41BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION
PLOT NO. 4, SHAILASHREE VIHAR, CHANDRASEKHARPUR
BHUBANESWAR-751023

CASE NO.
FILING NO. 1

IN THE MATTER OF: An application under condition 10 of License Conditions of Odisha Power Transmission Corporation Limited (OPTCL) approved by Odisha Electricity Regulatory Commission vide order dated 27.10.2006 passed in Case No.22 of 2006.

AND
IN THE MATTER OF: Investment proposal of OPTCL for seeking approval of investment proposal taken up from FY 2026-27 to FY 2030-31 260 nos. DTPCs in identified 400 kV and 220 kV Transmission network of OPTCL on availing equity/ grant/loan assistance from suitable funding agency.

AND
IN THE MATTER OF: Odisha Power Transmission Corporation Ltd.
Janpath, Bhubaneswar-751 007

--- Applicant/ Petitioner

Vs.

1. **The Chief Executive Officer**
   TP Western Odisha Distribution Ltd.
   At/PO: Burla, Dist: Sambalpur-768017

2. **The Chief Executive Officer**
   TP Southern Odisha Distribution Ltd.
   Kamapalli, Courtpeta,Berhampur, Ganjam, Odisha-760004

3. **The Chief Executive Officer**
   TP Northern Odisha Distribution Ltd.
   At/PO: Januganj, Remuna Golei, Dist. Balasore-756019

4. **The Chief Executive Officer**
   TP Central Odisha Distribution Ltd
   IDCO Tower, 2nd Floor, Janpath, Bhubaneswar-751022

5. **The Additional Chief Secretary to Government**
   Department of Energy, Government of Odisha,
   2nd floor, Kharavel Bhawan,
   Gopabandhu Marg, Keshari Nagar, Bhubaneswar-751001

--- Respondents

The above-named applicant, Odisha Power Transmission Corporation Ltd.

MOST RESPECTFULLY SHOWETH:

1. That Odisha Power Transmission Corporation Ltd. (hereinafter referred to as "OPTCL") is a deemed Transmission Licensee under fifth proviso of section 14 of the Electricity Act, 2003 (hereinafter referred to as the "Act") and as notified by the Government of Odisha in the Transfer Scheme vide Notification No. 6892 dated 09.06.2005.

2. That Odisha Electricity Regulatory Commission (hereinafter referred to as the "Commission") vide order dated 27.10.2006 passed in Case No.22 of 2006 approved the License Conditions of OPTCL, the deemed Transmission Licensee, which came into force from 1st November 2006.

3. That in terms of license condition 10.1 of the aforesaid licensee conditions, unless otherwise directed by the Commission, the licensee shall obtain prior approval of the Commission for making investment in the licensed business, if such investment is above the limits laid down at license condition 23.1.

As per license condition 23.1, the Hon'ble Commission has specified the term "Major Investment" as any planned investment in or acquisition of transmission facilities, the cost of which, when aggregated with all other investments or acquisitions (if any) forming part of the same overall transaction, equals or exceeds Rs.10 Crore.

4. That as mentioned under aforesaid license condition 7.1 and as per provisions contained in section 40 of the Electricity Act, 2003, OPTCL, as a Transmission Licensee, is duty bound to make investment to build, maintain and operate an efficient, coordinated and economical intra-state transmission system.

5. That in the above backdrop and in compliance of the requirement under license condition 10, OPTCL is filing this investment proposal before the Hon'ble Commission for approval towards following projects on availing equity/loan assistance from suitable funding agency.

6. The highlights of the proposal are given as under:

Upgradation of GSS

- 220kV Upgradation of 132/33kV GSS at Phulbani and 220kV DC line to Baliguda GSS

Transmission lines

- 2nd ckt stringing of 132kV Padampur-Ghens S/C line.

Telecom project

- Installation of **260 nos. Digital Tele Protection Couplers (DTPCs)** in identified 400kV and 220kV transmission network of OPTCL utilizing the existing OPGW-SDH communication infrastructure.

