Indian Institute of Technology Bhubaneswar (IITBBS)

Green Audit Report

by

True Quality Certifications Private Limited

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Green Audit Report

Project Name:	Green Audit for Indian Institute of Technology, Bhubaneshwar
Project's Internal Ref:	TQC/2025/GA/001
Report Number:	TQC/2025/GA/AR/001
Date of Issue:	01/12/2025
Document Version:	Version 01
Audit Date:	***20/11/2025*** to ***21/11/2025***
Audit Location:	Indian Institute of Technology, Bhubaneshwar, Argul, Jatni, Khodha, Bhubaneshwar, Odisha – 752050
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1. Executive Summary:

Indian Institute of Technology Bhubaneswar has authorized True Quality Certifications Pvt. Ltd. to perform a comprehensive Green Audit of its campus covering environmental performance, resource efficiency, sustainability practices, and compliance-related elements across infrastructure and operations. The Green Audit was conducted on 20th to 21st November 2025 for Green Audit Criteria covering Sustainability, Environment, Water, Waste and Energy Management in line with National Building Code 2016 Part 11.

The audit was conducted by the following team from True Quality Certifications Pvt. Ltd.:

- Mr. Ishan Shrivastava as Lead Auditor
- Mr. Sarthak Jain as Auditor
- Reviewed & Approved by Ms. Krishna Dutta, Director of Operation / Head (Certification Services), True Quality Certifications Pvt. Ltd.

Although IIT Bhubaneswar is not legally mandated to comply with NBC 2016 Part 11: Approach to Sustainability, the audit team has voluntarily applied the principles, intent, and evaluation logic of NBC Part 11 to ensure that the assessment follows a nationally recognized, structured, and scientifically grounded sustainability framework. This approach enables benchmarking of the Institute's environmental performance against established best practices without imposing any regulatory obligation on the institution.

The campus hosts academic blocks, laboratories, residential zones, hostels, utility buildings, and a wide range of supporting infrastructure spread across a large, naturally enriched landscape. As a premier educational and research institution, IIT Bhubaneswar continues to expand its academic, administrative, and environmental management systems, while working to strengthen sustainability practices across its operations.

The audit was carried out using the Institute's Green Audit Checklist (F-04.11), supported by the Finding Report (F-04.05) and other available operational records. The evaluation included inspections of critical infrastructure such as electrical substations, the Sewage Treatment Plant (STP), water systems, the chiller plant, laboratories, administrative buildings, hostels, academic blocks, storage areas, and landscaped zones. The findings reflect the Institute's current level of compliance, operational risks, existing strengths, and improvement opportunities that can guide IIT Bhubaneswar in its progression toward enhanced sustainability and environmental stewardship.

The Assessment covered 12 major clauses covering Sustainability, Environment, Water, Waste and Energy Management as shown in the table below:

Table 1: National Building Code 2016, Part 11 Clauses

Sr. No.	Clauses as per NBC, Part 11		
	Clause No.	**NBC Part 11 Thematic Area**	**Major Focus**
1.	Clause 3	Approach to Sustainability	Governance
2.	Clause 4	Applicability of Principles	Adoption

3.	Clause 5	Implementation of Measures	Execution
4.	Clause 6	Siting, Form & Design	Design
5.	Clause 7	External Development & Landscape	Landscape
6.	Clause 8	Building Envelope Optimization	Envelope
7.	Clause 9	Materials & Resource Efficiency	Materials
8.	Clause 10	Water & Waste Management	Resources
9.	Clause 11	Building Services Optimization	Services
10.	Clause 12	Constructional & Site Practices	Construction
11.	Clause 13	Commissioning, O&M & Monitoring	Operations
12.	Clause 14	Statutory & Legal Compliance	Compliance

The audit was performed using a structured Green Audit Checklist comprising 12 sub-sections and more than 201 inspection criteria. Scoring was carried out in accordance with the conformity assessment framework shown in Table-2.

Table 2: Interpretation for Scoring

Compliance Status	Score
Compliant Point	1
Opportunities for Improvement (OFIs)	0.75
Minor NCs (non-conformities)	0.5
Major NCs (non-conformities)	0

The auditors marked any non-applicable check point as “N/A” and evaluated all remaining points through a review of records, operational practices, documents, and physical verification. Each check point was assessed against the defined requirements, and compliance was recorded accordingly. When the requirement was fully met, the item was marked as Compliant. Where gaps were identified, the observations were categorized into OFIs, Minor NCs, or Major NCs, as shown in Table-2.

Major Nonconformity (NC): A Major Nonconformity is a significant deviation indicating that a required control, process, or practice has not been implemented, or has been implemented in a manner that fails to meet the intended requirements entirely. Such nonconformities may pose a risk to environmental performance, safety, operational integrity, or regulatory compliance.

Minor Nonconformity (NC): A Minor Nonconformity refers to a single instance, or a limited number of isolated instances, where a requirement has not been met. These issues do not represent a systemic failure. However, at the Lead Auditor’s discretion, multiple related Minor Nonconformities may be grouped and reported as a single Major Nonconformity, depending on their collective impact or recurrence.

Opportunity for Improvement (OFI): An Opportunity for Improvement is not a nonconformity. It indicates a condition, practice, or observation that may potentially lead to a nonconformity in the future or represents an area where the organization can enhance performance, efficiency, or consistency.

