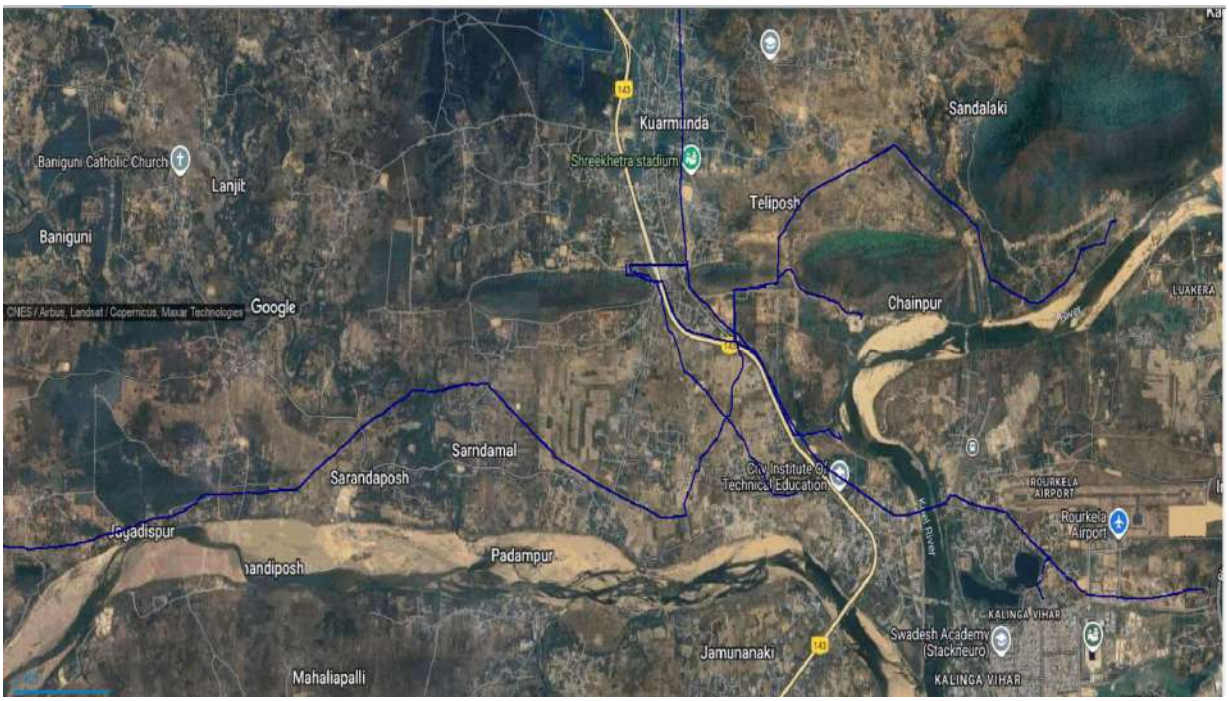
EXISTING SCENARIO: -

- The **Purnapani 33kV feeder** is a vital power supply link catering to residential, institutional, and industrial loads in and around the **BPUT to Kuarmunda** region. The existing line section between **Akanksha Hostel (BPUT) to Sarvesh factory near to Kuarmunda GSS** is currently strung with **100 sq.mm AAAC conductor**, which has become inadequate in view of the **increasing power demand**.
- Kalinga Vihar is the commercial area of Rourkela city and therefore an uninterrupted power supply is necessary for this area occur.
- The Kalinga Vihar serves a critical urban load center within the Kalinga Vihar area of Rourkela, encompassing residential, commercial, and institutional consumers. Currently.
  - This feeder feeds Kalinga Vihar PSS as N-1 source and Kalinga Vihar PSS comes under Rourkela City.
  - So upgradation of said section is required to augment from 100 Sqmm conductor to 232Sqmm conductor.

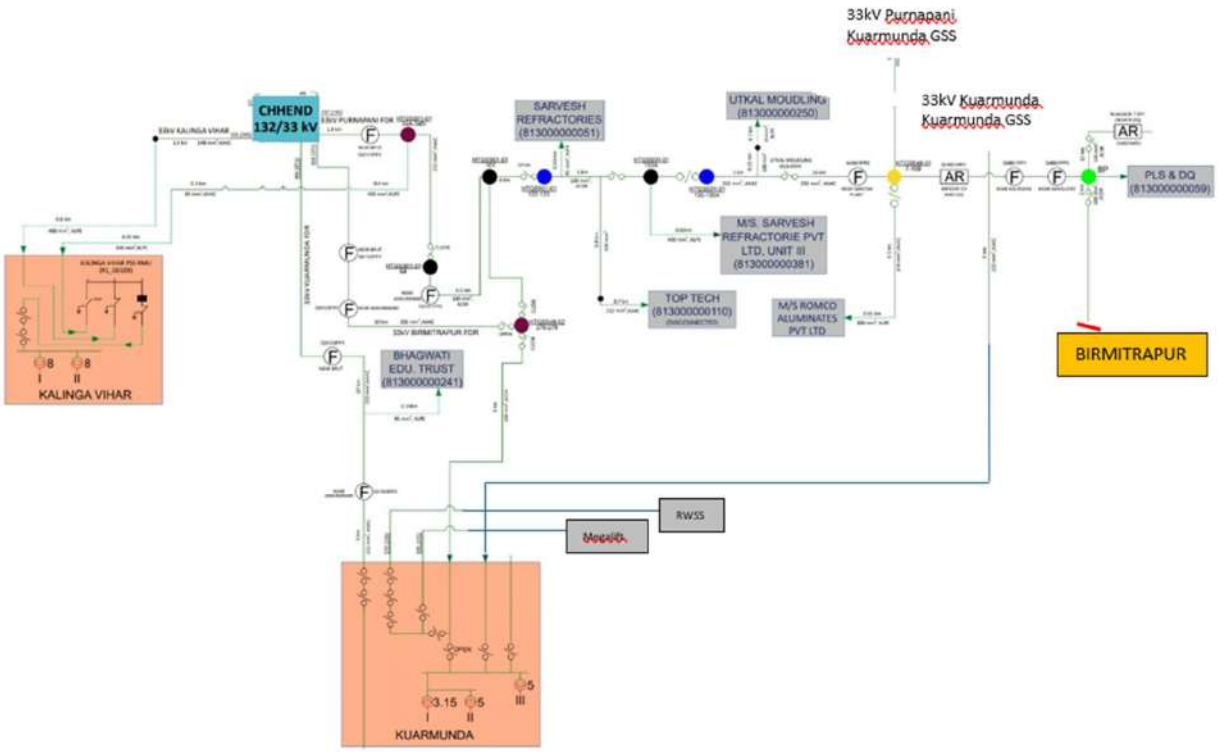
Existing Peak (FY25-26) Loading and projected load of Purnapani Feeder:

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
Chhend	Purnapani	15.5	5.6	11%	Ok	5.6	11%	Ok

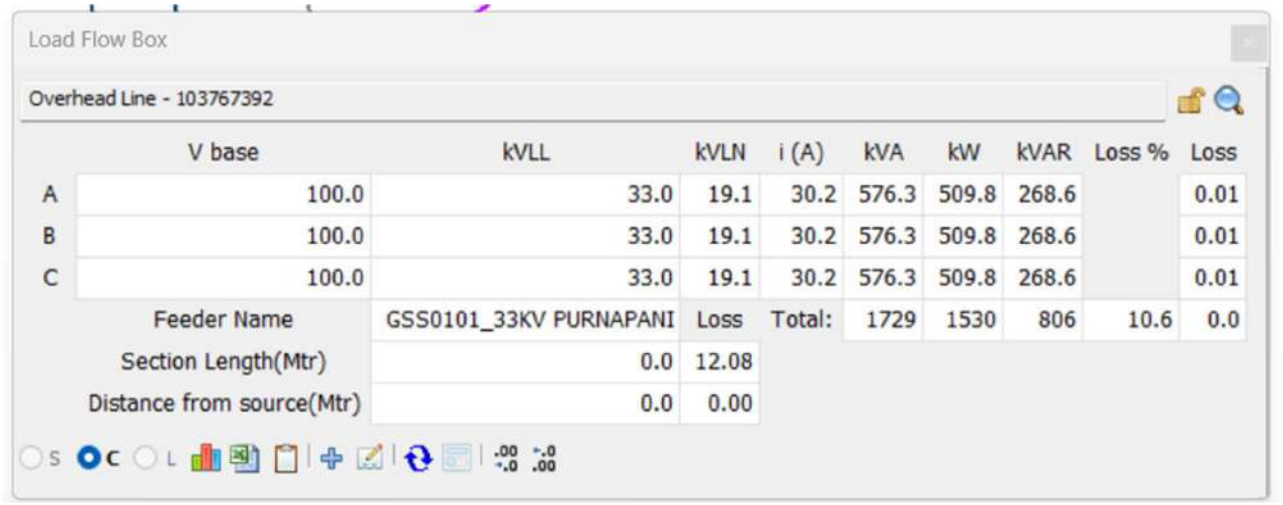
GIS MAP



Existing SLD:

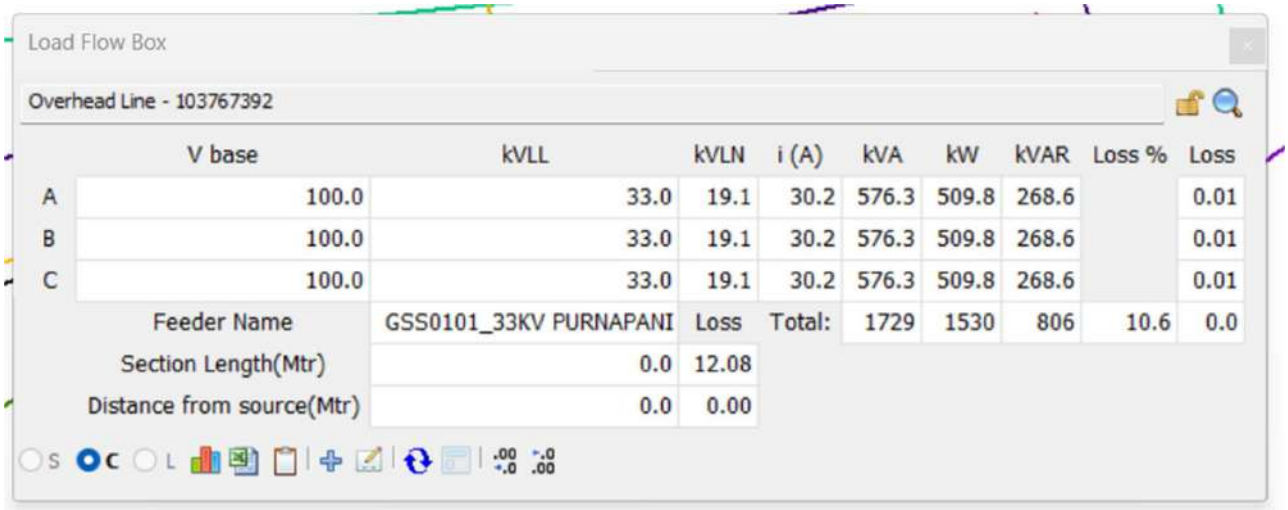


Load Flow Study of existing scenario in Cyme Software



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
B	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
C	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
Feeder Name		GSS0101_33KV PURNAPANI	Loss	Total:	1729	1530	806	10.6	0.0
Section Length(Mtr)		0.0	12.08						
Distance from source(Mtr)		0.0	0.00						

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

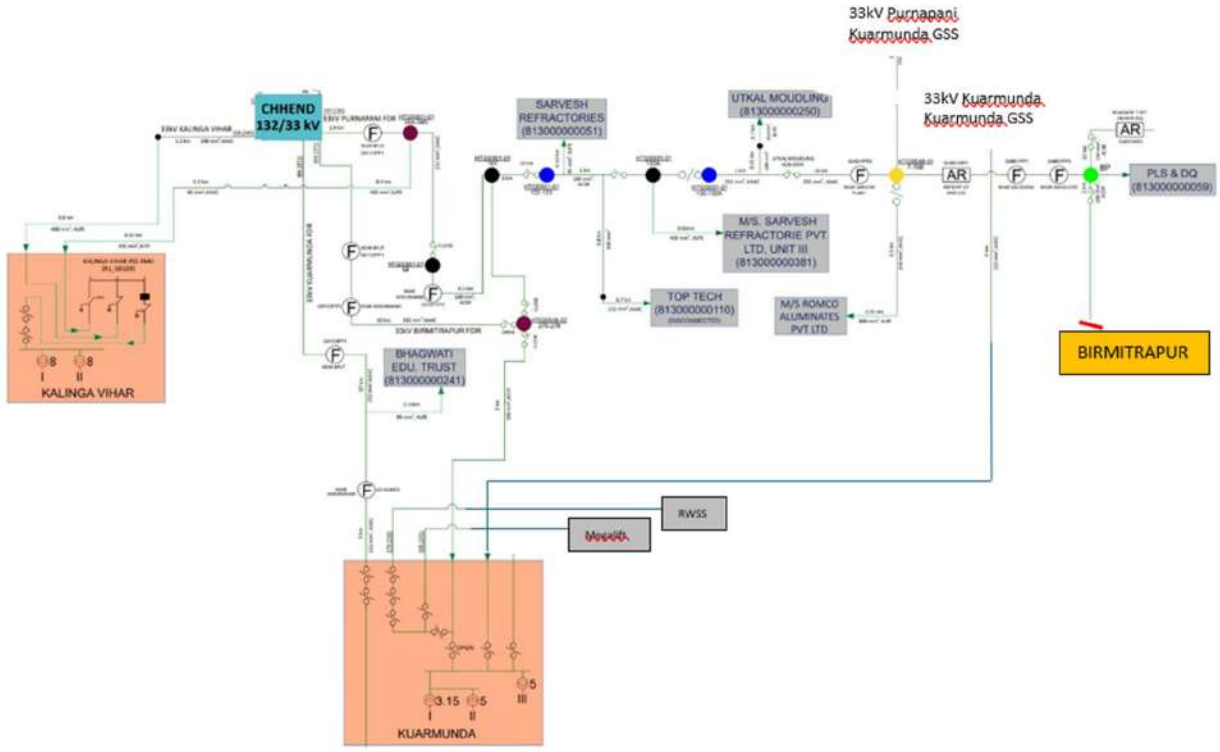


	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
B	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
C	100.0	33.0	19.1	30.2	576.3	509.8	268.6		0.01
Feeder Name		GSS0101_33KV PURNAPANI	Loss	Total:	1729	1530	806	10.6	0.0
Section Length(Mtr)		0.0	12.08						
Distance from source(Mtr)		0.0	0.00						

<u>Proposed Scenario:</u>

- It is proposed 10 Ckm augmentation 33kV trunk line of Purnapani feeder from Akanksha Hostel (Near to BPUT 4 Pole) to Sarvesh factory (Near to Kuarmunda GSS) (HTC) using 13Mtr WPB Poles & AAAC 232Sqmm.

Proposed GIS SLD



Scope of Work:

- 10 Ckm of 33kV link line using 232 sq.mm Bare conductor.

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: -	Kalinga Vihar	
Name of the Work: -	33KV Rourkela-I feeder trunk line conductor augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (In Cr.)**
1	**PART A:** 33KV CONDUCTOR AUGMENTATION USING 13Mtr WPB & AAAC 232 SQMM (Refer Annexure-93)	2.416493
	Total Amount (In Cr.)	**2.416493**
	Total Amount (In Cr.)	**2.42**
Total estimated cost is Rs.2.42 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 2.42 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

- Kalinga Vihar PSS acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Kalinga Vihar Area.
- This proposal improves the reliability of Kalinga Vihar 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:

- Upgrading from 100sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and improves for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

------End-----

Upgradation of 33kV Rajamunda Industry O/G Line

1.0 Proposal for upgradation of Rajamunda Industry O/G Line:

Proposal:

33V Line Augmentation Rajamunda feeder from Rajamunda PSS to Vidya Minerals

Requirement/ Need of the proposal:

Objective: To ensure the safe and reliable power supply to the Industrial Feeder.

