

# Strengthening Audit Oversight of Public Private Partnerships

Case Study Based Training Programme for Officials of  
the Comptroller and Auditor General of India

Indian Institute of Management Mumbai

# Paradip Bulk Water Supply Project

Transportation of water from Mahanadi river at Cuttack to Paradip for Paradip Refinery Project on Build-Own-Operate-Transfer (BOOT) basis

03<sup>rd</sup> February 2026

# Case Study Overview

## Contents

- Bulk water contracts
- Take or pay clauses
- Tariff risks
- Demand guarantees
- Payment security mechanisms
- Audit implications
- Key implementation challenges
- Contractual risks and real-world insights
- Implications for audit oversight and lessons for public accountability

## Audit Focus

- Why this case is relevant from an audit perspective

# Contract Structuring – Infrastructure Projects

- **Engineering, Procurement and Construction (EPC)**

Short term orientation – Completion of construction, O&M for a minimum required time and moving to other projects

Not associated with the life cycle of the project

Upfront financing by the public sector

- **Public Private Partnerships (PPP)**

Upfront financing by the Private Sector Partner (PSP)

Since the PSP will be associated with the life cycle of the project , better quality of assets will be created

High assurances on strict adherence to Service Level Requirements

# Water Sector in India - Overview

- Provision of services by local government bodies and departments
- Predominant source - surface water
- Features
  - Inadequate Coverage
  - Intermittent and Erratic Supply
  - Inequality in distribution
  - High rate of transmission losses
- Reasons
  - Transmitted over long distances
  - Several intervention points
  - Aged municipal water assets
- Growing population, expanding cities and less water
  - Meeting long term needs is a major challenge

# Steps Taken – Private Sector Participation

- Private Sector Participation brought in efficiency & unlocks finance to increase number of projects
- Evolving/ Changing PSP Participation modes
  - Long term BOOT Contracts
  - Management Contracts
  - EPC plus O&M contracts
  - HAM
- Ministry of Urban Development (MoUD) made 24/7 water supply a **Service Level Benchmark**
- With demonstrated ability to achieve 24/7 evolution to performance based contracts with long term O&M
  - Integrated development/ augmentation and maintenance of infrastructure assets
  - Milestone based & Required Service Levels

# 24/7 Pressurised Water Supply Projects

- Number of initiatives underway
  - Several ULB’s to cover continuous water supply
  - Mandate under Smart Cities program
- Key features
  - Implemented on pilot basis or rehabilitation of existing assets
  - Multi lateral funded – several cases
  - Bid on international competitive basis
  - Engineering Procurement and Construction model with long term O&M
  - Sewage projects part of water supply

# Project Context

- Indian Oil Corporation Limited (IOCL or IOC) is an Indian oil and gas company under the ownership of the Government of India and administrative control of the Ministry of Petroleum & Natural Gas
- It is a public sector undertaking and is the largest government-owned oil in the country both in terms of capacity and revenue. Indian Oil accounts for nearly half of India's petroleum products market share, 35% national refining capacity. It has consolidated refining capacity of 80.55MMTPA
- IOCL set up a 15 MMTPA grass-roots refinery at Paradip, Odisha, as a greenfield project. Paradip Refinery, commissioned in 2016, is situated in Paradip, Jagatsinghpur district in the State of Odisha. Situated on the Eastern Coast this refinery caters to the petroleum products demand majorly across east, south and central India & is strategically located for export of petroleum products to South-East Asian countries.