Total investment of the above said projects **Rs. 274.21 Cr.** and the details of estimated cost, source of funding and OERC approvals in Transmission/ Business Plan are as under

SUMMARY OF INVESTMENT, COST AND SOURCE OF FUNDING

Sl. No.	NAME OF TRANSMISSION REINFORCEMENT WORKS	ESTIMATED COST (Rs. Cr.)	SOURCE OF FUNDING / SCHEME	Trans. Plan
1	220kV Upgradation of 132/33kV GSS at Phulbani and 220kV DC line to Baliguda GSS	242.92	Equity:Debt (30:70)	15th TP in case no. 71/2026
2	2nd ckt stringing of 132kV Padampur-Ghens S/C line	11.66	100% Grant from Govt.	15th TP in case no. 71/2026
3	Installation of 260 nos. DTPCs in identified 400kV and 220kV Transmission network of OPTCL	19.63	100% Grant from Govt.	TP approval not required
	TOTAL	**274.21**		

- Sl. No. 1 will be funded through 30% Equity support from Govt. and remaining 70% will be availed through loan from funding agencies.

- Sl. No. 2 &3 proposed for 100% Budgetary Support (Grant) from Govt. of Odisha.

7. That the information on the above proposed investment with regard to the following:

a) Executive Summary
b) Technical Considerations
c) Techno-Economic justification
d) Implementation
e) Prior consultation with DISCOMs
f) Environmental Considerations
g) NPV & IRR

are filed along with this application as **ANNEXURE- 1 & 2 for** kind perusal and approval of the Hon'ble Commission.

8. That in compliance to the requirements under aforesaid license condition 10.4, the Detailed Project Report (DPRs) containing the relevant information related to the above mentioned projects are filed along with this application.

9. That, OPTCL hereby submits the justification for creation of each of the proposed **03 nos.** projects in the respective DPRs and in the information document filed along with this application.

PRAYER

The applicant, Odisha Power Transmission Corporation Ltd., Bhubaneswar most respectfully requests the Hon'ble Commission to approve the investment proposal filed herein for implementation of the projects.

By the applicant
Through

Bhubaneswar
Date: 08.2026

Sr.GM, RT&C

BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION
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IN THE MATTER OF: Investment proposal of OPTCL taken up from FY 2026-27 to FY 2030-31 for 01 no. 220kV Upgradation of 132/33kV GSS, 01 no. 132kV 2nd ckt string of SC line and 01 no. Telecom project on availing equity/grant/loan assistance from suitable funding agency.

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Vs.

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   Department of Energy, Government of Odisha,
   2nd floor, Kharavel Bhawan,
   Gopabandhu Marg, Keshari Nagar, Bhubaneswar-751001

--- Respondents

AFFIDAVIT VERIFYING THE APPLICATION

Sri Arup Kumar Banerjee, Late Tulasi Das Banerjee, aged about 59 years, residing at Bhubaneswar, do solemnly affirm and say as follows:

1. I am the Senior General Manager, Regulation, Tariff and Commercial, OPTCL, duly authorized by the said applicant to make this affidavit on its behalf.
2. The Statements made in Paragraphs 1 to 9 herein above are based on official information and I believe them to be true.

Bhubaneswar **DEPONENT**
Date: 08.2026

ANNEXURE-1

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1. EXECUTIVE SUMMARY

OPTCL has technically and economically justified requirements for the immediate implementation of additional system reinforcement of its transmission network to meet the system needs for the years immediately beyond 2024. The proposed projects to be implemented by OPTCL on availing loan assistance from suitable funding agency is the immediate priority and long-term system reinforcement required for the State. The proposed addition will improve the security and supply standards of the OPTCL transmission network and reduce transmission loss. The requirement for OPTCL to undertake such investment to provide an efficient, coordinated and economical system of transmission is called for in condition 7.1 of license conditions of OPTCL (effective from 1st November 2006) approved by the Hon'ble Commission vide order dated 27.10.2006 passed in Case No.22 of 2006 and as per provisions contained in section 40 of the Electricity Act, 2003. The technical, economic and environmental aspects of the investment have been considered in compliance with condition 10 for major investments of aforesaid license conditions.
The proposed investment has been taken into account as regards the fundamental requirements to:

- Ensure that the quality of supply to consumers is maintained / improved.
- Enable OPTCL to receive an economic return.

In the light of the above requirements, the proposed investment has been developed and justified based upon:

- Comparative load flow studies using application of planning criteria to meet various combinations of load and generation patterns currently available and anticipated beyond 2024.
- Comparative loss evaluation and also comparison with the capital expenditure of the scheme proposed after capitalization.

A total investment of **Rs. 274.21 Cr.** for the transmission schemes is proposed as follows:

Upgradation of GSS

- 220kV Upgradation of 132/33kV GSS at Phulbani and 220kV DC line to Baliguda GSS

Transmission lines

- 2nd ckt stringing of 132kV Padampur-Ghens S/C line.