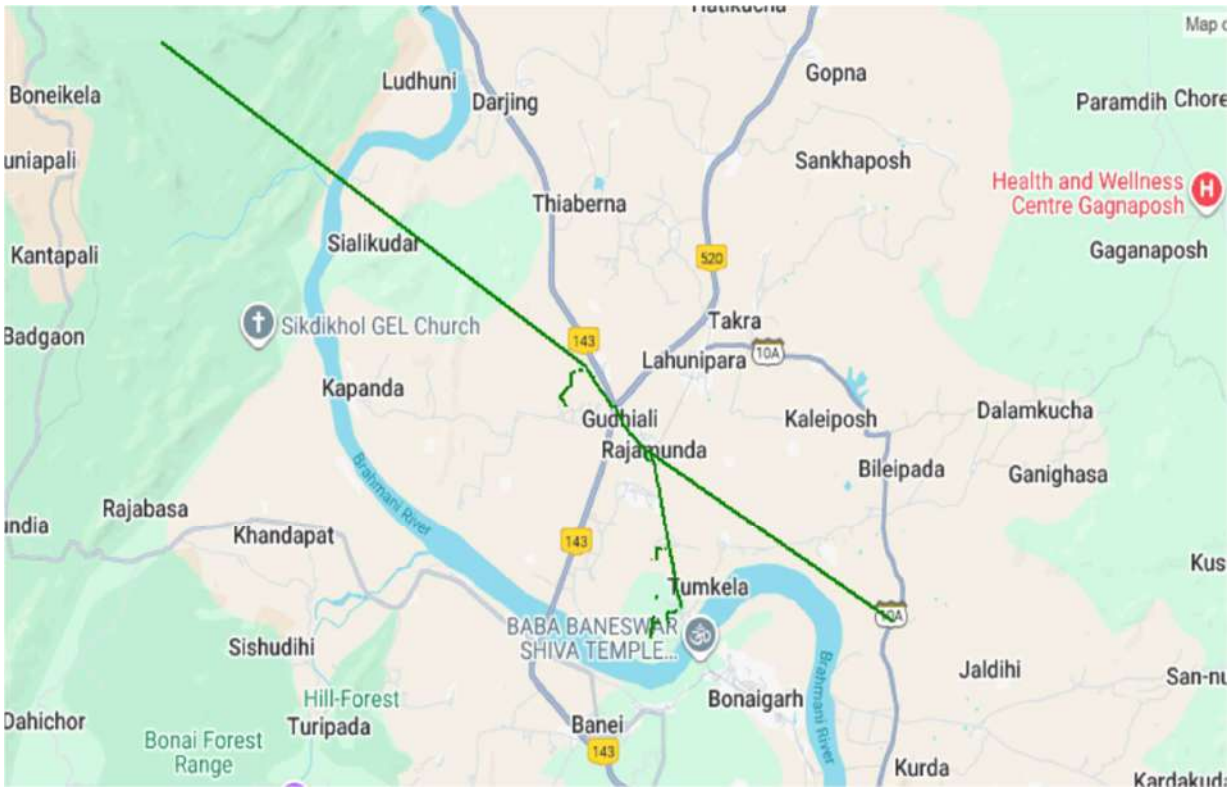
Existing Scenario:

- At present, 33kV Rajamunda Industry O/G line is emanating from 33/11kV Rajamunda PSS. The total trunk length of this feeder is 3Ckm feeds power to 5No's of 33kV HT Consumer.
- The Peak Loading of 33kV Rajamunda feeder is 190 Amp and conductor size is 232/100 Sqmm.
- The existing industry line is on a 9 & 11Mtr. PSC pole, with a conductor size of 100 mm² AAAC. There are multiple joints in the conductor, and the pole and cross arm are tilted, with damage to the pole's cupping. Additionally, the span length is uneven, varying between 60 and 80 meters.
- Due to this, Frequent breakdowns on lines hamper the reliability of the power supply. Also, considering the future load growth of the upcoming consumers, this upgradation is proposed to supplement the existing feeder to mitigate Overloading.

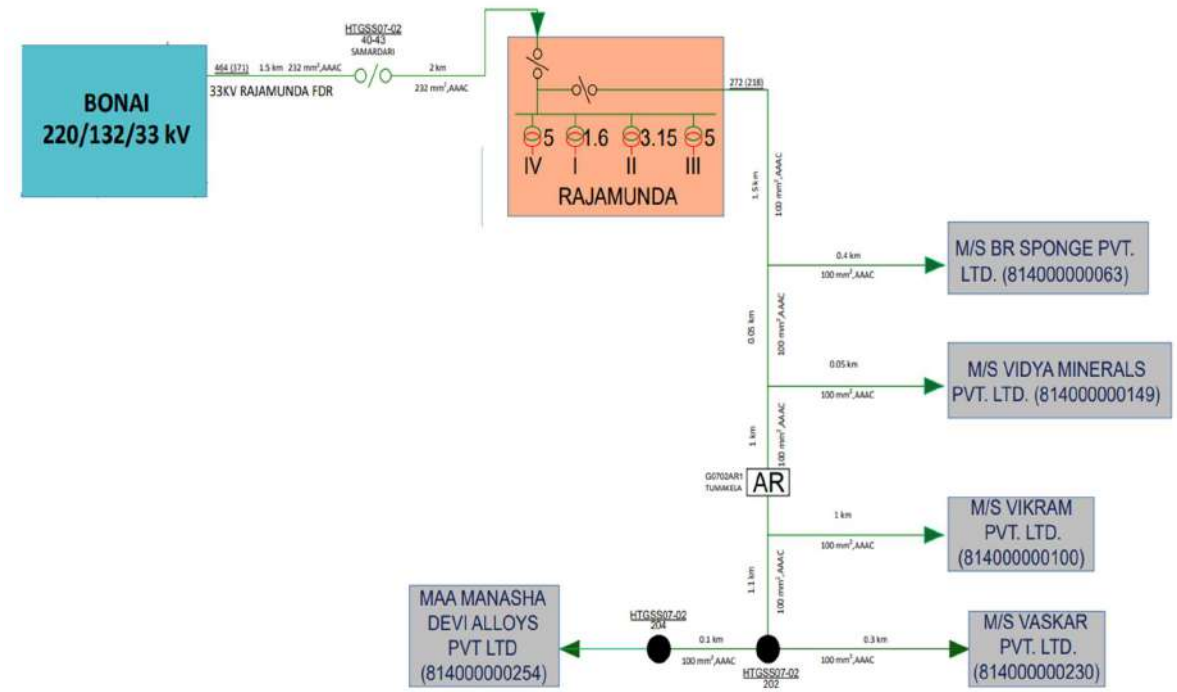
Existing Peak (FY25-26) Loading and projected load of Rajamunda Feeder:

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
Bonai	Rajamunda	26	10.86	42%	Ok	11.48	44%	Ok

GIS Map:



SLD Map:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 10522024

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	190.1	3621.1	3178.6	1734.6		0.70
B	100.0	33.0	19.0	190.1	3621.1	3178.6	1734.6		0.70
C	100.0	33.0	19.0	190.1	3621.1	3178.6	1734.6		0.70
Feeder Name		GSS0702_33KV_RAJAMUNDA	Loss	Total:	10863	9536	5204	66.5	2.1
Section Length(Mtr)		0.0	203.89						
Distance from source(Mtr)		0.0	37.63						

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

Load Flow Box

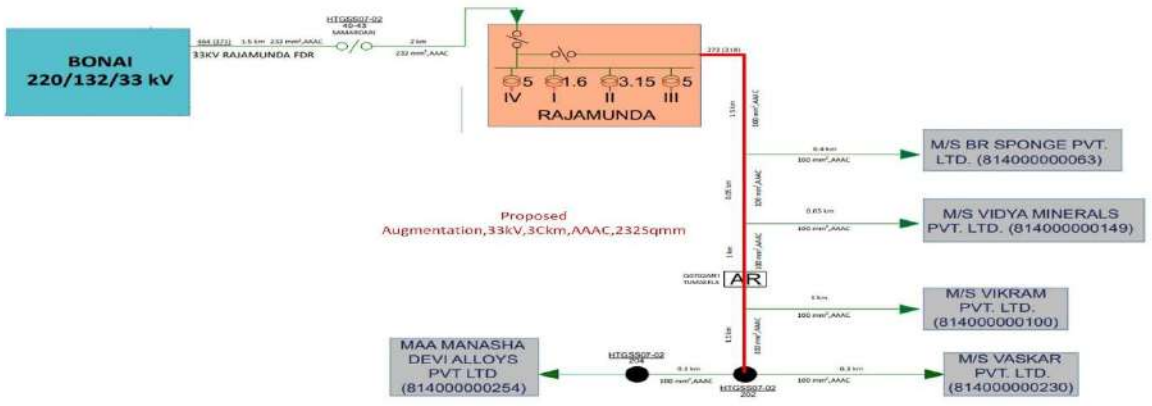
Overhead Line - 10522024

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	200.8	3825.6	3354.8	1838.5		0.78
B	100.0	33.0	19.0	200.8	3825.6	3354.8	1838.5		0.78
C	100.0	33.0	19.0	200.8	3825.6	3354.8	1838.5		0.78
Feeder Name		GSS0702_33KV_RAJAMUNDA	Loss	Total:	11477	10064	5516	70.2	2.4
Section Length(Mtr)		0.0	221.30						
Distance from source(Mtr)		0.0	37.56						

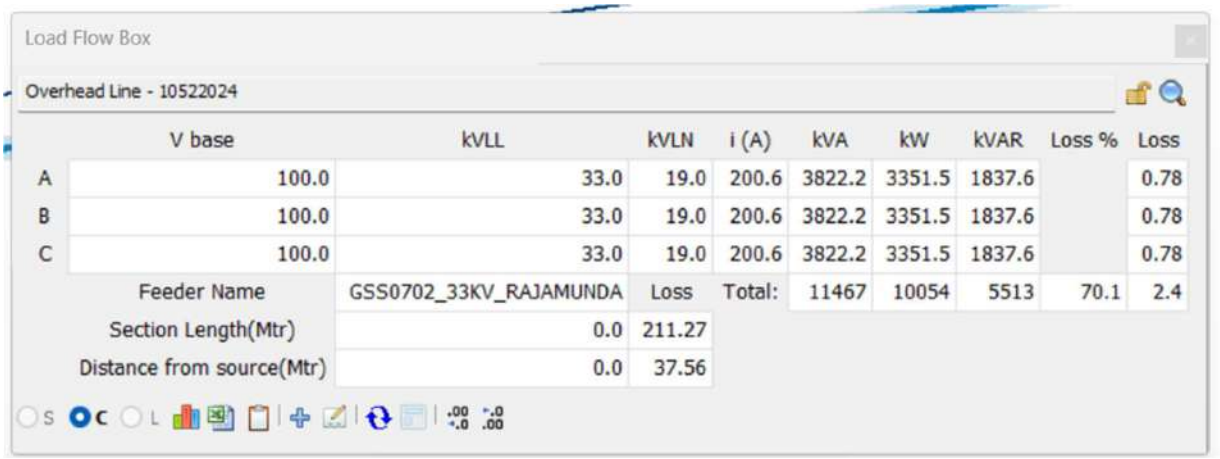
Proposed Scenario:

- Upgradation of the trunk section of the line with 232Sqmm Conductor using 13Mtr. WPB Pole.

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 10522024

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	200.6	3822.2	3351.5	1837.6		0.78
B	100.0	33.0	19.0	200.6	3822.2	3351.5	1837.6		0.78
C	100.0	33.0	19.0	200.6	3822.2	3351.5	1837.6		0.78
	Feeder Name	GSS0702_33KV_RAJAMUNDA	Loss	Total:	11467	10054	5513	70.1	2.4
	Section Length(Mtr)	0.0	211.27						
	Distance from source(Mtr)	0.0	37.56						

Scope of Work:

- Upgradation of Line 33kV ,3Ckm,AAAC,232Sqmm using 13Mtr. WPB Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division:-	**RSED**	
Name of the Sub-Division: -	Bonai	
Name of Section:-	Lahunipara	
Name of the Work:-	Upgradation of Rajamunda Industry O/G line of 3Ckm with 232Sqmm, from Rajamunda PSS to T-off Vidya Minerals (HTC)	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (In Cr.)**
1	PART A: Upgradation with 3Ckm, AAAC,232Sqmm (Refer Annexure-93)	**₹ 0.7249479**
	Total Amount (in Cr.)	**₹ 0.7249479**
	Total Amount (In Cr.)	**₹ 0.72**
Total estimated cost is Rs.0.72Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.72 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	**Bonai**	Rajamunda	10064	221	**4.71**	**41295.52**	**1.70**
After Proposal	**Bonai**	Rajamunda	10054	211			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	72.49	Rs. Lac
B	Load due to load growth	-	528.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	462	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	2747994	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	39.16	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	1.70	Rs. Lac
J	Net Revenue Collected	H+I	40.86	Rs. Lac
K	% revenue return	(J/A)*100	56.4	%
L	Pay Back Period	100/K	1.77	Years

Benefit to the system and consumers:

- Improving reliability 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 Industrial consumers.

Upgradation of 33kV Bonai Industry O/G Line

1.0 Proposal for upgradation of Bonai Industry O/G Line:

Proposal:

33kV Line Augmentation Bonai feeder from Bonai PSS to Shivshakti Metallics

Requirement/ Need of the proposal:

Objective: To ensure the safe and reliable power supply to the Industrial Feeder of 33kV Bonai feeder .

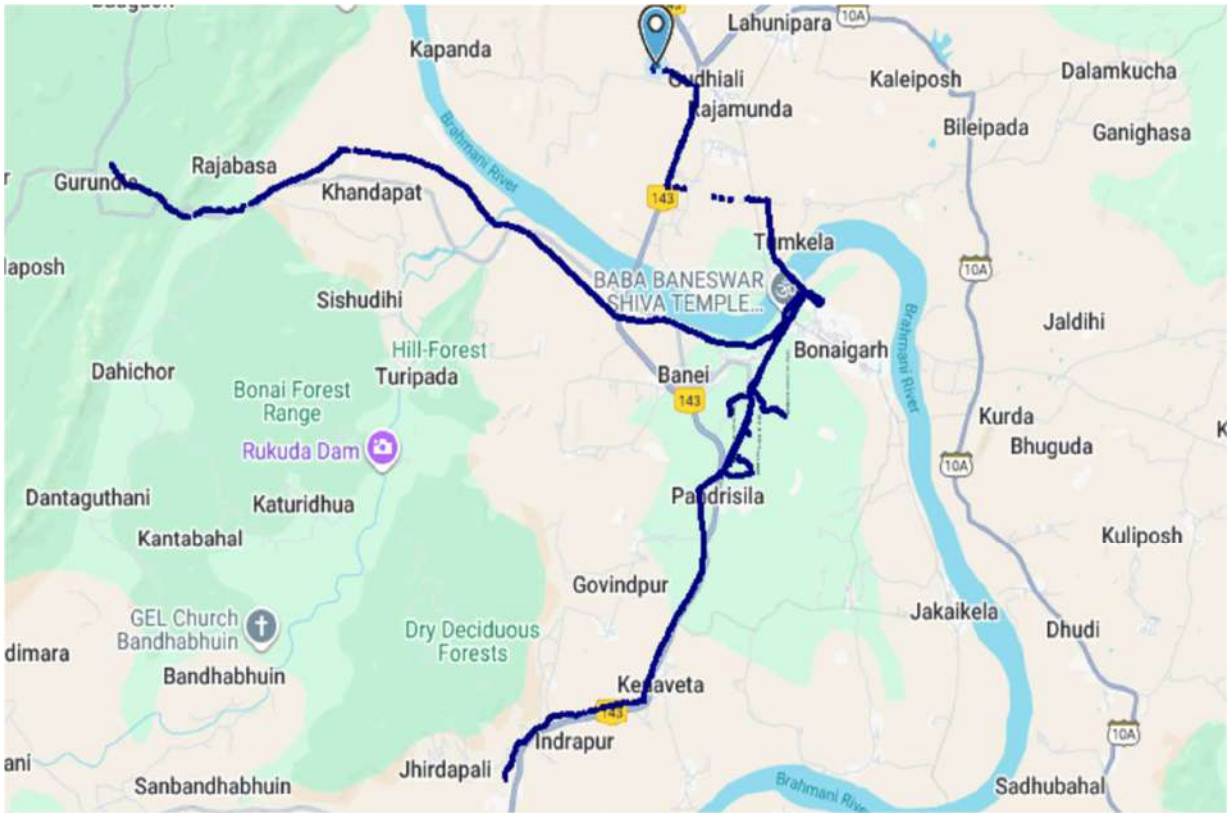
Existing Scenario:

- At present, 33kV Bonai Industry O/G line is emanating from 33/11kV Bonai PSS. The total trunk length of this feeder is 3Ckm feeds power to 6No's of 33kV HT Consumer.
- Peak Loading of a Bonai feeder is 213 Amp and conductor size is 100 & 232 Sqmm.
- The existing industry feeder line is on a 9 meter PSC pole, with a conductor size of 100 mm² AAAC. There are multiple joints in the conductor, and the pole and cross arm are tilted, with damage to the pole's cupping. Additionally, the span length is uneven, varying between 60 and 80 meters.
- Due to this, Frequent breakdowns on lines hamper the reliability of the power supply. Also, considering the future load growth of the upcoming consumers, this upgradation is proposed to supplement the existing feeder to mitigate Overloading.