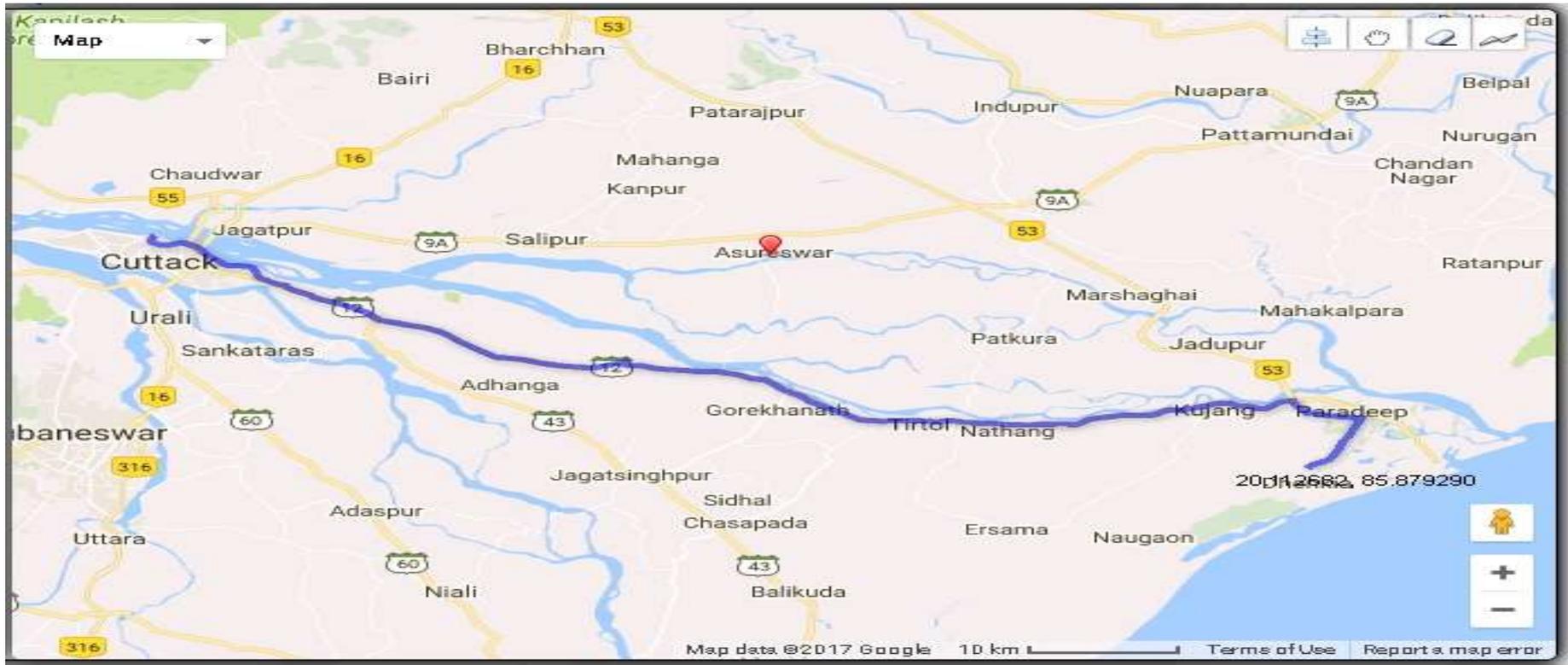
# Project Context

- The water requirement of the Refinery is about **95 MLD** and IOCL awarded the contract for water supply to IL&FS Paradip Refinery Water Limited (IPRWL), a Special Purpose Vehicle on BOOT basis
- IOCL conducted a detailed evaluation on fresh water from Mahanadi versus desalinated water from Paradip for the refinery. **The cost benefit analysis, technical studies and finalized treatment of surface water as the main source of water supply to the refinery.** The project was conceived as Phase 1 of the projected water requirement upto 30 years
- The project entailed transportation of water from Mahanadi river at Cuttack to Paradip for the Refinery project on Build Own Operate Transfer (BOOT) Basis for a period of 25 years from COD

# Project Context

- Treated Water requirement of the IOCL is 3950 m<sup>3</sup>/hour for Paradip Refinery Project at Paradip, Orissa is to be met from upstream of the Zobra Barrage of the Mahanadi River at Cuttack, which is at a distance of around 93 KM from Refinery
- The proposed pipeline project entails the abstraction, transportation and supply of water from upstream of Zobra Barrage over Mahanadi river at Cuttack district to IOCL's Refinery at Paradip