Telecom project

- Installation of **260 nos. Digital Tele Protection Couplers (DTPCs)** in identified 400kV and 220kV transmission network of OPTCL utilizing the existing OPGW-SDH communication infrastructure.

SUMMARY OF INVESTMENT, COST AND SOURCE OF FUNDING

Sl. No.	NAME OF TRANSMISSION REINFORCEMENT WORKS	ESTIMATED COST (Rs. Cr.)	SOURCE OF FUNDING / SCHEME	Trans. Plan
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2	2nd ckt stringing of 132kV Padampur-Ghens S/C line	11.66	100% Grant from Govt.	15th TP in case no. 71/2026
3	Installation of 260 nos. DTPCs in identified 400kV and 220kV Transmission network of OPTCL	19.63	100% Grant from Govt.	TP approval not required
	TOTAL	**274.21**		

- Sl. No. 1 will be funded through 30% Equity support from Govt. and remaining 70% will be availed through loan from funding agencies.
- Sl. No. 2 &3 proposed for 100% Budgetary Support (Grant) from Govt. of Odisha.

2. TECHNICAL CONSIDERATIONS

2.1 Planning Criteria

Maintenance of quality power supply to consumers and reduction of technical losses are achieved by application of appropriate planning criteria.

The following criteria have been considered when investigating the proposed new sub-stations as well as transmission lines with respect to the acceptable range of voltages permitted at different points of the system under both normal and contingency situation:

- At all loads under normal steady state operating conditions, the voltages at all points on the main nodal points of the interconnected system should be maintained within a tolerance of + 5% to -5% of the nominal voltage. At other locations and outgoing line circuits a higher voltage tolerance of +10% to -10% can be accepted.
- The loading of all elements should not exceed their rated values for steady state conditions.
- Under a single contingency outage i.e. under outage of any one of power element of the transmission system, the system voltage at any point should not fall below 90% of the nominal value without any immediate corrective action.
- After system re-adjustment, following any single element outage, without considering any load shedding at important load centers, the voltages and loading of all elements should return to normal acceptable levels.
- Under any low load or loss of load situation, the 400kV system voltage should not be allowed to exceed +5% of the nominal value, whereas the 220kV & 132kV system voltage can be permitted to rise to a maximum of +10%.

2.2 Overall conclusions of the studies performed with proposed schemes

The System Studies concluded that under the normal steady state conditions, the immediate implementation of the additional proposed sub-stations as well as transmission lines would:

- Improve the system voltage profile at all points of the transmission system.
- Reduce the loading on certain important line sections of the transmission network thereby avoiding overloading of lines or avoiding the line sections being loaded close to their respective capacities.
- Reduce the overall transmission system losses.

The single contingency outage scenario studies indicated certain line outage situations that could lead to potential problems related to overloading of remaining system lines and collapse of system voltages at locations close to the tripped line in the proposed case.

2.3 Review of scheme proposed

2.3.1 220kV DC line from Baliguda to the proposed 220kV up gradation Grid of 132/33kV GSS, Phulbani (Approx. line length 66.0 Kms) with 02 nos of feeder bay extension at 220/33kV GSS, Baliguda. Up-gradation of 132/33kV GSS, Phulbani to 220kV voltage system.

JUSTIFICATION OF THE PROJECT:

- At present, the 132/33 kV GSS at Phulbani is connected to the 220/132/33 kV GSS at Bhanjanagar through a 132 kV single-circuit (SC) line having a total length of **133 km**, which is subsequently LILO'd at the 132/33 kV GSS at G. Udayagiri.
- Phulbani GSS, being one of the oldest Grid Substations in Kandhamal District, caters to the DISCOM load of a vast geographical area through the following 33 kV feeders:

Sl. No.	33kV Feeder length	Length (km)
1	33kV Baliguda feeder	130
2	33kV Boudh feeder	50
3	33kV Kalinga feeder	50
4	33kV Phiringia feeder	40
5	33kV Khajuripada feeder	30
6	33kV Phulbani feeder	3
7	33kV Medical college feeder	5
8	33kV Medical feeder	1

Since Phulbani GSS caters to the load of a geographically extensive area of Kandhamal District, the associated 33 kV feeder lengths are consequently very long. Further, during the summer season and under other high-demand operating conditions, low bus voltages have been observed at Phulbani GSS, as indicated below:

Bus Voltage level	Observed Minimum Voltage
132kV Bus voltage	118 kV
33kV Bus voltage	30 kV

- The Kandhamal District is experiencing an acute low-voltage problem, which is evident from the above observations. In order to improve the voltage profile, OPTCL commenced construction of the **132 kV Boudh–Phulbani D/C line in 2022**, which is expected to be commissioned by **December 2026**. Although the commissioning of this line is expected to provide improvement in the voltage profile, the improvement at the 132 kV level alone would not be adequate to address the anticipated long-term load growth and reliability requirements of the district.
- With regard to the anticipated load growth, it is submitted that the power demand in and around Kandhamal District has increased substantially in recent years, driven by infrastructure development, electrification initiatives, and the establishment of various important institutions and projects. Several upcoming developments, including the **E-Library, Civil Services Coaching Centre, Government Medical College and Hospital, Daringbadi Eco Retreat, Integrated Farming Project at Manipadar Village, Kandhamal Apex Spices Association for Marketing at Phiringia Block, and Water Treatment Plant at Harbhanga**, are expected to further increase the electricity demand in the district.
- Inadequate and unreliable power supply is significantly hampering the socio-economic development of Phulbani district. Frequent power interruptions and insufficient electricity adversely affect existing businesses, industries, education, healthcare, agriculture, and other economic activities. The lack of dependable power also discourages potential investors from establishing industries in the district, despite its considerable potential in agro-processing, forest-based industries, tourism, handicrafts, food processing, and small-scale manufacturing. Consequently, many potential industries are not coming to the district, limiting employment opportunities and income generation. This situation also contributes to migration of local youth in search of better opportunities elsewhere. Strengthening power infrastructure is therefore essential for attracting investment and promoting sustainable development.

- Further, Phulbani is the District Headquarters of Kandhamal and requires a reliable and uninterrupted power supply for effective administration and delivery of essential public services. Therefore, considering the existing low-voltage condition, anticipated load growth, the need for improved reliability, and the

requirement to fulfil the N-1 contingency criterion as identified in the 15th Intra-State Transmission Plan study, the following system-strengthening works have been proposed:

i) **Upgradation of existing 132/33kV GSS at Phulbani to 220/132/33kV GSS**
ii) **Construction of 220kV Baliguda-Phulbani DC line**
iii) **Construction of 220kV Bhanjanagar-Baliguda DC line**

The projects at Sl. Nos. (i) and (ii) form part of the present DPR, whereas the project at Sl. No. (iii) shall be proposed and filed separately through a separate DPR. It is pertinent to mention that the proposed **220 kV connectivity will supplement the ongoing 132 kV system-strengthening measures** and provide an additional high-voltage source to the Kandhamal area, thereby further improving the voltage profile and reliability of the transmission network.

- With the implementation of the above projects, the voltage profile in Kandhamal District is expected to improve significantly. The proposed system strengthening will also facilitate compliance with the N-1 contingency criterion, enhance the reliability and operational flexibility of the transmission network, and provide adequate capacity to cater to the anticipated growth in DISCOM load in the coming years.
- In view of the above, it is proposed to undertake the construction of a 220 kV D/C line from Baliguda to the proposed 220 kV upgraded GSS at Phulbani, having an approximate length of 66.0 km, along with 02 nos. of 220 kV feeder bay extensions at 220/33 kV GSS, Baliguda, and upgradation of the existing 132/33 kV GSS at Phulbani to a 220 kV voltage level.

Proposed Scope of Works:

- Construction of 220kV DC line from Baliguda to the proposed 220kV up gradation Grid of 132/33kV GSS, Phulbani (Approx. line length **66.0** Kms) with 02 nos of feeder bay extension at 220/33kV GSS, Baliguda.
- Up-gradation of 132/33kV GSS, Phulbani to 220kV voltage system.

The said project is a part of in 15th Intra-state Transmission Plan in case no. 71/2026. The working capital will be made available with 30% Equity support

from Govt. of Odisha and remaining 70% will be met by taking loan from outside funding agencies.