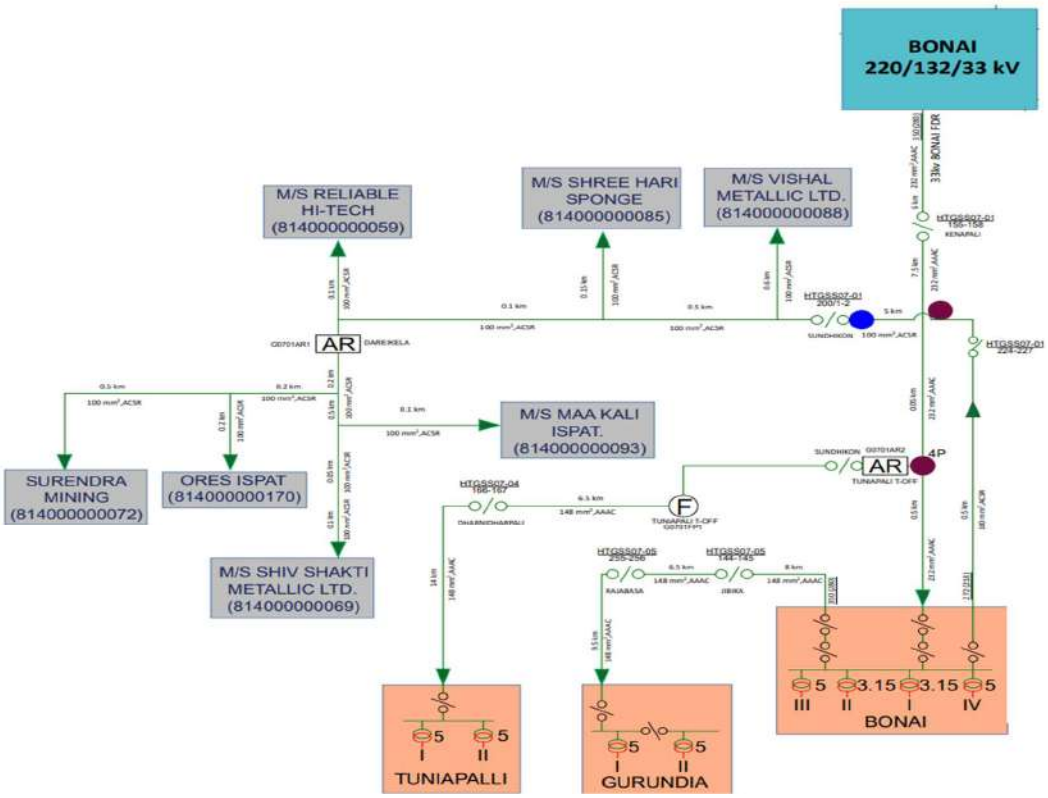
Existing Peak (FY25-26) Loading and projected load of Bonai Feeder:

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
Bonai	Bonai	26	12.15	47%	Ok	12.9	49.6%	Ok

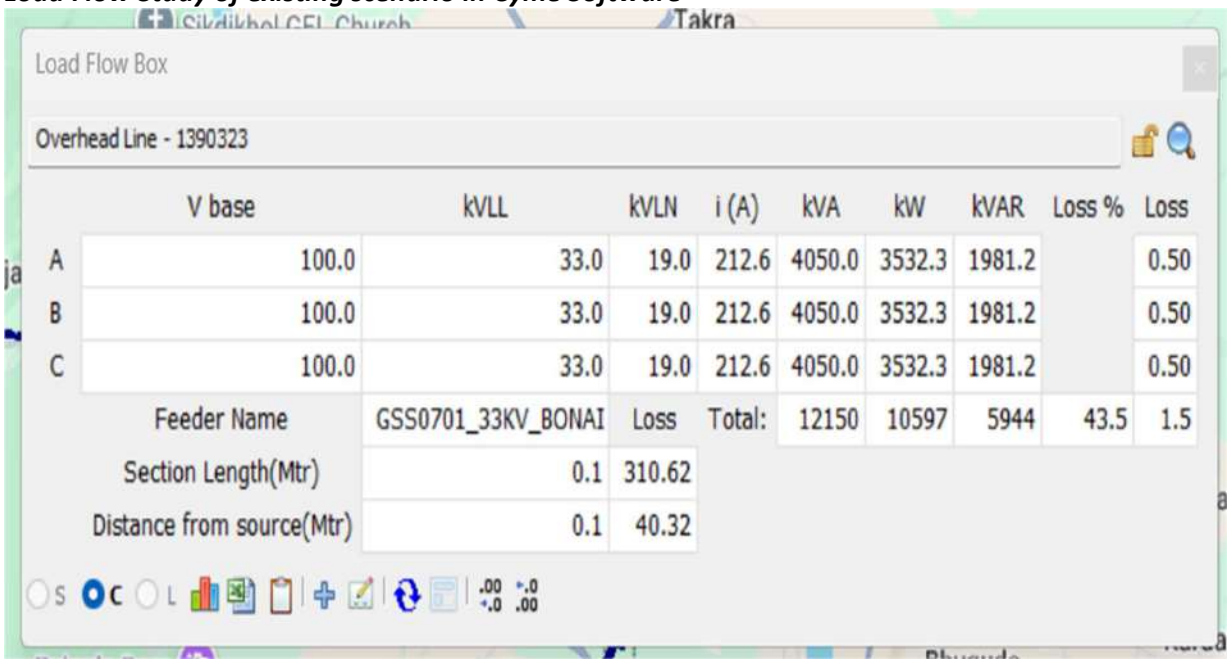
GIS MAP



SLD Map:

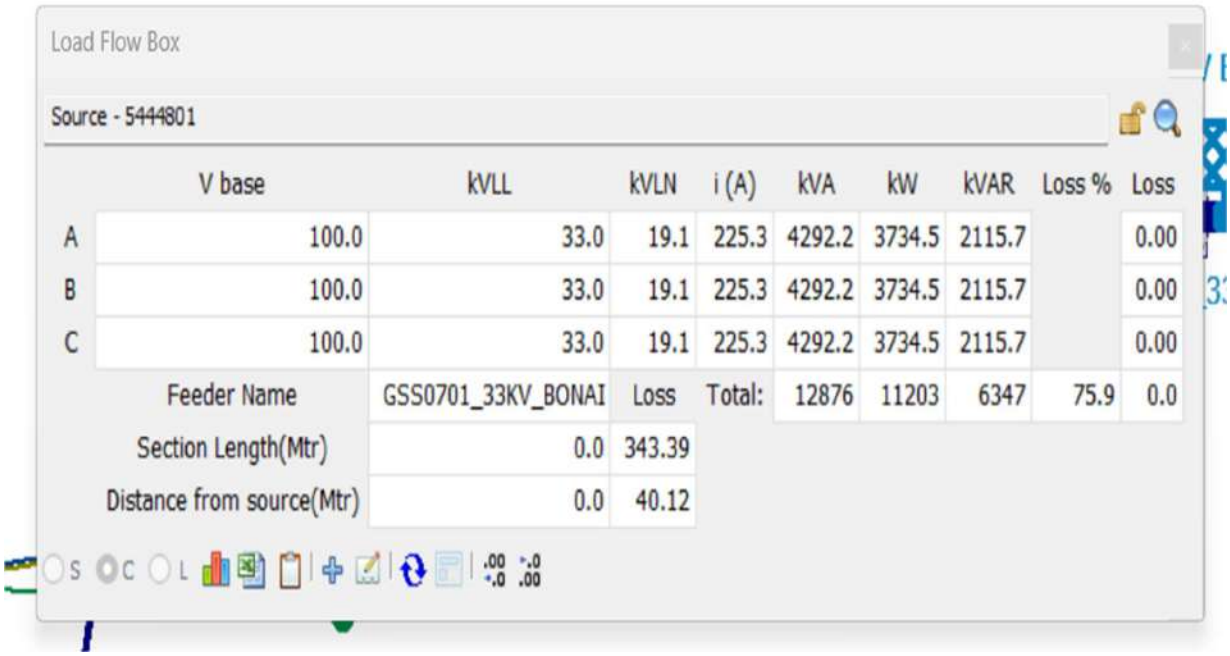


Load Flow Study of existing scenario in Cyme Software



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	212.6	4050.0	3532.3	1981.2		0.50
B	100.0	33.0	19.0	212.6	4050.0	3532.3	1981.2		0.50
C	100.0	33.0	19.0	212.6	4050.0	3532.3	1981.2		0.50
	Feeder Name	GSS0701_33KV_BONAI	Loss	Total:	12150	10597	5944	43.5	1.5
	Section Length(Mtr)	0.1	310.62						
	Distance from source(Mtr)	0.1	40.32						

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

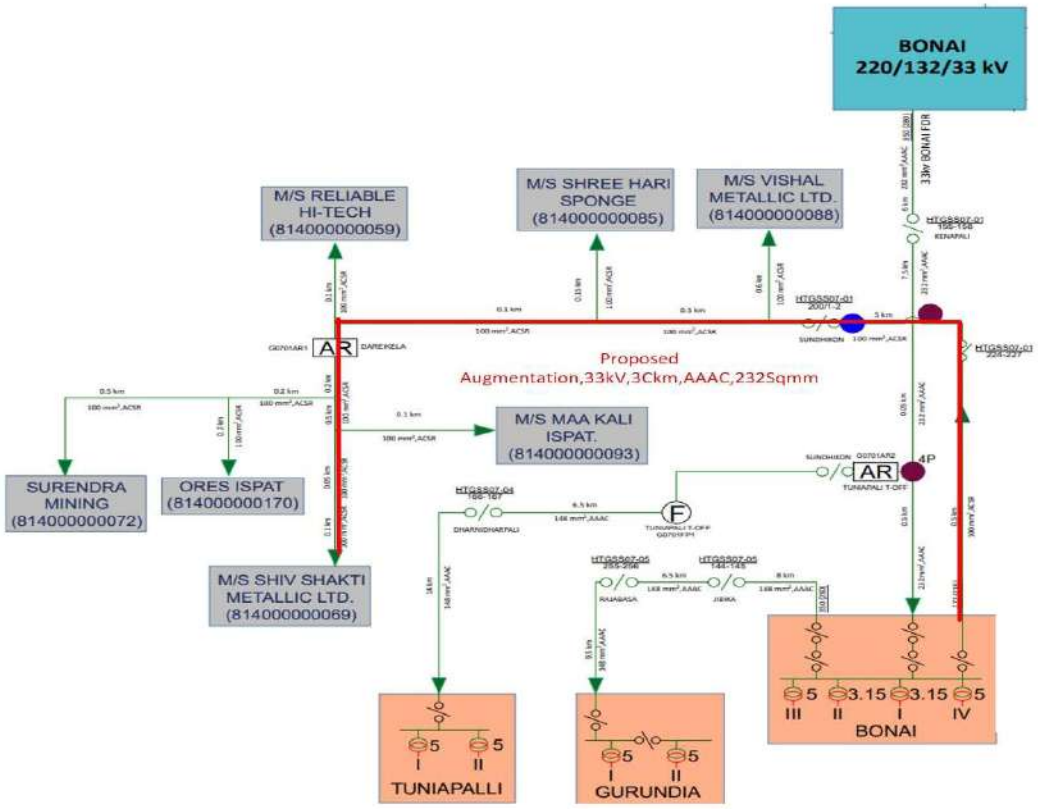


	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	225.3	4292.2	3734.5	2115.7		0.00
B	100.0	33.0	19.1	225.3	4292.2	3734.5	2115.7		0.00
C	100.0	33.0	19.1	225.3	4292.2	3734.5	2115.7		0.00
	Feeder Name	GSS0701_33KV_BONAI	Loss	Total:	12876	11203	6347	75.9	0.0
	Section Length(Mtr)	0.0	343.39						
	Distance from source(Mtr)	0.0	40.12						

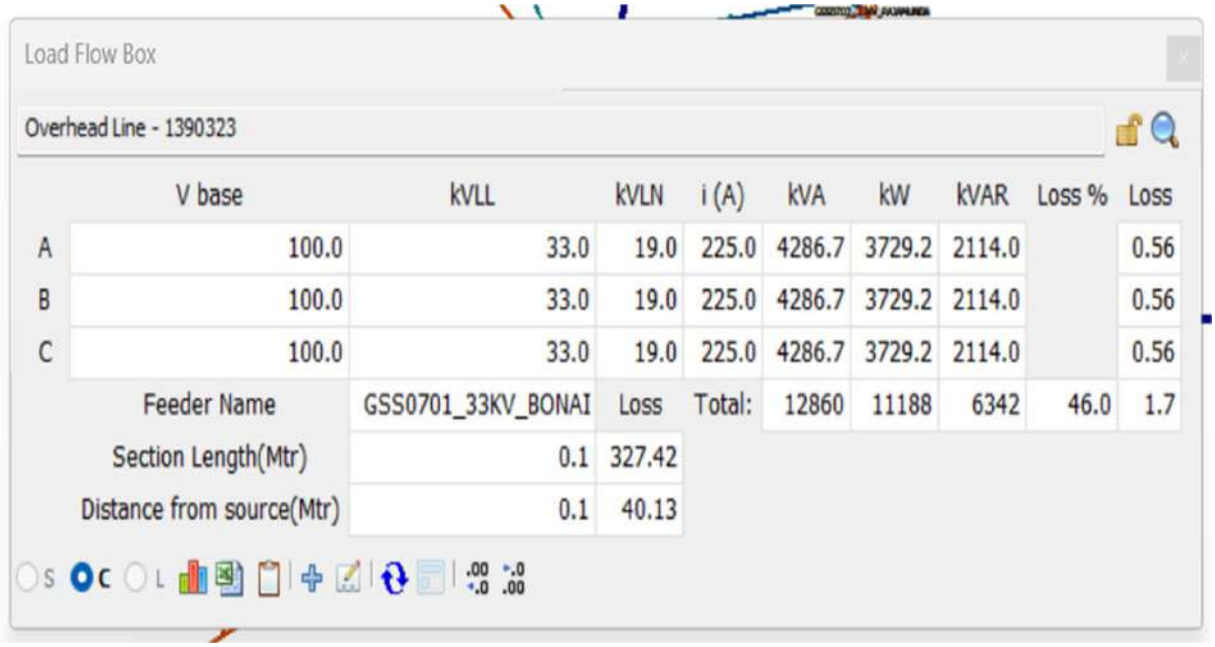
Proposed Scenario:

- 3CKM -Upgradation of the trunk section of the line with 232Sqmm Conductor

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software



Load Flow Box

Overhead Line - 1390323

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	225.0	4286.7	3729.2	2114.0		0.56
B	100.0	33.0	19.0	225.0	4286.7	3729.2	2114.0		0.56
C	100.0	33.0	19.0	225.0	4286.7	3729.2	2114.0		0.56
Feeder Name		GSS0701_33KV_BONAI	Loss	Total:	12860	11188	6342	46.0	1.7
Section Length(Mtr)		0.1	327.42						
Distance from source(Mtr)		0.1	40.13						

Scope of Work:

- Upgradation of Line 33kV ,3Ckm,AAAC,232Sqmm using 13Mtr. WPB Pole.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division:-	**RSED**	
Name of the Sub-Division: -	Bona	
Name of Section:-	Boani	
Name of the Work:-	Upgradation of Bonai Industry O/G line of 3Ckm with 232Sqmm, from Bonai PSS to Shiv Shakti Metallic Ltd.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A:33kV Augmentation with 232sqmm AAAC Conductor-3 Ckm,(Refer Annexure-93)	**₹ 0.7249479**
	Total Amount (In Cr.)	**₹ 0.7249479**
	Total Amount (In Cr.)	**₹ 0.72**
Total estimated cost is Rs.. 0.72Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.72Cr. (For detailed BoQ, refer Annexure)

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	**Bonai**	Bonai	11203	343	**7.51**	**65751.68**	**2.70**
After Proposal	**Bonai**	Bonai	11188	327			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	72.49	Rs. Lac
B	Load due to load growth	-	606.00	kVA

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
C	Total kW due to load growth	1.732*33*B*Pf	530	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	3153948	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	44.94	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	2.70	Rs. Lac
J	Net Revenue Collected	H+I	47.64	Rs. Lac
K	% revenue return	(J/A)*100	65.7	%
L	Pay Back Period	100/K	1.52	Years

Benefit to the system and consumers:

- Improving reliability 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 Industrial consumers.

Mitigation of 33kV Feeder Over-Loading Issue

1.0 Proposal for Mitigation of Over-Loading issue for 33kV Industrial-I Feeder.

PROPOSAL:

33kV Line Aug of industrial -1 fdr from Budhipadar GSS to first DP struct. & T-off Jyoti Pet.

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 95 sq. mm XLPE Cable & 185 sq.mm (in Two Patch) to 3C,400 sq. mm XLPE Cable to mitigate over-loading.

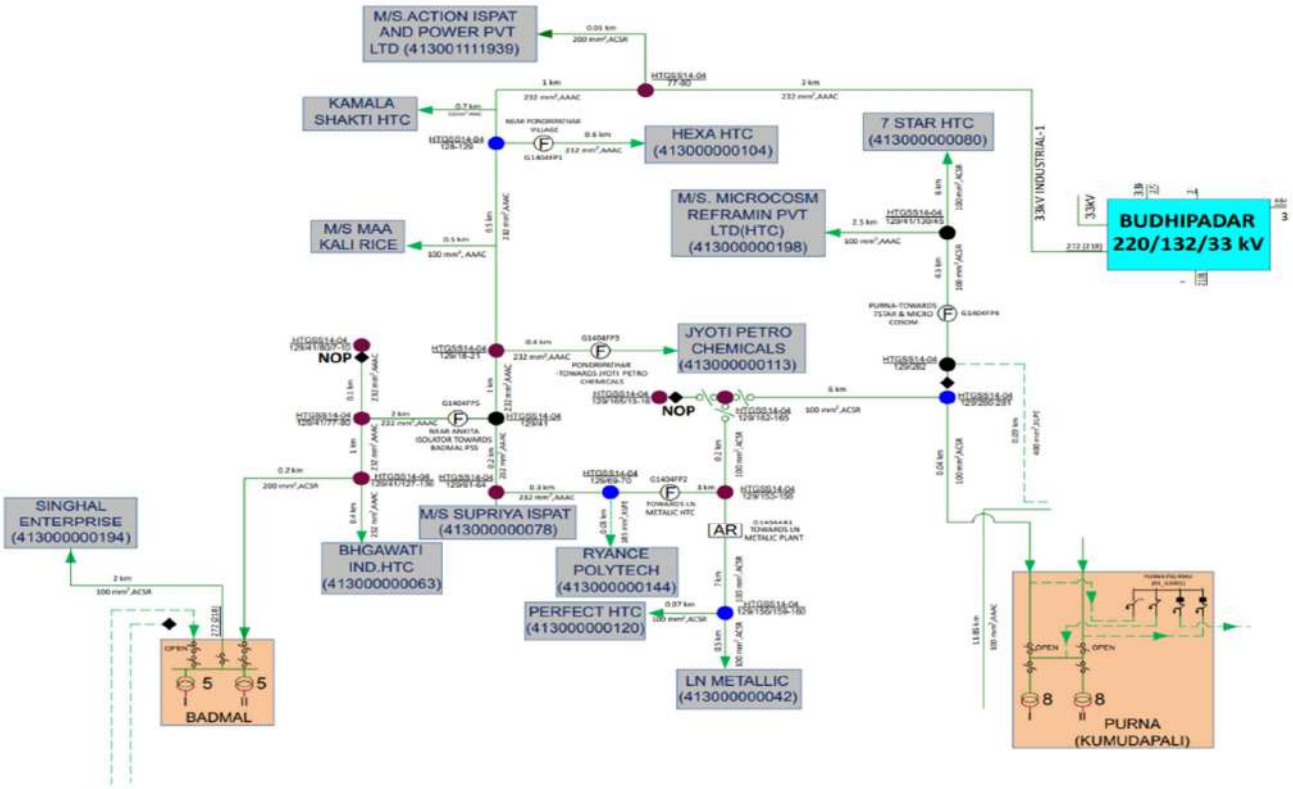
EXISTING SCENARIO: -

- Presently 33kV Industrial-I feeder emanating from Budhipadar GSS & feeding power supply to 13 nos. of HT Consumers & one no. of PSS c(Badmal).
- From Budhipadar GSS, some part of cable portion is getting over-loaded as well as cable towards T-off to Jyoti Petro Chemicals is also getting over-loaded.
- Over-Loaded cable from GSS boundary wall comprises of 95sq.mm XLPE (Ampacity-189 Amp) while cable is bearing a load of 366 Amp & cable from T-Off to Jyoti Petro Chemicals comprises of 185 sqmm XLPE (Ampacity-270 Amp) while cable is bearing load of 366 Amp.
- This proposal pertains to a **High Revenue Feeder.**