# Project Location



# Key Project Highlights

The Project is conceptualized as follows:

- Construction of water intake structure in the upstream of Zobra Barrage over Mahanadi River at Cuttack, with facilities like sedimentation, settling tank, etc.
- Laying of approx. 93 km long water pipeline, from intake at Cuttack to Paradip Refinery Complex at Paradip, to meet the supply requirement of desired quantity of water
- A Water Treatment Plant of suitable design and capacity including treated water sumps to meet the uninterrupted supply requirement of minimum 3950 m<sup>3</sup>/hour
- Construction of one Reinforced Cement Concrete lined Water reservoir of capacity 265 mn litres at refinery for storage of water

# Project Components

Intake works

Pipeline

Paradip works

## Cuttack

Zobra reservoir, Mahanadi River

- Intake well with pump house
- Pre-settling tanks (2 nos)
- PST pumping station with 1MGWT pumps with 100% standby
- About 14% weightage

## Cuttack to Paradip Refinery

94 Km of pipeline 1300-1100 mm

- Cross country mild steel pipeline with in-lining, out coating and cathodic protection
- About 75% weightage

## Paradip

94 Km of pipeline 1300-1100 mm

- Raw Water Reservoir – 1 Nos RCC 265000 m<sup>3</sup>
- Water Treatment Plant - 100 MLD
- Raw Water Reservoir – 1 No. 6900 m<sup>3</sup>
- About 11% weightage



# Project Photographs

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- ❖ Intake Pump House in Mahanadi
- ❖ Inside view of Intake Pump House



# Project Photographs

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❖ PST-I

❖ Inside view of PST Pump House



# Project Photographs

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- ❖ Underground pipeline with air valve