2.3.2 2nd Circuit stringing of SC line on DC tower from 132/33KV Grid S/S Padampur to 132/33KV Grid Sub-Station Ghens with 132KV Feeder Bay extension at both Padampur and Ghens Grid Sub-Station

EXISTING SUPPLY SYSTEM

The existing 132/33KV, 2X40 MVA Grid S/S at Ghens is fed from a 132KV DC line (line length: 29.53 Kms.) from 220/132/33KV Grid S/S Bargarh New. The Ghens Grid S/S is catering to Melechhamunda, Sohela, Ghens and Bijepur command areas in 33KV. The 2x20+1x40 MVA 132/33KV Grid Substation Padampur is connected with 132/33kV Substation Patnagarh and a Solar power plant of 40 MW Power capacity. Padampur, Paikmal, Gaisilet, Lakhmara and Dahita feeders are also connected to 132/33KV Grid Substation Padampur.

NEED OF THE PROJECT

Presently, 132/33KV Padampur Grid S/S is connected with 132/33kv Grid S/S Ghens through a SC line on DC tower and meeting the load of Ghens and its adjoining areas. The 33KV supply has been extended to both rural and agricultural areas from this substation. Since, this is an existing SC line on DC tower, in order to ensure reliability of the transmission network and uninterrupted power supply, the 2nd circuit stringing will be highly essential. Once this Project is completed, it will ensure stability and reliability of the 132KV network in the western part of Odisha by improving the voltage profile and providing uninterrupted power supply.

SCOPE OF NEW PROPOSAL

2nd Circuit stringing of SC line on DC tower from 132/33KV Grid S/S Padampur to 132/33KV Grid Sub-Station Ghens with 132KV Feeder Bay extension at both Padampur and Ghens Grid Sub-Station. The total scope of works as envisaged in the proposed project is detailed below.

I. 132KV SC line on DC transmission tower from Padampur to Ghens : 40.137 Kms

II. 132 kV Feeder Bay extension (Padampur) : 1 No.

III. 132 KV feeder bay extension (Ghens) : 1No.

Switchyard and other civil works :As required.

The said project is a part of in 15th Intra-state Transmission Plan in case no. 71/2026. State Govt. has been requested for 100% Budgetary Support (Grant).

2.3.3 Installation of 260 nos. Digital Tele Protection Couplers (DTPCs) in identified 400kV and 220kV transmission network of OPTCL utilizing the existing OPGW-SDH communication infrastructure.

INTRODUCTION:

Odisha Power Transmission Corporation Limited (OPTCL), the State Transmission Utility (STU) of Odisha, owns and operates the Extra High Voltage (EHV) transmission network comprising **400 kV, 220 kV and 132 kV** transmission systems across the State. The Corporation has developed an extensive Optical Ground Wire (OPGW)-based communication network interconnecting Grid Substations to facilitate operational communication, SCADA, tele-protection and other mission-critical applications.

Communication-assisted protection is one of the most critical components of the EHV transmission system. Digital Tele Protection Couplers (DTPCs) enable high-speed transmission of protection signals between substations through the OPGW-SDH communication network, ensuring instantaneous fault detection, selective tripping and rapid restoration of the transmission system.

Although DTPCs have been provided for most of the newly commissioned transmission lines, several existing 400 kV and 220 kV transmission lines are either operating with conventional PLCC-based protection or without communication-assisted protection. Modernization of these left-out transmission lines has therefore become essential for improving system reliability and ensuring compliance with prevailing protection standards.

Accordingly, OPTCL proposes to implement the project **"Supply, Installation and Commissioning of Digital Tele Protection Coupler (DTPC) in 400 kV & 220 kV System in OPTCL"** for strengthening the communication-assisted protection system of the State Transmission Network.

NEED OF THE PROJECT:

The proposed project aims to provide DTPC-based communication-assisted protection to all identified left-out 400 kV and 220 kV transmission lines by utilizing the existing OPGW-SDH communication network.

Implementation of the project will provide the following benefits:

- Modernization of communication-assisted protection of existing EHV transmission lines.
- Faster fault detection and selective isolation.
- Reduced fault clearing time.
- Improved grid reliability and operational security.
- Protection of high-value transmission assets.
- Better utilization of the existing OPGW communication infrastructure.
- Compliance with ERPC guidelines and applicable CEA standards.
- Enhanced resilience of Odisha State Transmission Network.

SCOPE OF WORK:

The scope of the proposed project includes the **Supply, Installation, Testing and Commissioning of 260 Digital Tele Protection Couplers (DTPCs)** in identified 400 kV and 220 kV Grid Substations of OPTCL along with all associated accessories and services required for successful commissioning.