Existing Peak (FY25-26) Loading and projected load of Industrial 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**
Budhipadar	Industrial-1	26	20945	81%	Ok	21252	82%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Cable - 132993827

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	366.4	6981.6	6093.9	3407.0		0.70
B	100.0	33.0	19.1	366.4	6981.6	6093.9	3407.0		0.70
C	100.0	33.0	19.1	366.4	6981.6	6093.9	3407.0		0.70
	Feeder Name	GSS1404_33KV INDUSTRIAL -1	Loss	Total:	20945	18282	10221	159.3	2.1
	Section Length(Mtr)	0.0	429.73						
	Distance from source(Mtr)	0.0	12.15						

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

Load Flow Box

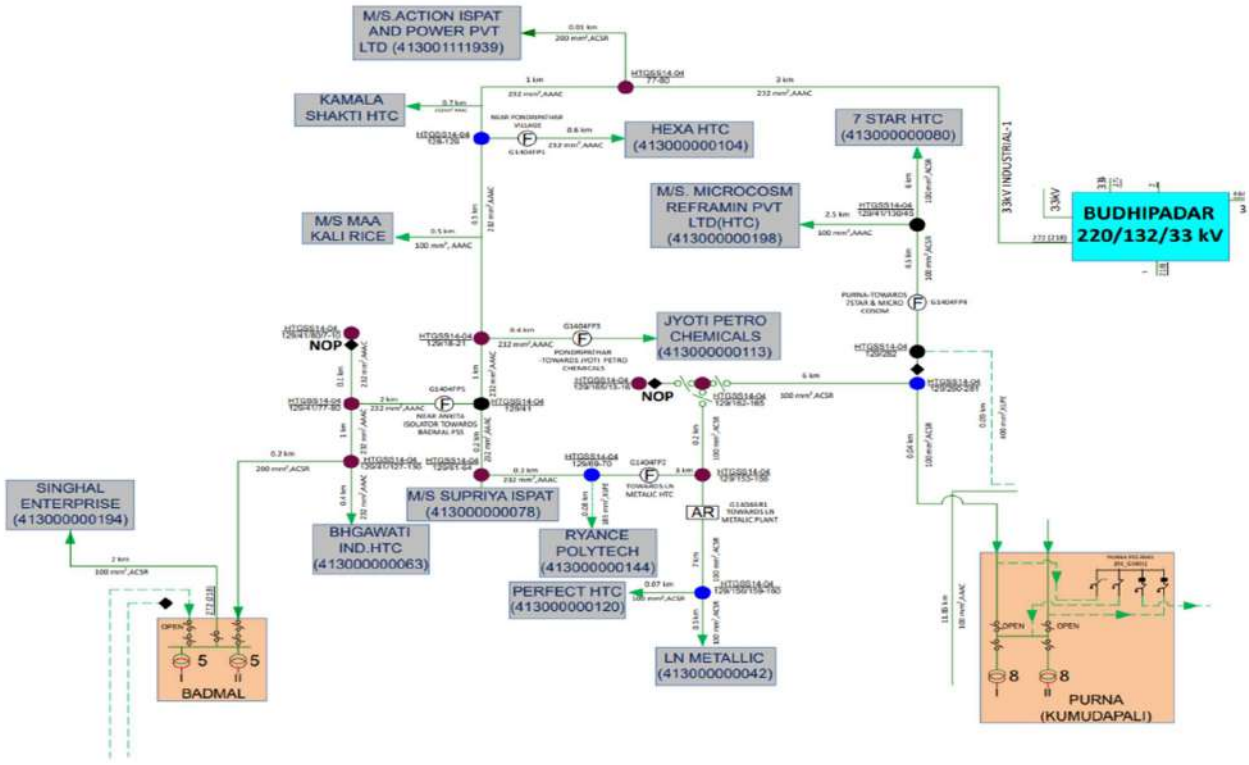
Cable - 132993827

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	371.8	7083.9	6177.9	3466.4		0.72
B	100.0	33.0	19.1	371.8	7083.9	6177.9	3466.4		0.72
C	100.0	33.0	19.1	371.8	7083.9	6177.9	3466.4		0.72
Feeder Name		GSS1404_33KV INDUSTRIAL -1	Loss	Total:	21252	18534	10399	161.7	2.2
Section Length(Mtr)		0.0	443.69						
Distance from source(Mtr)		0.0	12.13						

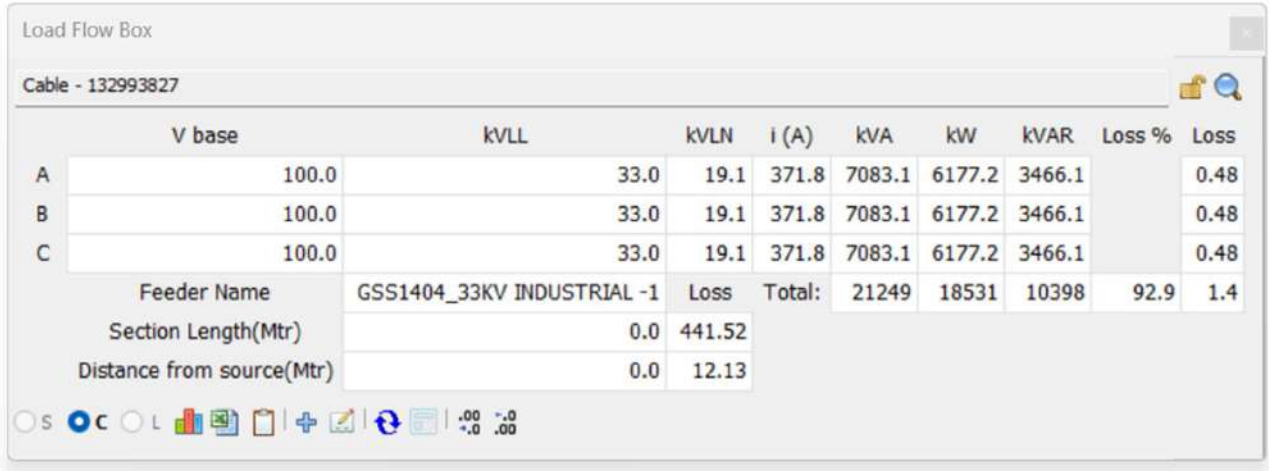
Proposed Scenario:

- It is proposed 0.6 CKm augmentation 33kV Industrial-I feeder from GSS Boundary Wall to first DP structure & 0.6 Ckm of augmentation from T-Off to Jyoti Petro Chemicals using 33 KV 3C, 400 sqmm XLPE Cable.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Cable - 132993827

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	371.8	7083.1	6177.2	3466.1		0.48
B	100.0	33.0	19.1	371.8	7083.1	6177.2	3466.1		0.48
C	100.0	33.0	19.1	371.8	7083.1	6177.2	3466.1		0.48
	Feeder Name	GSS1404_33KV INDUSTRIAL -1	Loss	Total:	21249	18531	10398	92.9	1.4
	Section Length(Mtr)	0.0	441.52						
	Distance from source(Mtr)	0.0	12.13						

Scope of Work:

- 0.12 km of 33 KV 3C, 400 sqmm XLPE Cable.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**JED-JHARSUGUDA**	
Name of the Work: -	33KV Industrial-I feeder trunk line augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV AUGMENTATION TO 3C, 400 SQMM XLPE CABLE-0.12 KM (Refer Annexure-167)	0.107571
	Total Amount	**0.11**
Total estimated cost is Rs.0.11 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 0.11Cr.

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	**Budhipadar**	Industrial-1	18534	444	**1.02**	**8934.32**	**0.37**
After Proposal	**Budhipadar**	Industrial-1	18531	442			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	10.76	Rs. Lac
B	Load due to load growth	-	252.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	221	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1311543	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	18.69	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	0.37	Rs. Lac
J	Net Revenue Collected	H+I	19.06	Rs. Lac
K	% revenue return	(J/A)*100	177.2	%
L	Pay Back Period	100/K	0.56	Years

Benefit to the system and consumers:

- Upgrading from existing cable to 3C, 400 sqmm XLPE Cable increases ampacity, and improves thermal margin for future load growth.

------End-----

Mitigation of 33kV Feeder Over-Loading Issue

1.0 Proposal for Mitigation of Over-Loading for 33kV Cheruapada Feeder.

PROPOSAL:

33kV Line augmentation of Cheruapada feeder near Queens play school.

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 33 KV 3C, 300 sqmm XLPE Cable to 3C, 400 sq. mm XLPE Cable to mitigate over-loading.

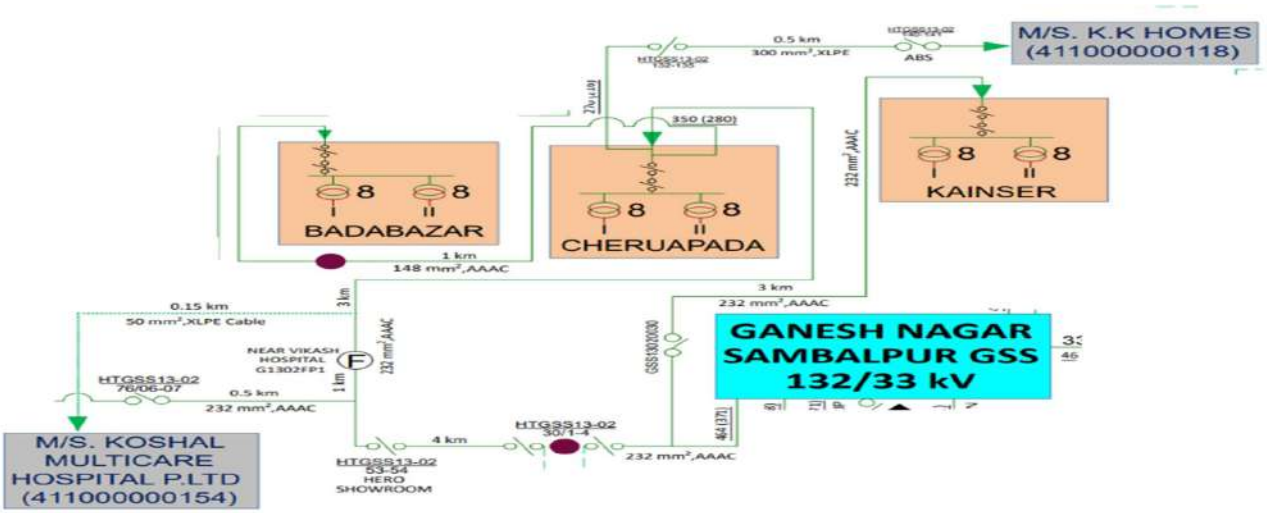
EXISTING SCENARIO: -

- Presently 33kV Cheruapada feeder emanating from Ganesh Nagar GSS & feeding power supply to three nos. of 33/11 KV PSS (Badabazar, Cheruapada, Kainser) as well as to two nos. of HT Consumers.
- Currently, Feeder is bearing a peak load of 462 Amp, with some part of cable is getting over-loaded with a loading of 354.1 Amp while ampacity of 300 sqmm cable is 350 Amp.
- This proposal pertains to a **High Revenue Feeder**.

Existing Peak (FY25-26) Loading and projected load of Cheduapada 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
Sambalpur	Cheduapada	26	26.4	101%	Yes	28.115	108%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 106649038

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	461.8	8798.3	7688.1	4278.1		1.60
B	100.0	33.0	19.0	461.8	8798.3	7688.1	4278.1		1.60
C	100.0	33.0	19.0	461.8	8798.3	7688.1	4278.1		1.60
Feeder Name		GSS1302_33KV CHERUAPADA	Loss	Total:	26395	23064	12834	94.4	4.8
Section Length(Mtr)		0.0	526.80						
Distance from source(Mtr)		0.1	40.64						

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

Load Flow Box

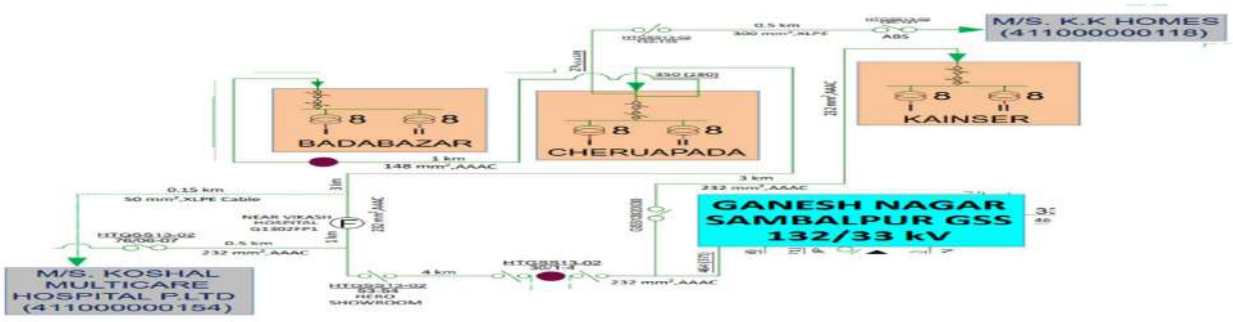
Overhead Line - 111412195

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	491.9	9371.8	8165.4	4599.8		0.23
B	100.0	33.0	19.1	491.9	9371.8	8165.4	4599.8		0.23
C	100.0	33.0	19.1	491.9	9371.8	8165.4	4599.8		0.23
Feeder Name		GSS1302_33KV CHERUAPADA	Loss	Total:	28115	24496	13799	100.6	0.7
Section Length(Mtr)		0.0	601.11						
Distance from source(Mtr)		0.0	40.47						

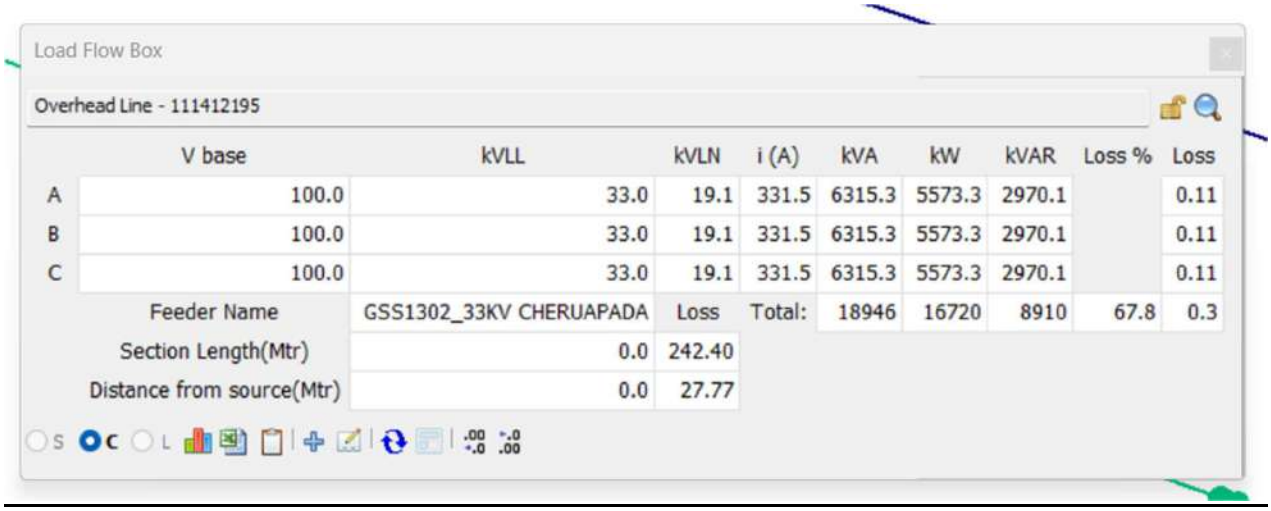
<u>Proposed Scenario:</u>

- It is proposed 0.06Ckm augmentation of 33kV Cheruapada feeder for railway crossing near queens play school using 33 KV 3C, 400 sqmm XLPE Cable.