# Project Photographs

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❖ Above Ground Pipeline



# Project Photographs

❖ Above Ground Pipeline



# Project Photographs

❖ Above Ground Pipeline



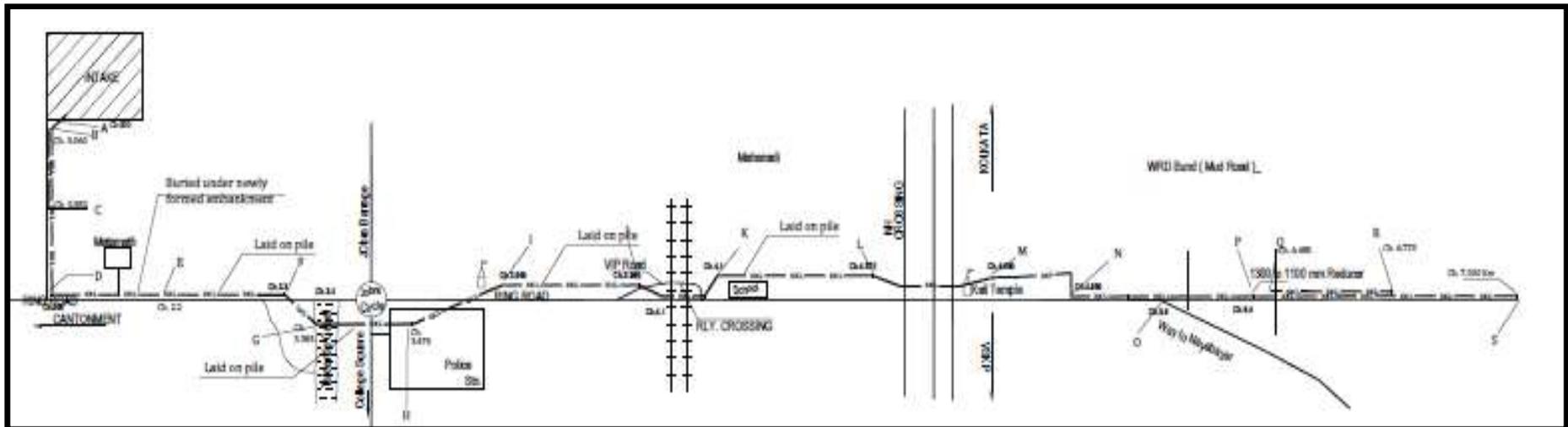
# Project Photographs

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❖ Construction Methodology



# Pipeline

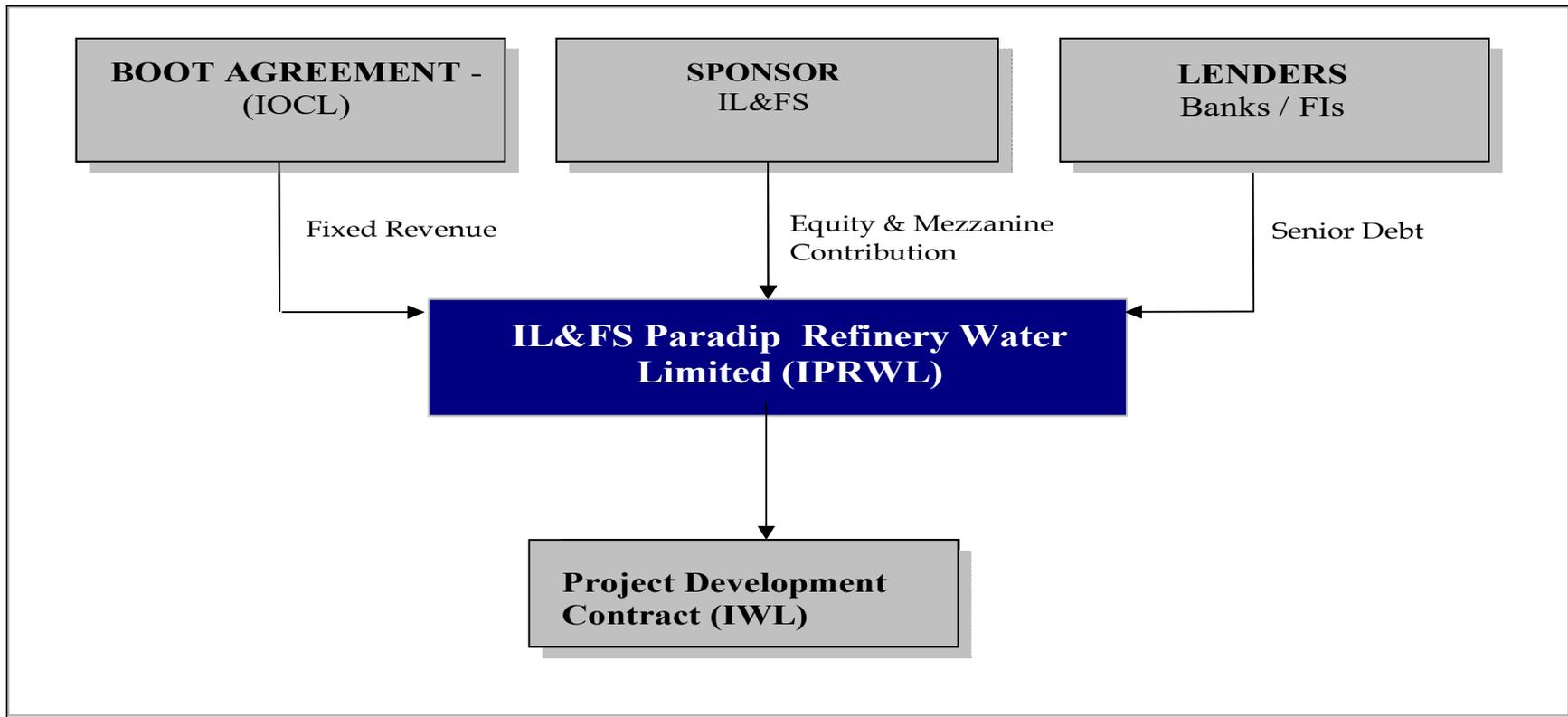


Cross Country Mild Steel Pipeline of 93 Km (87 km of 1100mm Dia, 6 Km of 1300mm Dia ) (About 7 kms above ground)  
With 164 Air valves, 19 Isolation and 19 scour Valves and 4 Cathodic protection stations