The major scope of the project comprises the following:

- Supply of Digital Tele Protection Couplers (DTPCs) conforming to the approved technical specifications.
- Supply of all necessary interface modules, power supply units, mounting accessories, patch cords, connectors, cables and other associated hardware required for successful installation and commissioning.
- Installation of DTPCs at the identified Grid Substations.
- Integration of DTPCs with the existing Protection Relays and SDH communication equipment through the existing OPGW network.
- Configuration, testing and commissioning of the complete communication-assisted protection system.

The entire work shall be executed in accordance with the approved technical specifications, relevant IEC/IEEE standards and the technical requirements of OPTCL.

Digital Tele Protection Couplers (DTPCs), which are essential for communication-assisted protection of EHV transmission lines, are yet to be installed in the identified balance 400 kV and 220 kV transmission line sections. The proposed project aims to strengthen the protection communication system by utilizing the existing OPGW-

SDH communication network, thereby improving grid reliability, operational security, faster fault clearance and compliance with the applicable guidelines of the Central Electricity Authority (CEA) and the Eastern Regional Power Committee (ERPC).

Transmission planning approval of the said project is not required. State Govt. have been requested for 100% budgetary support (Grant).

3. TECHNO-ECONOMIC JUSTIFICATION

3.1 Overall assessment of economic benefit

The financial analysis concludes that the immediate implementation of the proposed transmission schemes will involve additional capital expenditure (CAPEX) to the tune of **Rs. 274.21 Cr.** and generate additional revenue to the tune of **Rs. 31.54 Cr.** annually.

3.2 Capital Expenditure for the transmission scheme

The capital expenditure for the schemes has been estimated as **Rs 274.21 Cr.** and indicated in the Table below.

SUMMARY OF INVESTMENT, COST AND SOURCE OF FUNDING

Sl. No.	NAME OF TRANSMISSION REINFORCEMENT WORKS	ESTIMATED COST (Rs. Cr.)	SOURCE OF FUNDING / SCHEME	Trans. Plan
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3	Installation of 260 nos. DTPCs in identified 400kV and 220kV Transmission network of OPTCL	19.63	100% Grant from Govt.	TP approval not required
	TOTAL	**274.21**		

- Sl. No. 1 will be funded through 30% Equity support from Govt. and remaining 70% will be availed through loan from funding agencies.

- Sl. No. 2 &3 proposed for 100% Budgetary Support (Grant) from Govt. of Odisha.

3.3 Transmission loss reduction

The loss reduction realizable by implementing the schemes is given in the table below.

SUMMARY OF SYSTEM LOSSES ON THE TRANSMISSION SYSTEM

Sl. No.	DESCRIPTION OF LOAD FLOW CASES	PEAK LOSSES IN MW
1	220kV Upgradation of 132/33kV GSS at Phulbani and 220kV DC line to Baliguda GSS	0.3
2	2nd ckt stringing of 132kV Padampur-Ghens S/C line	0.28
	TOTAL	**0.58**

4. IMPLEMENTATION

The proposal for availing loan assistance towards execution of these proposed transmission schemes is being posed before a suitable funding agency.

5. PRIOR CONSULTATION WITH DISCOMS

The Hon'ble Commission invariably in each and every ARR order of OPTCL has directed that OPTCL should have prior discussion and coordination with the DISCOMs before submission of transmission project for approval of OERC in order to avoid idle investments. Accordingly, OPTCL has made prior discussions with DISCOMs.

6. ENVIRONMENTAL CONSIDERATIONS

No major environmental or resettlement issues are envisaged for these additional transmission schemes.

OPTCL's policy is to generally avoid social and environmental impacts. Where this is not possible, mitigation measures are designed and implemented. A detailed mechanism for suitable and adequate environmental mitigation by compensatory afforestation is well established and generally implemented.

The Environmental Impact Assessment Study has been made and annexed with the Detailed Project Reports.

7. NET PRESENT VALUE & INTERNAL RATE OF RETURN

The Net Present Value as well as the Internal Rate of Return of individual projects have been calculated and annexed with the respective Detailed Project Reports.

ANNEXURE-2

03 nos. of DPRs of the following Investment proposals are detailed below.

Upgradation of GSS

- 220kV Upgradation of 132/33kV GSS at Phulbani and 220kV DC line to Baliguda GSS

Transmission lines

- 2nd ckt stringing of 132kV Padampur-Ghens S/C line.

Telecom project

- Installation of **260 nos. Digital Tele Protection Couplers (DTPCs)** in identified 400kV and 220kV transmission network of OPTCL utilizing the existing OPGW-SDH communication infrastructure.