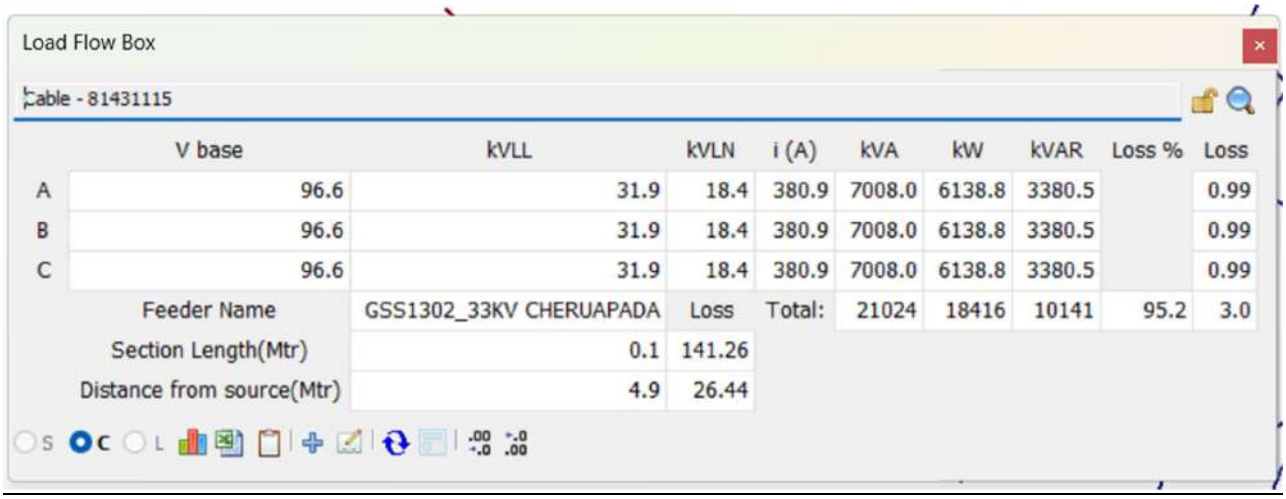
Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software



	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						



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	96.6	31.9	18.4	380.9	7008.0	6138.8	3380.5		0.99
B	96.6	31.9	18.4	380.9	7008.0	6138.8	3380.5		0.99
C	96.6	31.9	18.4	380.9	7008.0	6138.8	3380.5		0.99
Feeder Name		GSS1302_33KV CHERUAPADA	Loss	Total:	21024	18416	10141	95.2	3.0
Section Length(Mtr)		0.1	141.26						
Distance from source(Mtr)		4.9	26.44						

Scope of Work:

- 0.06 Ckm of 33 KV 3C, 400 sqmm XLPE Cable.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**SED, SAMBALPUR**	
Name of the Work: -	33KV Cheruapada feeder trunk line augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV AUGMENTATION USING 3C, 400 SQMM XLPE CABLE (Refer Annexure-167)	0.053785
	Total Amount	**0.05**

Total estimated cost is Rs.0.05 Crore. (On TPWODL Capex Scheme)

Cost Estimate: ₹ 0.05Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Reliability improvement of Railways crossing

Benefit to the system and consumers:

- Upgrading from existing cable to 3C, 400 sqmm XLPE Cable increases ampacity and improves thermal margin for future load growth.
- It also ensures reliable power supply with less no. of interruptions.

------End-----

N-1 reliability of 33kV Feeder

1.0 Proposal for N-1 Reliability improvement of 33 KV Brajrajnagar Feeder:

Proposal:

33kV Line Augmentation With Covered Conductor From Powerhouse Pada To Nursinga Mandir to improve Reliability.

Requirement/ Need of the proposal:

Objective: To improve the the reliability of 33kV Brajrajnagar feeder.

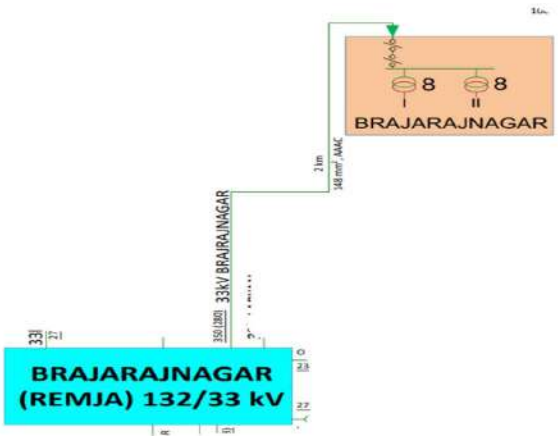
Existing Scenario:

- At present, 33kV Brajrajnagar feeder is emanating from Remja GSS. The total length of this feeder is 2 CKM and the peak load is 206 AMP.
- The conductor size of 33kV Brajrajnagar feeder emanating is 148sq.mm AAAC.
- Currently, the Feeder is experiencing multiple interruptions as it is passing through Dense forests.
- As the above feeder is single source of supply for 33/11 KV Brajrajnagar PSS & this PSS is serving to several high value consumers & town areas of Brajrajnagar area. So, it is required to Augment some section with covered conductor.

Existing Peak (FY25-26) Loading and projected load of Industrial 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
Remja	Brajrajnagar	20	11.75	59%	OK	12.773	64%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 97216209

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	205.6	3916.8	3414.5	1919.0		0.33
B	100.0	33.0	19.1	205.6	3916.8	3414.5	1919.0		0.33
C	100.0	33.0	19.1	205.6	3916.8	3414.5	1919.0		0.33
	Feeder Name	GSS0807_33KV BRAJRAJNAGAR	Loss	Total:	11750	10243	5757	55.9	1.0
	Section Length(Mtr)	0.0	91.35						
	Distance from source(Mtr)	0.0	14.15						

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

Load Flow Box

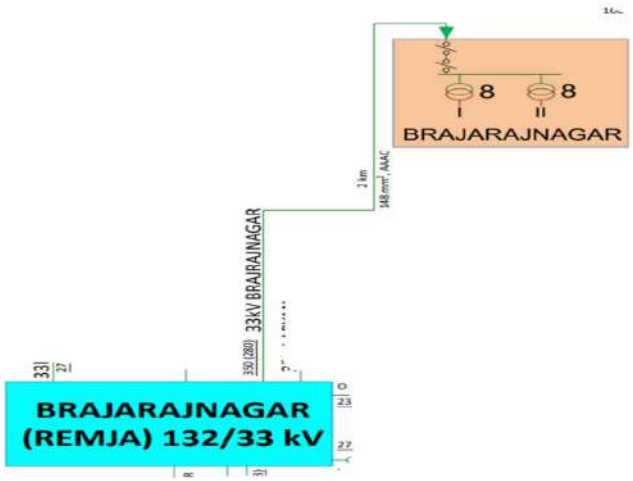
Overhead Line - 97216209

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	223.0	4249.5	3695.8	2097.4		0.38
B	100.0	33.0	19.0	223.0	4249.5	3695.8	2097.4		0.38
C	100.0	33.0	19.0	223.0	4249.5	3695.8	2097.4		0.38
	Feeder Name	GSS0807_33KV BRAJRAJNAGAR	Loss	Total:	12749	11087	6292	60.6	1.1
	Section Length(Mtr)	0.0	105.02						
	Distance from source(Mtr)	0.0	14.14						

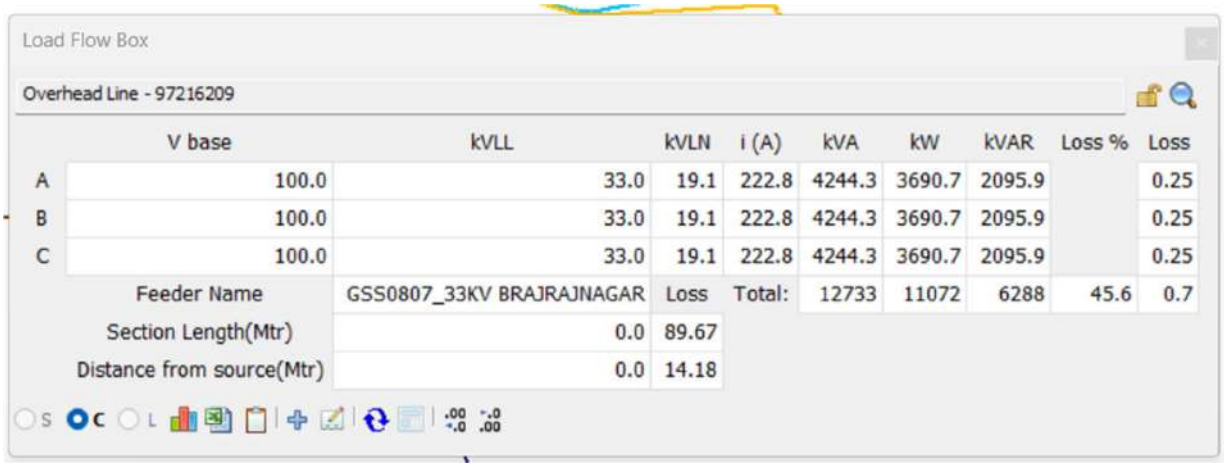
Proposed Scenario:

- 232sqmm AAAC conductor-0.5Ckm from POWER HOUSE PADA to NURSING MANDIR.

Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Overhead Line - 97216209

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	222.8	4244.3	3690.7	2095.9		0.25
B	100.0	33.0	19.1	222.8	4244.3	3690.7	2095.9		0.25
C	100.0	33.0	19.1	222.8	4244.3	3690.7	2095.9		0.25
Feeder Name		GSS0807_33KV BRAJRAJNAGAR	Loss	Total:	12733	11072	6288	45.6	0.7
Section Length(Mtr)		0.0	89.67						
Distance from source(Mtr)		0.0	14.18						

Scope of Work:

- 0.5 Ckm of Augmentation of Trunk line from 148 Sqmm AAAC to 232 Sqmm AAAC (covered).

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BNED, BRAJRAJNAGAR**	
Name of the Work: -	Proposal for improving reliability of 33 KV Brajrajnagar Feeder by Augmentation to 232 sqmm AAA conductor (covered).	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount(Cr.)**
1	PART A: 232Sqmm AAAC conductor (covered) - 0.5CKM (Refer Annexure-56)	0.152200
	Total Amount (In Cr.)	**0.15**
Total estimated cost is Rs.0.15 Crore.		

Cost Estimate: ₹ 0.15 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	**Remja**	Brajrajnagar	11087	105	**7.21**	**63199.02**	**2.59**
After Proposal	**Remja**	Brajrajnagar	11072	90			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	15.22	Rs. Lac
B	Load due to load growth	-	844.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	739	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	4392628	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	62.59	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	2.59	Rs. Lac
J	Net Revenue Collected	H+I	65.18	Rs. Lac
K	% revenue return	(J/A)*100	428.3	%
L	Pay Back Period	100/K	0.23	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Brajrajnagar 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 N-1 Reliability improvement of 33 KV Jharuapada Feeder:

Proposal:

33kV Line augmentation of Jharupada feeder from Kanjihjaran to Balaji Road to improve Reliability.

Requirement/ Need of the proposal:

Objective: To improve the reliability of 33kV Jharuapada feeder.

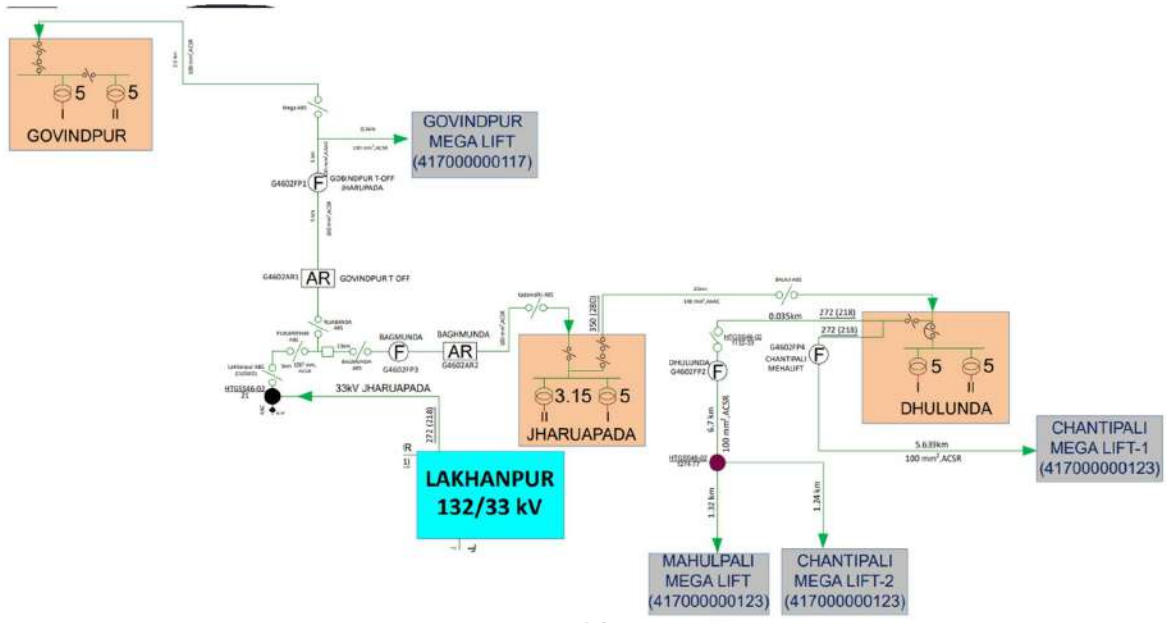
Existing Scenario:

- At present, 33kV Jharuapada feeder is emanating from Lakhanpur GSS. The total length of this feeder is 75.23 CKM and the peak load is 181.3 AMP.
- The Feeder is supplying power to three nos. of 33/11 KV PSS (Dhulunda, Jharuapada & Govindpur) as well as four nos. of Megalift.
- The conductor size of 33kV Jharuapada feeder is 100sq.mm AAAC/ACSR & 148 sqmm AAAC.
- Currently, the Feeder is experiencing multiple interruptions as it is passing through Dense forests.

Existing Peak (FY25-26) Loading and projected load of Industrial 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
Lakhanpur	Jharupada	15	10.36	69%	OK	10.9	73%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 123721043

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	181.3	3454.5	2987.3	1734.9		0.55
B	100.0	33.0	19.0	181.3	3454.5	2987.3	1734.9		0.55
C	100.0	33.0	19.0	181.3	3454.5	2987.3	1734.9		0.55
	Feeder Name	GSS4602_33KV JHARUAPADA	Loss	Total:	10364	8962	5205	63.4	1.6
	Section Length(Mtr)	0.0	1703.86						
	Distance from source(Mtr)	0.0	20.60						

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

Load Flow Box

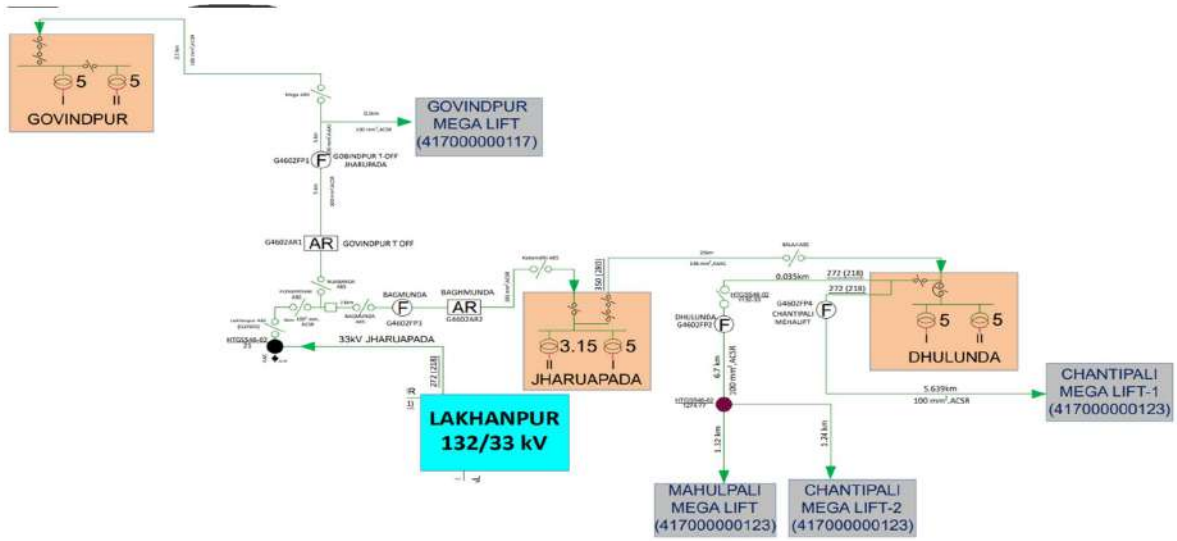
Overhead Line - 123721043

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	189.8	3616.1	3118.0	1831.5		0.60
B	100.0	33.0	19.0	189.8	3616.1	3118.0	1831.5		0.60
C	100.0	33.0	19.0	189.8	3616.1	3118.0	1831.5		0.60
	Feeder Name	GSS4602_33KV JHARUAPADA	Loss	Total:	10848	9354	5494	66.4	1.8
	Section Length(Mtr)	0.0	1858.20						
	Distance from source(Mtr)	0.0	20.14						

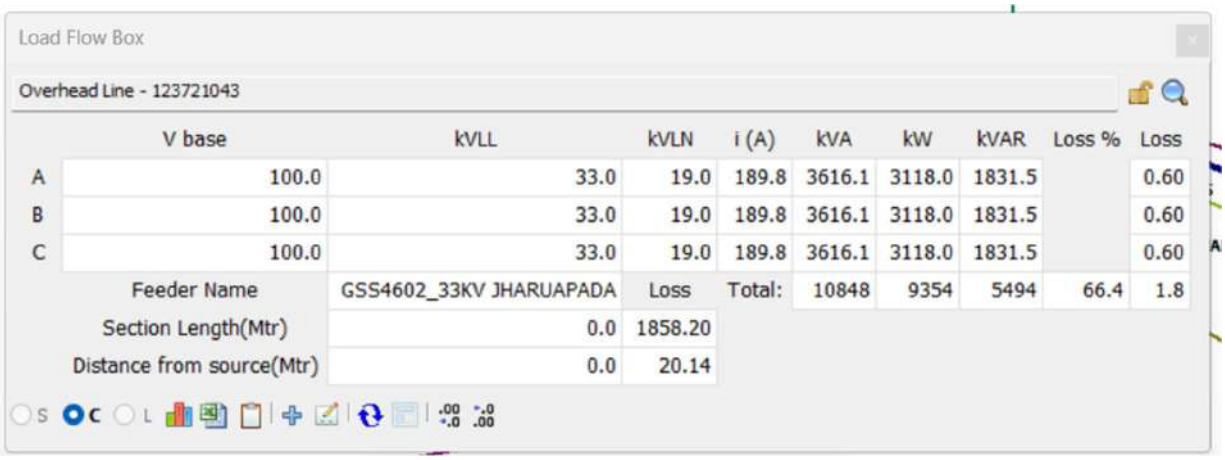
Proposed Scenario:

- In order to improve reliability of the above Feeder, it is proposed Augmentation of Trunk line from 100 sqmm AAAC to 232 sqmm AAAC (covered) of 3Ckm from Kanjihjaran to Balaji Road.