# Contract Structure & Project Details

- Project awarded by IOCL to IL&FS on Build Own Operate Transfer (BOOT) mode
- A Special Purpose Vehicle (SPV), IPRWL, with IL&FS as equity sponsor undertake the project
- All project activities housed in the SPV, includes;
  - Project Development (Financing, Design, Engineering, Procurement, Construction)
  - O&M (Operation & Maintenance of the project for 25 years)
- Project Cost - Rs. 953.54 cr (initial project cost Rs, 646.54)
  - Start Date : 25/09/2009
  - Commercial Operations Date: 1/06/2014

# Contract Structure



# Revenue Mechanism

- IPRWL to finance, build and commission all project facilities and undertake O&M
- Payments to IPRWL as Equated Monthly Instalments (EMI) over 25 years
- Nature of BOOT is on “Take or Pay Basis”
- Ist EMOI commences from Commercial Operation Date
- Equated Monthly Instalments consist of
  - Monthly Fixed Charges
    - Towards “Return on capital” for development of facilities
  - Monthly Variable Charges
    - Towards variable cost for transportation of water from Cuttack to Paradip (with indexation linked to indices)
    - The tariff excludes taxes and duties as applicable, which shall be billed at actual

- **Power**

The cost of power prior to COD shall be borne by the BOOT Contractor at intake and refinery site. The power consumption charges shall be directly borne by IOCL during the BOOT Contract period

# Tariff risks

- The tariff payable as per BOOT agreement consists of fixed component and variable component. 80% of the project revenue comprises of fixed component and is assured. The remaining 20% is variable, of which 95% is also fixed in nature
- Land and all in-principle approvals provided by IOCL. BOOT contractor to convert it to permanent approvals

However;

- No intermittent payments / advances during construction
- No revenue mechanism for part completion of facilities
- No separate / specific mechanism for reimbursement for change of scope

# Audit Implications

- The BOOT Contractor shall appoint during the subsistence of the Agreement a reputed firm of chartered accountants duly authorised to practice in India as its Statutory Auditor. All fees and expenses of the Statutory Auditor shall be borne by the BOOT Contractor
- Any claim provided by the BOOT Contractor to IOCL relating to **reductions due to short supply, quality of water, Work falling under the categories of Change in scope, or reimbursement of expenditures incurred by the BOOT contractor on behalf of the IOCL or any matter incidental thereto in connection with the Project shall be valid and effective only if certified by the Auditors of BOOT Contractor.** The IOCL may further instruct BOOT contractor, before making such payments for the verification from any other professional or consultants

# Termination Payments

## Compensation on Termination

- **(a) Termination due to BOOT Contractor's Event of Default**
- Upon Termination by IOCL on account of occurrence of a BOOT Contractor Event of
- Default during the Agreement Period, the IOCL shall only pay to the BOOT Contractor
- by way of Termination Payment an amount equal to 90% of the Debt Due, if any and take
- over the project as per provisions and rights conferred under substitution agreement
- **(b) Termination Due to IOCL Event of Default.**
- Upon Termination of this Agreement by the BOOT Contractor due to IOCL Events of Default, the BOOT Contractor shall be entitled to receive from IOCL, by way of
- Termination Payment a sum equal to:
- (i) The total Debt Due, plus
- (ii) The entire working capital finance by banks
- (iii) 125% of the equity (subscribed in cash and actually spent in the project)
- (iv) IOCL shall make payment as specified in (i) and (ii) above directly to the respective lenders