Proposed SLD:



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	19.0	189.8	3616.1	3118.0	1831.5		0.60
B	100.0	33.0	19.0	189.8	3616.1	3118.0	1831.5		0.60
C	100.0	33.0	19.0	189.8	3616.1	3118.0	1831.5		0.60
	Feeder Name	GSS4602_33KV JHARUAPADA	Loss	Total:	10848	9354	5494	66.4	1.8
	Section Length(Mtr)	0.0	1858.20						
	Distance from source(Mtr)	0.0	20.14						

Scope of Work:

- 3 Ckm of Augmentation of Trunk line from 100 Sqmm AAAC to 232 Sqmm AAAC (covered).

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BNED, BRAJRAJNAGAR**	
Name of the Work: -	Proposal for improving reliability of 33 KV Jharuapada Feeder by Augmentation to 232 sqmm AAA conductor (covered).	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A: 232Sqmm AAAC conductor (Covered) - 3CKM (Refer Annexure-56)	0.913200
	Total Amount (In Cr.)	**0.91**
Total estimated cost is Rs.0.91 Crore.		

Cost Estimate: ₹ 0.91 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Reliability Improvement

Benefit to the system and consumers:

- Reliability improvement of 33kV Jharuapada feeder.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers.

Reliability improvement of 33kV Feeder

1.0 Proposal for reliability improvement for 33kV OPGC Feeder.

PROPOSAL:

33kV Line augmentation of OPGC feeder from Remja GSS to Bandhbahal PSS.

REQUIREMENT/NEED OF THE PROPOSAL:

Objective:

- Upgrading from 100 sq. mm to 232 sq. mm AAAC to improve the reliability of 33 KV OPGC Feeder.

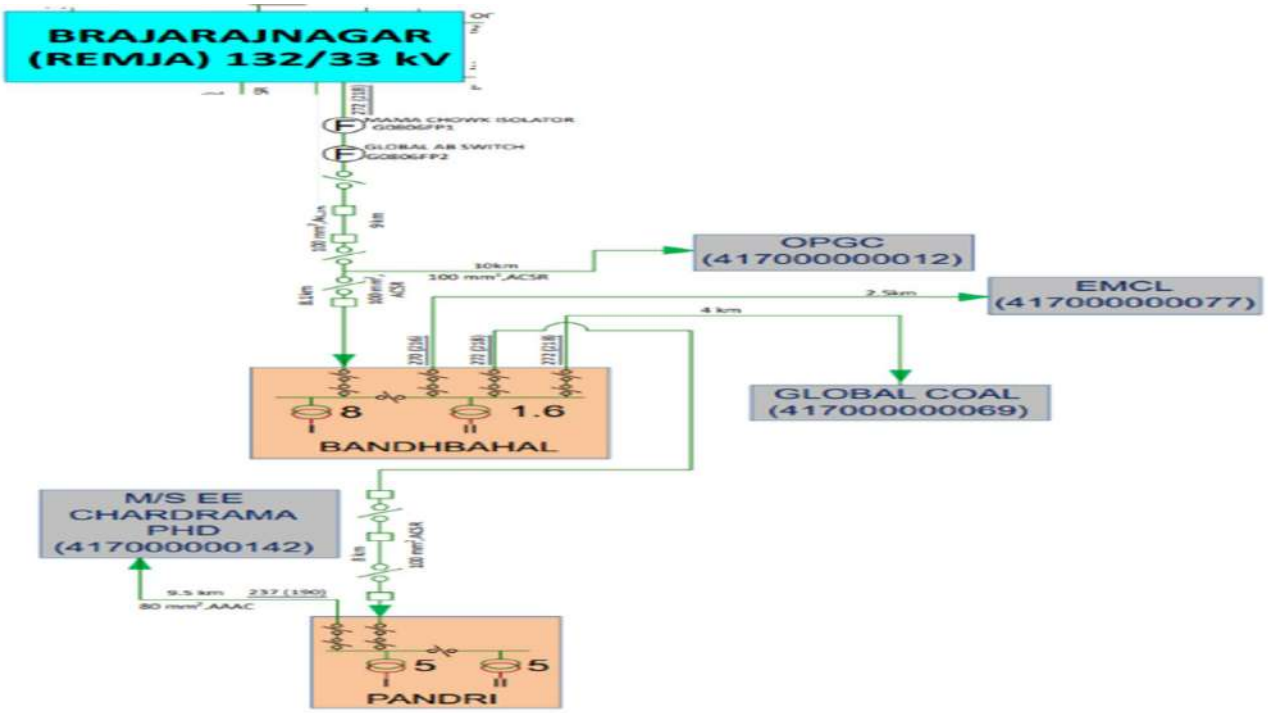
EXISTING SCENARIO: -

- Presently 33kV OPGC feeder emanating from 220/33 KV Remja GSS & feeding power supply to two nos. of 33/11 KV PSS (Bandhbahal, Pandri) as well as to four nos. of HT Consumers.
- This feeder is High revenue feeder.
- Currently, Feeder is having a length of 49.31 Ckm with conductor size of 100 sqmm ACSR bearing a load of 99 Amp.
- The Feeder is often snapped due to old age and span is appox 100 Meter from Remja GSS upto Bandhbahal PSS which results in frequent tripping.
- Due to above issue 33kV OPGC feeder require to upgrade.

Existing Peak (FY25-26) Loading and projected load of OPGC 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
Remja	OPGC	15.5	5.6	36%	Ok	5.98	38.6%	Ok

Existing SLD:



Load Flow Study of existing scenario in Cyme Software

Load Flow Box

Overhead Line - 96803952

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	98.9	1884.4	1644.0	921.1		0.09
B	100.0	33.0	19.1	98.9	1884.4	1644.0	921.1		0.09
C	100.0	33.0	19.1	98.9	1884.4	1644.0	921.1		0.09
Feeder Name		GSS0806_33KV OPGC	Loss	Total:	5653	4932	2763	34.6	0.3
Section Length(Mtr)		0.0	203.72						
Distance from source(Mtr)		0.0	18.55						

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

Load Flow Box

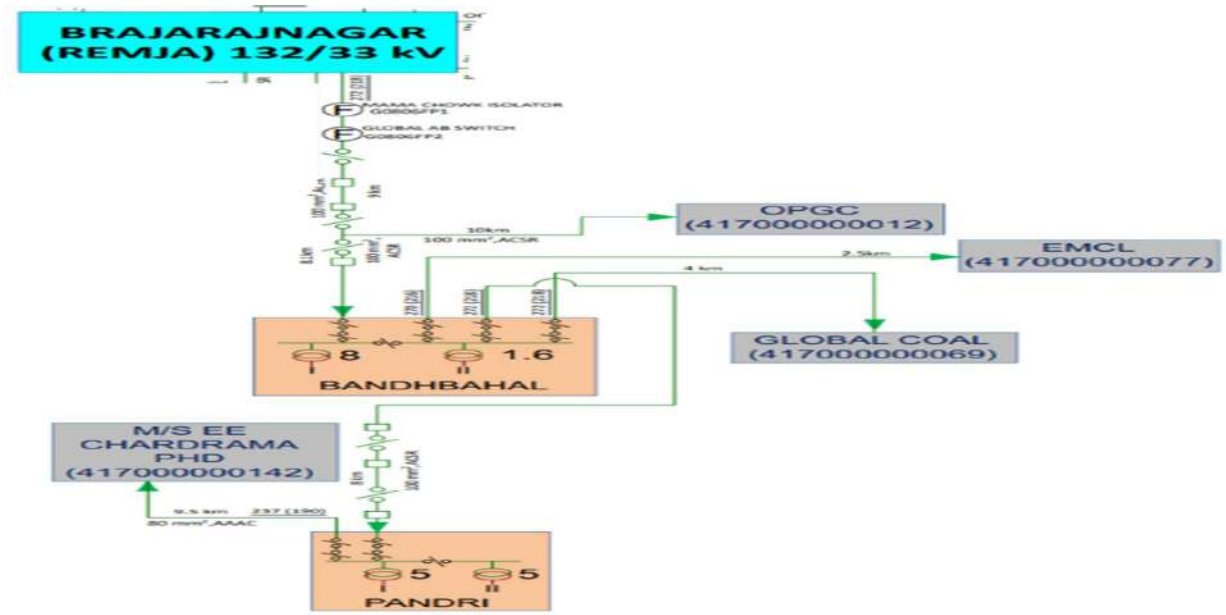
Overhead Line - 96803952

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	104.7	1994.5	1736.7	980.8		0.10
B	100.0	33.0	19.1	104.7	1994.5	1736.7	980.8		0.10
C	100.0	33.0	19.1	104.7	1994.5	1736.7	980.8		0.10
	Feeder Name	GSS0806_33KV OPGC	Loss	Total:	5984	5210	2942	36.6	0.3
	Section Length(Mtr)	0.0	225.75						
	Distance from source(Mtr)	0.0	18.45						

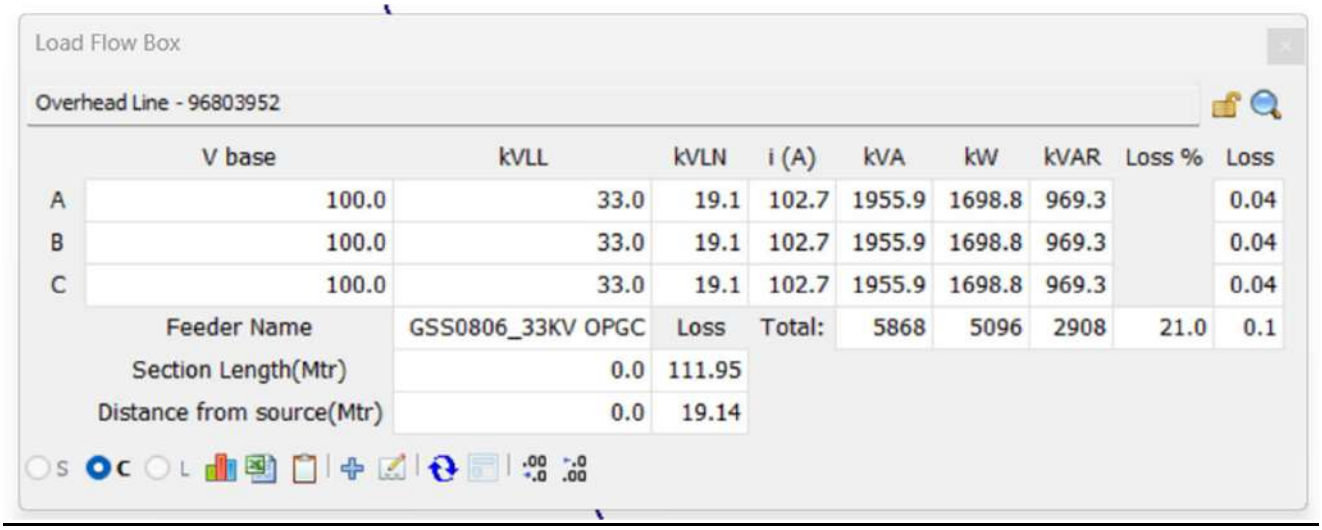
Proposed Scenario:

- It is proposed 20Ckm augmentation of 33kV OPGC feeder from Remja GSS to Bandhbahal PSS using 232 sqmm AAAC.

Proposed GIS SLD



Load Flow Study of proposed scenario in Cyme Software



Load Flow Box

Overhead Line - 96803952

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	102.7	1955.9	1698.8	969.3		0.04
B	100.0	33.0	19.1	102.7	1955.9	1698.8	969.3		0.04
C	100.0	33.0	19.1	102.7	1955.9	1698.8	969.3		0.04
	Feeder Name	GSS0806_33KV OPGC	Loss	Total:	5868	5096	2908	21.0	0.1
	Section Length(Mtr)	0.0	111.95						
	Distance from source(Mtr)	0.0	19.14						

Scope of Work:

- 20 Ckm of Augmentation using 232 sqmm AAAC.

Proposed Cost with Estimate Break-up:

ANNEXURE-		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**BNED, BRAJRAJNAGAR**	
Name of the Work: -	33KV OPGC feeder trunk line augmentation.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	**PART A:** 33KV AUGMENTATION USING 232 SQMM AAAC (Refer Annexure-93)	4.8329860
	Total Amount	**4.83**
Total estimated cost is Rs.4.83 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 4.83Cr.

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	**Remja**	OPGC	5210	226	**53.49**	**468537.36**	**19.23**
After Proposal	**Remja**	OPGC	5096	112			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	483.30	Rs. Lac
B	Load due to load growth	-	278.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	243	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	1446861	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	20.62	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	19.23	Rs. Lac
J	Net Revenue Collected	H+I	39.85	Rs. Lac
K	% revenue return	(J/A)*100	8.2	%
L	Pay Back Period	100/K	12.13	Years

Benefit to the system and consumers:

- Upgrading from 100sq. mm to 232 sq. mm AAAC increases ampacity, reduces line losses and voltage drop, and improves thermal margin for future load growth.
- Old/deteriorated conductors and fittings increase fault risk (snap, corona, hot spots) and maintenance costs; replacing them improves reliability and safety.
- Replacing weak poles reduces line sag and mechanical failure risk under wind/ice/loading events.

Over-Loading issue during N-1 of 33kV Feeder

1.0 Proposal for mitigate over-loading issue during N-1 operation of 33 KV Goshala Feeder:

Proposal:

33kV line augmentation of Godbhaga feeder from Gosala PSS to Godbhaga PSS.

Requirement/ Need of the proposal:

Objective: To mitigate over-loading issue during N-1 operation of 33 KV Goshala Feeder.

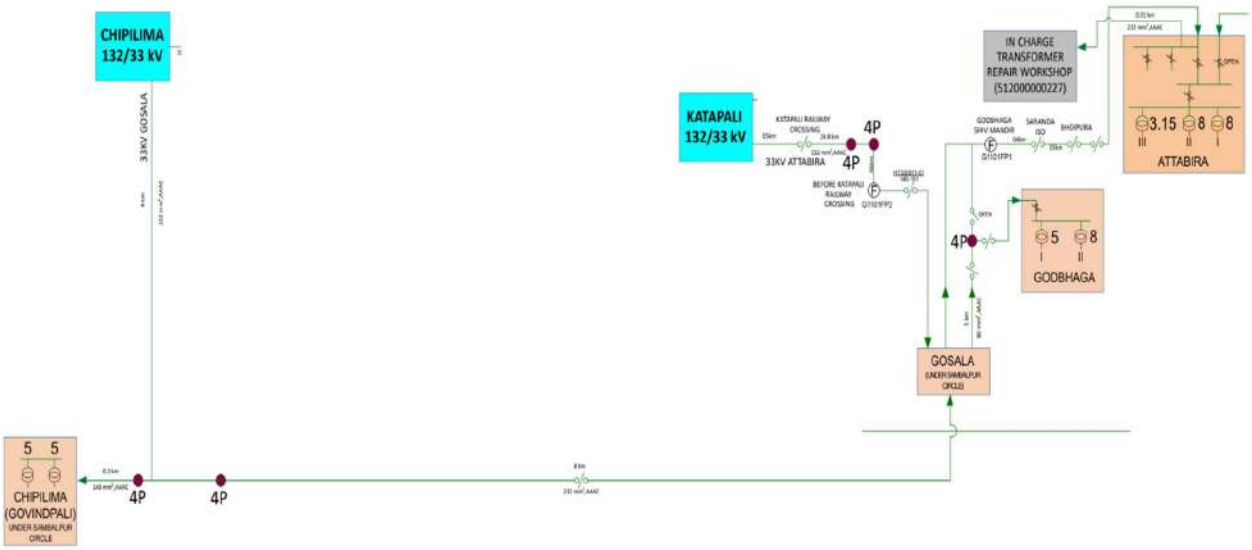
Existing Scenario:

- At present, 33kV Goshala feeder is emanating from 132/33 KV Chiplima GSS. The total length of this feeder is 18.8 CKM with a peak load 255 AMP.
- The conductor size of 33kV Goshala feeder is 80 sqmm/232 sqmm AAAC.
- Currently, the feeder is supplying to four nos. of PSS (Goshala, Godbhaga, Attabira & Chiplima). The conductor size of the line from Goshala PSS to Godbhaga PSS is of 80 sqmm AAAC due to which this part gets over-loaded during N-1 operation which takes up a load of 330 Amp while Ampacity of 80sqmm AAAC is 237 Amp when 33 KV Attabira Feeder gets Faulty.

Existing Peak (FY25-26) Loading and projected load of Goshala 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**
Katapali	Goshala	26	14.5	56%	OK	17.3	66.6%	OK

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	254.6	4850.0	4293.9	2255.0		1.44
B	99.9	33.0	19.0	254.6	4850.0	4293.9	2255.0		1.44
C	99.9	33.0	19.0	254.6	4850.0	4293.9	2255.0		1.44
	Feeder Name	GSS1001_33KV GOSHALA	Loss	Total:	14550	12882	6765	52.1	4.3
	Section Length(Mtr)	0.1	469.93						
	Distance from source(Mtr)	0.1	33.90						

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

Load Flow Box

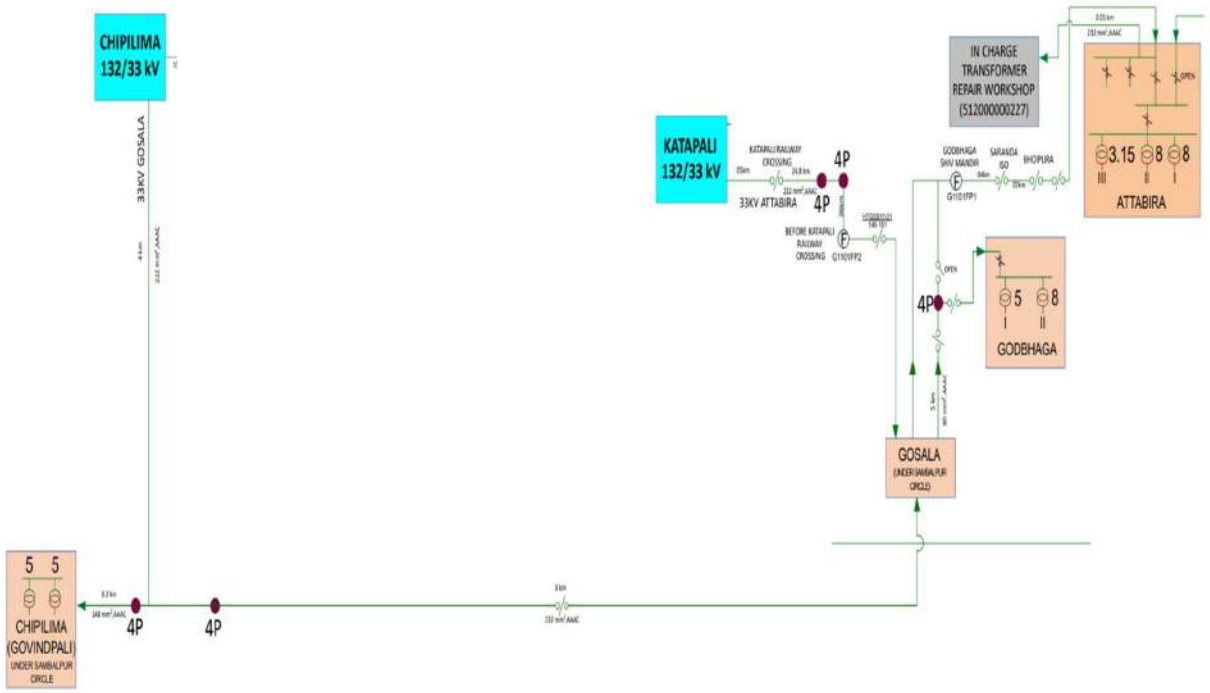
Overhead Line - 112163580

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	99.9	33.0	19.0	301.7	5748.5	5057.5	2732.6		2.03
B	99.9	33.0	19.0	301.7	5748.5	5057.5	2732.6		2.03
C	99.9	33.0	19.0	301.7	5748.5	5057.5	2732.7		2.03
	Feeder Name	GSS1001_33KV GOSHALA	Loss	Total:	17246	15172	8198	61.7	6.1
	Section Length(Mtr)	0.1	647.10						
	Distance from source(Mtr)	0.1	33.36						

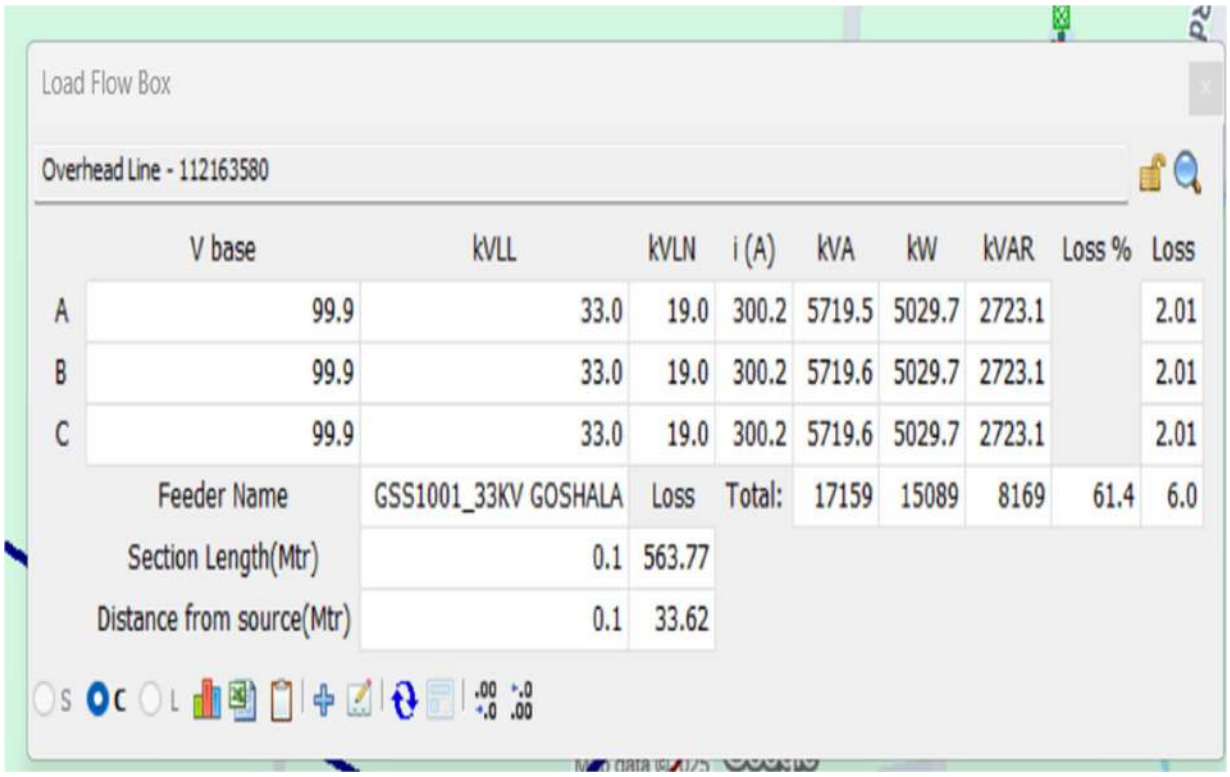
Proposed Scenario:

- In order to mitigate over-loading issue during N-1 operation as well as to ensure reliable supply, it is proposed to Augment from 80sqmm AAAC to 232 sqmm AAAC from Goshala PSS to Godbhaga PSS.

Proposed SLD:



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	300.2	5719.5	5029.7	2723.1		2.01
B	99.9	33.0	19.0	300.2	5719.6	5029.7	2723.1		2.01
C	99.9	33.0	19.0	300.2	5719.6	5029.7	2723.1		2.01
Feeder Name		GSS1001_33KV GOSHALA	Loss	Total:	17159	15089	8169	61.4	6.0
Section Length(Mtr)		0.1	563.77						
Distance from source(Mtr)		0.1	33.62						

Scope of Work:

- 8 Ckm of Augmentation of Trunk line from 80 Sqmm AAAC to 232 Sqmm AAAC.

Proposed Cost with Estimate Break-up:

ANNEXURE		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**SED, SAMBALPUR**	
Name of the Work: -	Proposal for mitigating over-loading during N-1 operation of 33 KV Goshala Feeder by Augmentation to 232 sqmm AAA conductor.	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A: 33KV LINE CONDUCTOR AUGMENTATION USING AAAC 232Sqmm - 8CKM (Refer Annexure-93)	1.933194
	Total Amount (In Cr.)	**1.93**
Total estimated cost is Rs.1.93Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 1.93 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	**Chipilima**	Goshala	15172	647	**39.17**	**343086.28**	**14.08**
After Proposal	**Chipilima**	Goshala	15089	564			

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
A	Total cost of scheme	-	193.32	Rs. Lac
B	Load due to load growth	-	2290.00	kVA
C	Total kW due to load growth	1.732*33*B*Pf	2004	kW
D	Total units consumed yearly (Load x days x Hrs x load factor)	C*365*24*LF	11918385	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.

Revenue Return Sheet				
Sr. No.	**Description**	**Formula**	**Value**	**UoM**
H	Revenue owing to serving additional load	(G*D)/10^5	169.84	Rs. Lac
I	Revenue owing to tech. loss reduction	Refer Technical Loss Calculation	14.08	Rs. Lac
J	Net Revenue Collected	H+I	183.92	Rs. Lac
K	% revenue return	(J/A)*100	95.1	%
L	Pay Back Period	100/K	1.05	Years

Benefit to the system and consumers:

- Reliability improvement of 33kV Brajrajnagar feeder.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to upcoming potential consumers

Replacement of Damaged Cable & Improving Reliability

1.0 Proposal for Sick cable Replacement of 33kV Kalinga Bihar Feeder:

Proposal:

Replacement of Sick Cable from Akankshya Hostel to Kalinga Bihar PSS of 33kV Kalinga Bihar PSS.

Requirement/ Need of the proposal:

Objective: To ensure the safe and reliable operation of the electrical network by replacing the Sick cable with a new cable.

Existing Scenario:

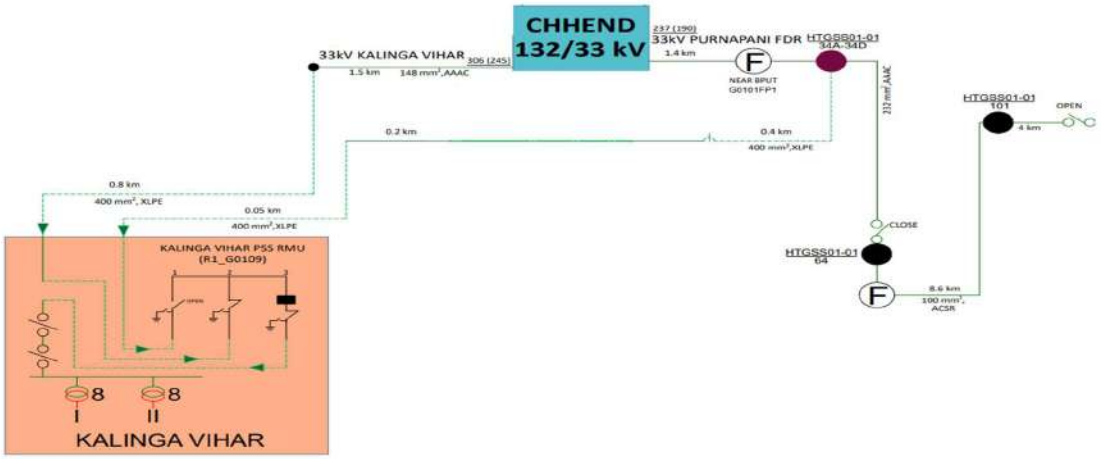
- At present, 33kV Kalinga Bihar feeder is emanating from 132/33kV Chhend GSS. The total trunk length of this feeder is 2.5 km and the peak load is 152.1 AMP.
- The feeder comprises 1.5 Ckm of AAAC 148 Sqmm conductor up to Akankshya Hostel, followed by the XLPE cable section Cable of 0.8Ckm,1C,4R, XLPE,400Sqmm.
- This Cable Section has 18No of ST joints and Frequent faults occur.
- At present the feeder is loaded upto % and will go upto 150% loaded with a 2 Year Load growth.
- Several breakdowns on the 11kV feeder hamper the reliability of the power supply. Also, considering the future load growth of the upcoming consumers, this new feeder is proposed to supplement the existing feeder to mitigate Overloading and N-1 Compliance.

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

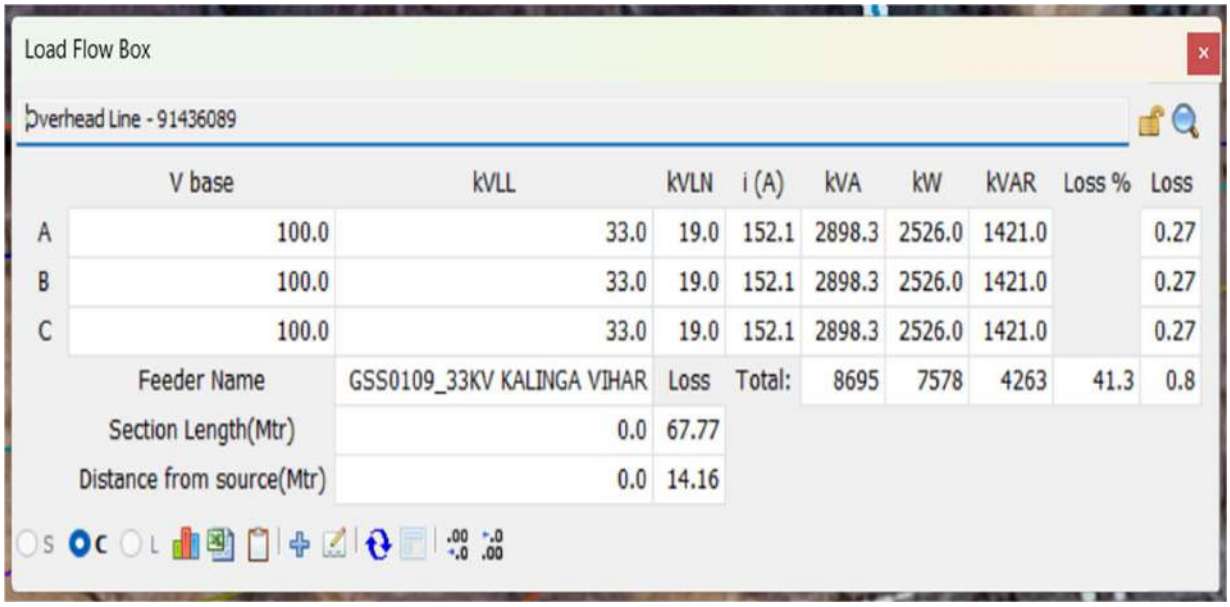
Existing Scenario								
Name of GSS	**33kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Loading FY25-26(MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected load FY26-27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Chhend	Kalinga Bihar	20	8.7	43%	Ok	9.5	47%	Ok

GIS Map:

SLD Map:



Load Flow Study of existing scenario in Cyme Software



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.0	152.1	2898.3	2526.0	1421.0		0.27
B	100.0	33.0	19.0	152.1	2898.3	2526.0	1421.0		0.27
C	100.0	33.0	19.0	152.1	2898.3	2526.0	1421.0		0.27
Feeder Name		GSS0109_33KV KALINGA VIHAR	Loss	Total:	8695	7578	4263	41.3	0.8
Section Length(Mtr)		0.0	67.77						
Distance from source(Mtr)		0.0	14.16						

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

Load Flow Box

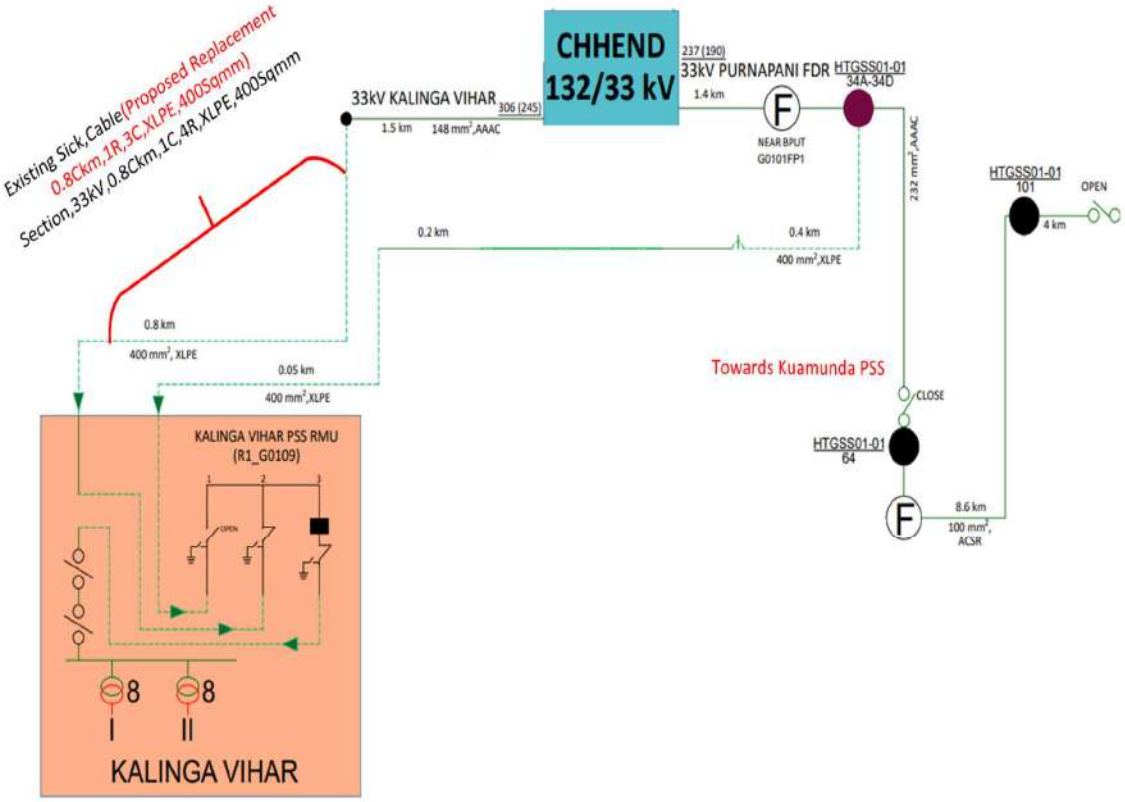
Source - 25674239

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
B	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
C	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
	Feeder Name	GSS0109_33KV KALINGA VIHAR	Loss	Total:	9520	8275	4707	94.1	0.0
	Section Length(Mtr)	0.0	78.43						
	Distance from source(Mtr)	0.0	14.15						

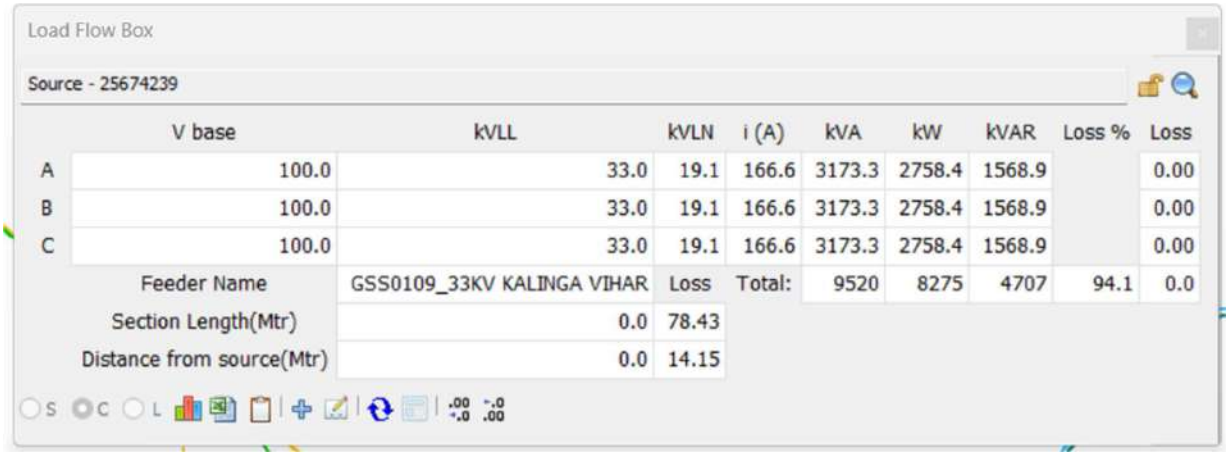
Proposed Scenario:

- Replacement of Existing Cable section with 0.8Ckm,3C,1R, XLPE,400Sqmm using HDD Method.