# Force Majeure

## Event:

- FM without termination
  - Non Political Event
  - Indirect Political Event and Political Event
  - FM leading to termination
- Allocation of Costs as per actual
  - The parties shall bear their respective costs
  - IOCL shall pay the cost to the BOOT Contractor
  - If a Force Majeure Event subsists for a continuous period of 180 days or more in a year, either Party may in its sole discretion terminate the Agreement by giving 30 days Termination Notice in writing to the other Party as per the following clauses:
- Non Political Event – payment to be made by IOCL
    - 100% of debt due less pending insurance claim, if any else 80% of the debt due
    - Outstanding Sub ordinate debt
    - 100% equity
  - Indirect Political Event/or Political event – payment to be made by IOCL
    - 100% of debt due less pending insurance claim, if any else 80% of the debt due
    - Outstanding Sub ordinate debt
    - 100% equity

# Risk Assessment

Risk Type	Allocated to	Mitigation
Construction Risk Land Availability	BOOT Contractor conjugation with IOCL	IOCL to provide land for intake, Water Treatment Plant (WTP) and storage free from encumbrance. Sludge disposal site is the responsibility of the BOOT Contractor <i>The land at barrage and at terminal point has already been acquired by IOCL and has been handed over to the company.</i>
Resettlement and Rehabilitation	BOOT Contractor	Relocation and compensation corpus has been built. Alternatively, there may be detour of the pipeline route in some section due to avoid R&R. <i>No resettlement issues in the laying of the pipeline. Only minor land acquisition was required for a small stretch near NH and SH, which was done in the name of IOCL</i>
Failure / delay in obtaining applicable permits	BOOT Contractor conjugation with IOCL	In principle approvals for major clearances (source, state highway, railway) is an IOCL condition precedent which have been already provided by them <i>All approvals and permits have been obtained by the BOOT Contractor in conjunction with IOCL.</i>
Time and Cost Over-runs	BOOT Contractor	The project development agreement has been allotted to IWL on fixed time and fixed cost basis. IWL is 100% subsidiary of IL&FS. <i>The time and cost over-run were primarily due to the revision of alignment by WRD in Cuttack city and Stay order on work at Intake site following a PIL. Both these factors were beyond the control of the BOOT Contractor and IOCL has agreed in- principle for payment of additional cost through EMI.</i>

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# Major Reasons for Revision in COD

- **Public Interest Litigation affecting work at Intake site**
- The Nationalist Lawyers Forum, Odisha, Cuttack, based on unconfirmed newspaper information and inquiry from unauthenticated and unmentioned sources, filed a Public Interest Litigation (PIL) contesting that the construction at the intake site near the Mahanadi river bed at Hadia – Pathia is illegal and would cause damage to Cuttack city
- The Hon’ble Odisha High Court passed a stay order on the construction activities at the intake site of the Project on July 29, 2011
- PIL has been disposed off and work resumed at Intake since June ’12
- **Change of pipeline alignment in Cuttack city**
- The pipeline stretch of chainage 0.875 kms to 6.2 kms passes through the Cuttack city portion of the WRD. Based on initial permits, a construction methodology for laying the pipelines was approved in February 2011. While physical construction was to commence in 2011, WRD sought for revision in alignment to avoid the ring road, fearing law and order problems
- IOCL/BOOT Contractor were advised for realignment of pipeline along the riverside, avoiding the ring road
- **Staggered receipt of RoW approvals for pipeline**
  - All approvals in place and work is being carried out

# Major Claims

- Reimbursement of deduction made towards statutory payment to OFDC
  - Statutory payments towards compensatory afforestation and related interest
- Change in Cuttack City pipeline alignment
  - Balance payment towards capital cost for Cuttack city pipeline works as change of scope
  - Interest claims on finances arranged for undertaking the change of scope
- Interest occasioned due to extended construction period
  - Force Majeure Stay at Intake site due to Public Interest Litigation
  - Staggered receipt of RoW approvals for pipeline / Withdrawal of SH approvals
  - Change in alignment of Cuttack City pipeline
- Claims for other variation in scope

# R&R

For the pipeline at Cuttack and Paradip there are no resettlement issues in the laying of the pipeline. In some portion there were encroachments, which were removed and pipeline has been laid. In the length along National Highway and State Highway wherever there were any encroachment issues, private land has been acquired in small portion and pipeline has been laid.