Proposed GIS SLD:



Load Flow Study of proposed scenario in Cyme Software


Load Flow Box

Source - 25674239

	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR	Loss %	Loss
A	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
B	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
C	100.0	33.0	19.1	166.6	3173.3	2758.4	1568.9		0.00
	Feeder Name	GSS0109_33KV KALINGA VIHAR	Loss	Total:	9520	8275	4707	94.1	0.0
	Section Length(Mtr)	0.0	78.43						
	Distance from source(Mtr)	0.0	14.15						

Scope of Work:

- Replacement of line ,33kV,0.8km,3C,1R, XLPE,400Sqmm using HDD.
- One Nos of DP with 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:-	Kalinga Bihar	
Name of the Work:-	Replacement of Sick Cable from Akankshya Hostel to Kalinga Bihar PSS	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount (Cr.)**
1	PART A:400Sqmm XLPE Cable-0.8 km (Refer Annexure-167)	**0.7171392**
2	PART B:DP with Isolator-1 Nos (Refer Annexure-96)	**0.05758**
	Total Amount (In Cr.)	**0.7747192**
	Total Amount (In Cr.)	**0.77**
Total estimated cost is Rs. 0.77Crore. (On TPWODL Capex Scheme)		

Cost Estimate: 0.77 Cr. (For detailed BoQ, refer Annexure)

Physical Target:

March 2027

Cost Benefit Analysis:

- Kalinga Vihar PSS acts as a High revenue PSS comes under Rourkela City; any fault here leads to complete blackout of Kalinga Vihar Area.
- This proposal improves the reliability of Kalinga Vihar PSS and improves the reliability of 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 replacing the line of 33kV Kalinga Bihar feeder.
- Providing N-1, reduces the risk of long outages and improves system resilience.
- Enables easier switching operations during faults or planned outages.
- The above arrangement will help to release power supply to the upcoming potential consumers.

Proposal to mitigate Overloading/Undervoltage of Bondamunda Feeder

Proposal for Overloading/Undervoltage Improvement of 11kV Bondamunda Feeder:

Proposal:

- ***11kV line augmentation of Bondamunda feeder from PSS to Kapatmunda(Tail end) for overloading mitigation.***

Requirement/ Need of the proposal:

- **Objective:** To ensure reliable power supply to consumers connected to the Bondamunda feeder, we have proposed conductor and cable upgradation from PSS to Kapatmunda(Tail end).

Existing Scenario

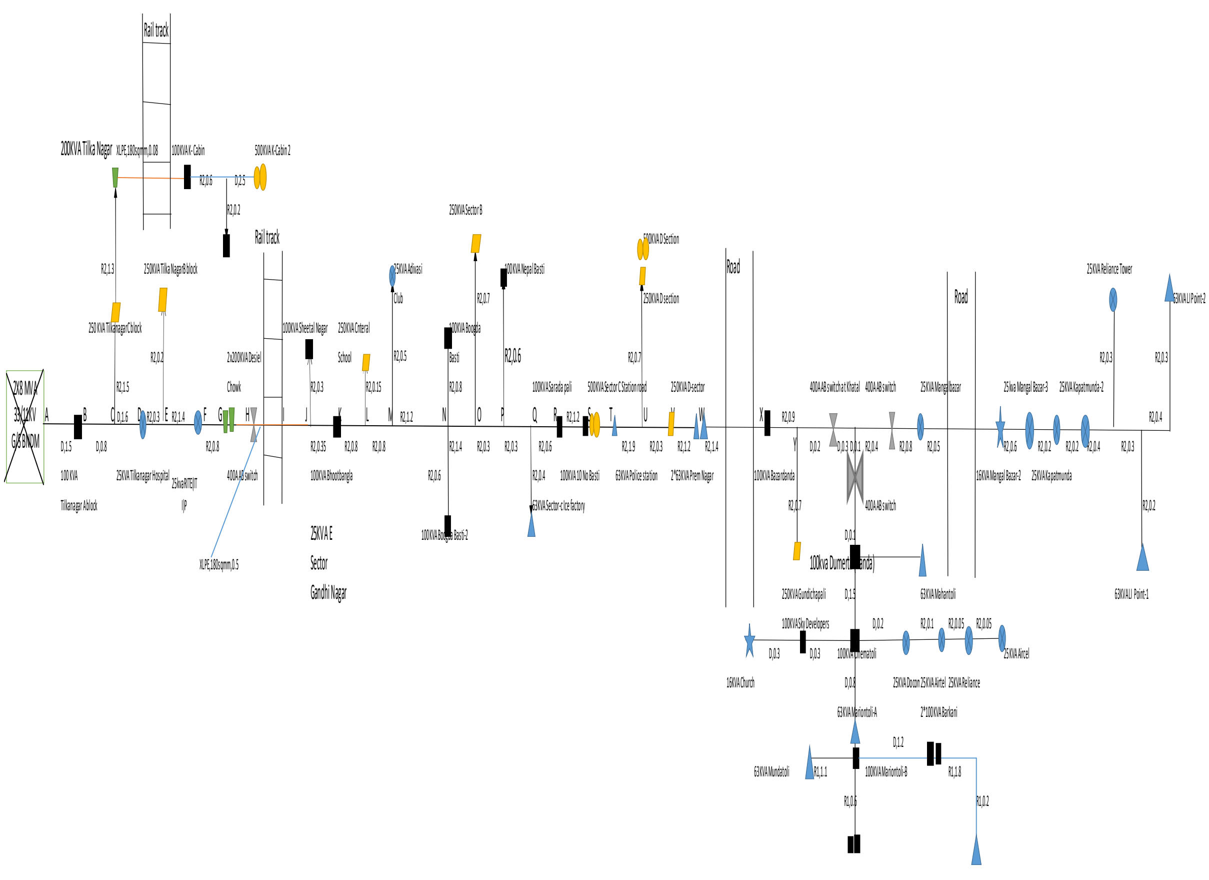
- 11 KV Bondamunda Town feeder emanates from 33/11 KV Bondamunda PSS & provides power supply to approx. 3000 Nos of commercial & domestic consumer of Bondamunda area of at Rourkela city.
- Peak load of Bondamunda feeder is 186.41 A & length of the feeder is 20.195 Ckm.
- Bondamunda Town feeder is consisting of both conductor and cable sections.
- Existing conductor size of Bondamunda feeder is 55 sqmm ACSR/88sqmm ACSR and cable dize is XLPE 95sqmm, due to load growth feeder is experiencing overloading and undervoltage at tail end.
- To mitigate the above issues, it is proposed to upgrade the conductor part with 100sqmm condutor and cable part with 3C, 300 sqmm XLPE.

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

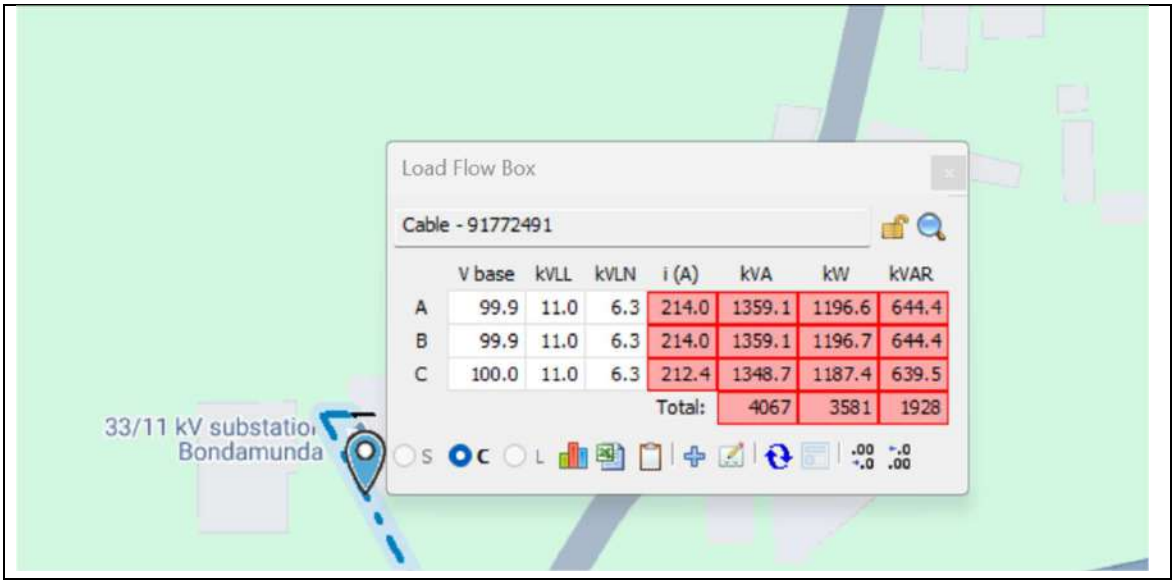
Existing Scenario								
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Peak Demand FY 26 (MVA)**	**% Loading**	**Feeder Overloading Status (AS IS)**	**Projected Demand FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Bondamunda	Bondamunda Town Feeder	3.30	186.41	108.13	overloaded	3.815	116.73	Overloaded and Under voltage

GIS Map:


11kV BONDAMUNDA FEEDER-33/11kV BONDAMUNDA PSS


Rail track
Rail track
Road
Road

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



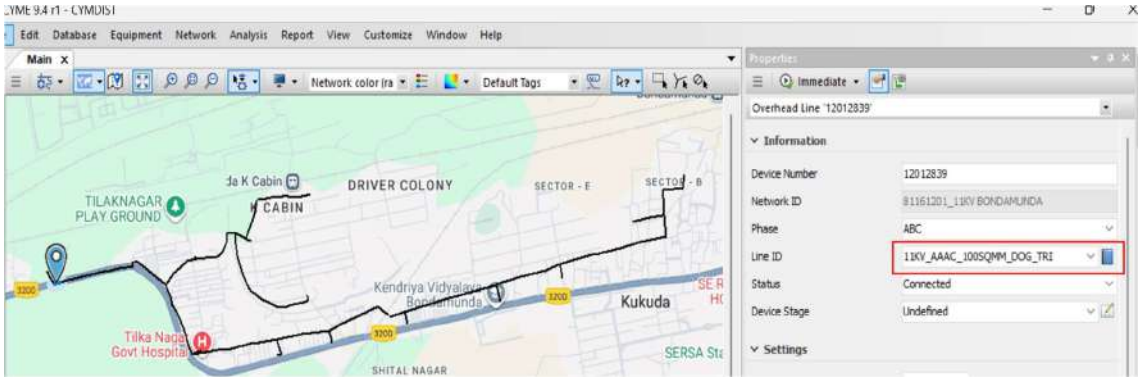
Proposed Scenario:

- 3.0ckm conductor upgradation using 100sqmm AAA bare conductor and 4.0ckm conductor upgradation using 100 sqmm AAA insulated conductor.
- 2.0ckm UG Cable upgradation using 300 sqmm, UG XLPE.

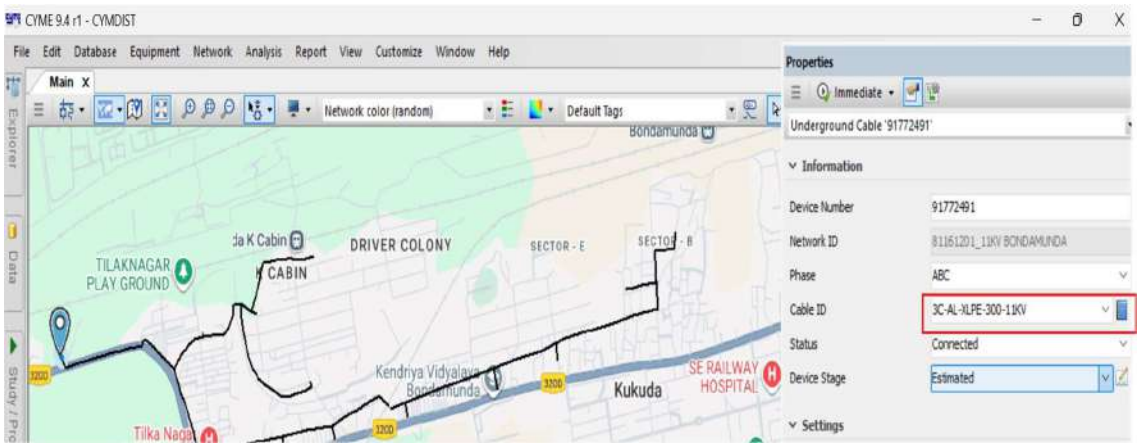
Proposed Loading details after proposal implementation :

Proposed Scenario after Proposal Mapping					
Name of PSS	**11kV Feeder Name**	**Feeder Capacity (MVA)**	**Projected Demand FY 27 (MVA)**	**% Loading**	**Feeder Overloading Status**
Bondamunda	Bondamunda Town Feeder	5.24	3.815	72.8	NO Under voltage and Over loading

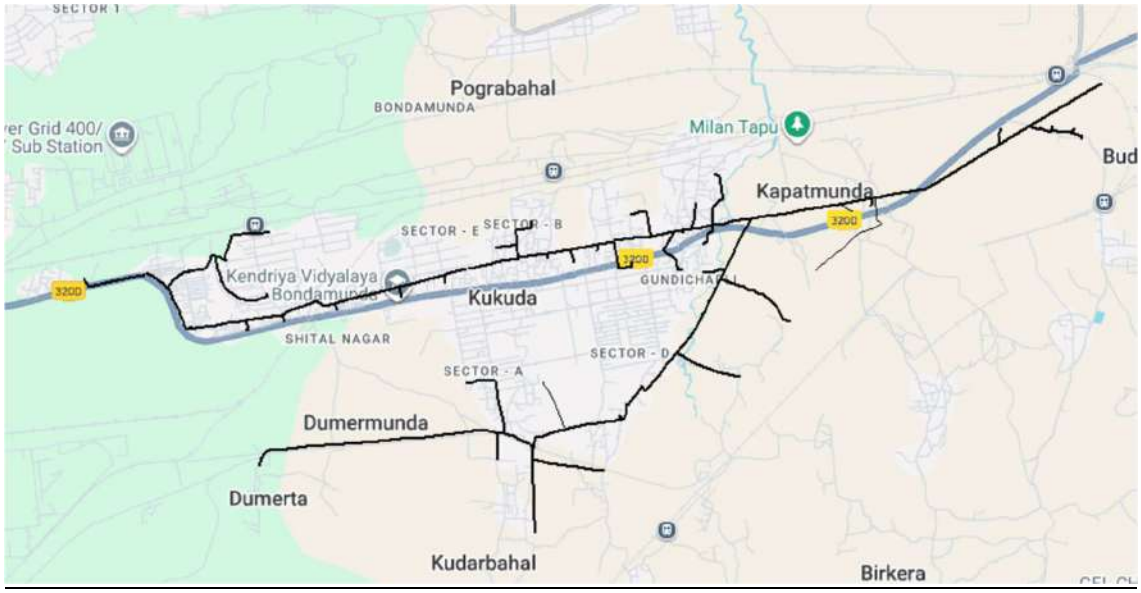
Proposed GIS SLD:



With Cable Upgradation



Proposed SLD:



Load Flow Study of proposed scenario in Cyme Software:

After Conductor and cable upgradation there is no Overloading and under voltage issue present in the Bondamunda feeder

Scope of Work:

- 3.0ckm conductor upgradation using 100sqmm AAA bare conductor and 4.0ckm conductor upgradation using 100 sqmm AAA insulated conductor.
- 2.0ckm UG Cable upgradation using 300 sqmm, UG XLPE.

Proposed Cost with Estimate Break-up:

ANNEXURE-12.1		
TP WESTERN ODISHA DISTRIBUTION LIMITED		
Name of the Division: -	**RED**	
Name of the Sub-Division: -	BISRA	
Name of Section: -	Bondamunda	
Name of the Work: -	Proposal for Conductor upgradation of Bondamunda feeder from Source to Tail end using 100sqmm conductor and Cable upgradation from 95sqmm to 3C, 300sqmm XLPE	
Names of Schemes: -	TPWODL CAPEX (FY 26-27)	
ABSTRACT OF ESTIMATE		
Sl. No.	**Description**	**Amount**
1	11KV, INSULATED CONDUCTOR (REFER ANNEXURE-57)	1,14,46,456.00
2	11KV, BARE CONDUCTOR (REFER ANNEXURE-92)	63,20,128.00
3	UG CABLE 3C,300 SQMM XLPE (REFER ANNEXURE-166)	1,23,16,345.00
	Total Amount	3,00,82,930.00
	Total Amount (In Cr 3.008)	
Total estimated cost is Rs. 3.008 Crore. (On TPWODL Capex Scheme)		

Cost Estimate: ₹ 3.008 Cr.

Physical Target:

March 2027

Cost Benefit Analysis:

Stage	Grid	11kV Feeder	Peak Loading (kW)	Losses at peak loading (kW)	Avg.Loss reduction (kW) (LLF –0.470)	Unit saved annually (kWH)	Annual saving (Rs Lacs) (Rs 4.105/Unit)
Before Proposal	**Bondamunda**	Bondamunda	3363	178	**1.88**	**16468.80**	**0.68**
After Proposal	**Bondamunda**	Bondamunda	3363	174			