# Project Cost Revision

- Additional cost for project completion from the initial project cost is Rs. 308 cr, due to delays in implementation of the project

<b>Particulars</b>	<b>Original (Rs. Cr)</b>	<b>Revised (Rs. Cr)</b>	<b>Incremental (Rs. Cr)</b>
<b>Equity / Equity Like instruments</b>	<b>96.98</b>	<b>96.98</b>	
<b>Promoter Subordinate Debt / Mezzanine Capital</b>	<b>64.65</b>	<b>173.74</b>	<b>109.09</b>
<b>Total Promoter Contribution</b>	<b>161.64</b>	<b>270.72</b>	
<b>Existing Senior Debt (Term Loan I)</b>	<b>484.91</b>	<b>484.91</b>	
<b>Additional Debt (Term Loan II)</b>		<b>198.36</b>	<b>198.36</b>
<b>Total</b>	<b>646.54</b>	<b>953.98</b>	<b>307.44</b>

# Projected Revenues at time of revised COD

- The Projected Average Debt to Service Coverage Ratio (DSCR) is 1.56 upto 2039, at the time of revised COD

Year ending March 31st	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<b>Revenue</b>															
<b>Fixed Charges</b>	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87	111.87
<b>Variable Charges</b>	21.56	22.20	22.87	23.55	24.26	24.99	25.74	26.51	27.31	28.12	28.97	29.84	30.73	31.65	32.60
<b>Total Revenues</b>	133.42	134.07	134.74	135.42	136.13	136.86	137.61	138.38	139.17	139.99	140.84	141.70	142.60	143.52	144.47
<b>Profit Before Interest, Depreciation &amp; Tax</b>	120.47	120.73	120.99	121.27	121.55	121.84	122.14	122.45	122.76	123.09	123.43	123.78	124.13	124.50	124.88
<b>Profit After Tax</b>	-16.72	-13.78	-10.13	-6.19	-1.75	2.87	7.12	11.81	16.78	22.49	28.48	34.59	40.65	45.98	50.82

# Valuation and Proposed Sale of Paradip Water

As a part of IL&FS (the Sponsor's) debt resolution plan, Paradip Refinery Water Ltd has been approved for sale from companies with Networth greater than Rs. 1030 cr

- The BOOT contract is valid upto 2039. IOCL had the first right of refusal
- In FY25, revenue stood at Rs. 135.4 crore, with EBITDA at Rs. 114.2 crore and **a margin of 84.3%**  
Cash and bank balances were Rs. 93.2 crore, while receivables were at Rs.10.9 crs
- Debt stands at Rs. 273.3 crore, down from Rs. 682.2 crore in Fy 2021. SBI is the sole lender, with **loans secured against project against project assets**
- Fitch rated its loans IND AA- in Dec 2024.
- The company has Rs. 197.9 crore in unabsorbed depreciation, offering potential tax benefits .



# Ease of Doing Business and Institutional Challenges

## Contents

- Land acquisition issues
- Environmental and statutory clearances
- Utility shifting and local approvals
- Impact on project timelines and costs

## Audit Perspective

- Distinction between genuine constraints and avoidable delays

# Key Audit Lessons

- What went right
- What went wrong
- Systemic issues across PPPs
- Implications for future audits

# Discussion Questions

## Examples

- Was the PPP the right procurement choice?
- Were fiscal risks adequately assessed?
- How should auditors approach renegotiated contracts?