The Summary of Scoring as per Checklist and audit Findings under Table 3: -

Table 3: Summary of Scoring as per Checklist

Summary of Scoring as per Checklist				
Sr. No.	**Checklist Section Title**	**Total Questions in Section**	**Number of Not-Applicable Points**	**Final Score**
1.	General Information	5	0	5 out of 5
2.	Environmental Governance (incl. Universal Accessibility)	22	2	18.5 out of 20
3.	Energy Management	17	3	13.75 out of 14
4.	Biodiversity & Green Cover	20	0	17 out of 20
5.	Innovation & Design Process	20	4	14.5 out of 16
6.	Awareness & Training	20	0	18.75 out of 20
7.	Water Management	15	1	11.75 out of 14
8.	Waste Management	17	0	14.25 out of 17
9.	Air & Noise Management	20	3	15.75 out of 17
10.	Sustainable Procurement	20	9	9 out of 11
11.	Legal & Regulatory Compliance	18	3	10.75 out of 15
12.	Monitoring & Reporting	7	2	4.75 out of 5
Total		**201**	**27**	**153.75 out of 174**

By giving a weightage of 1 to compliant, 0.75 to OFI, 0.5 to Minor NC and 0 to Major NC the total points against 174 applicable are 153.75 i.e. equal to 88.36%

Summary of Strengths and Effective Practices:

These practices highlight IIT Bhubaneswar's commitment to sustainability and environmental stewardship, reflecting the Institute's efforts toward green campus development and resource-efficient operations.

Summary of Audit Findings:

By addressing the identified nonconformities and implementing the recommended improvement actions, IIT Bhubaneswar can further strengthen its commitment to sustainability and significantly enhance its overall environmental performance. These actions will support more efficient resource utilization, improved compliance, better operational control, and continued progress toward a greener and more resilient campus.

2. Introduction & General Information

Indian Institute of Technology Bhubaneswar (IITBBS) is a centrally funded Institution of National Importance established in 2008 and located at Argul, Jatni, Khordha, Odisha ,Pincode 752050. The Institute operates from an expansive 943 Acre (38,16,189 m^2) permanent campus comprising academic schools, laboratories, hostels, residential quarters, utility buildings, administrative blocks, central services, and landscaped green areas. The campus supports a vibrant academic environment and continues to expand its infrastructure and sustainability-related initiatives in alignment with long-term institutional development goals.

The Green Audit was undertaken to evaluate IIT Bhubaneswar's environmental performance across multiple sustainability dimensions, including governance, energy use, water systems, waste management, biodiversity, building services, statutory compliance, and operational practices. The audit was based on the Green Audit Checklist consisting of 12 subsections and 201 evaluation criteria, supported by field inspections, document reviews, and operational data verification.

The campus supports a community of 3,408 students and 531 employees and approx. 4,000 total number peoples, functioning across a built-up area of 3,09,103.98 m^2 with a significant green/open area of 34,17,441 m^2, offering ample scope for biodiversity, natural ventilation, and ecological enhancement.

According to institutional data, the campus has an annual electricity consumption of 1,22,93,807 kWh, supported by a robust distribution network comprising one 33/11 kV Main Receiving Station (MRS) and seven Local Control sub-stations (LCS-1 to LCS-7), each equipped with transformers ranging from 500 kVA to 5000 kVA. Backup power is provided through 12 diesel generator (DG) sets of various capacities, consuming approximately 4,326 litres of diesel annually. Energy efficiency measures implemented across campus include widespread LED lighting, timer-based outdoor lights, IE3 motors, VFD-controlled HVAC systems, and star-rated electrical appliances. A 50 kWp solar photovoltaic system has been installed on the Main Building parking shed to promote renewable energy adoption.

Water for the campus is supplied through a bulk water supply arrangement under PPP mode, with an average demand of approximately 13 lakh litres per day. Multiple buildings are equipped with rainwater harvesting structures, and water-level sensors are installed to minimize wastage. Wastewater generated on campus is treated in a 600 KLD STP, with provision for recycling treated water for landscaping and non-potable applications. Although the campus uses various systems for solid waste, organic waste, and hazardous waste management, several areas require documentation and process strengthening.

The campus includes a large network of utility infrastructure, including 89 lifts, extensive underground cabling, chiller and HVAC plants with a combined capacity of over 3600 TR, and solar and LED lighting systems. The Institute also demonstrates commitment to environmental improvements through plantation activities, awareness signage, and ongoing initiatives to reduce resource consumption.

While IIT Bhubaneswar is not mandated to comply with NBC 2016 Part 11: Approach to Sustainability, the audit team has utilized the intent and evaluation logic of NBC Part 11 to structure the assessment. This ensures that the evaluation framework is consistent with nationally recognized sustainability principles without imposing regulatory obligations on the Institute. The information presented in this section provides the foundational understanding of campus

infrastructure, resource consumption, and environmental context for subsequent sections of the audit report.

3. Audit Scope & details

Scope of Audit

The Green Audit covered all major environmental and sustainability aspects of IIT Bhubaneswar, including energy use, water systems, wastewater treatment, solid and hazardous waste management, biodiversity, building services, statutory compliance, and sustainability governance. The evaluation was carried out using the Green Audit Checklist (F-04.11) comprising more than 250 inspection points.

Opening Meeting:

The audit commenced with an Opening Meeting held on 20th November 2025 with IIT Bhubaneswar officials. During this meeting, the audit scope, methodology, audit plan, timelines, documentation requirements, and site access arrangements were discussed and agreed upon. Roles and responsibilities were clarified before initiating the field audit.

Site Inspection & Document Review

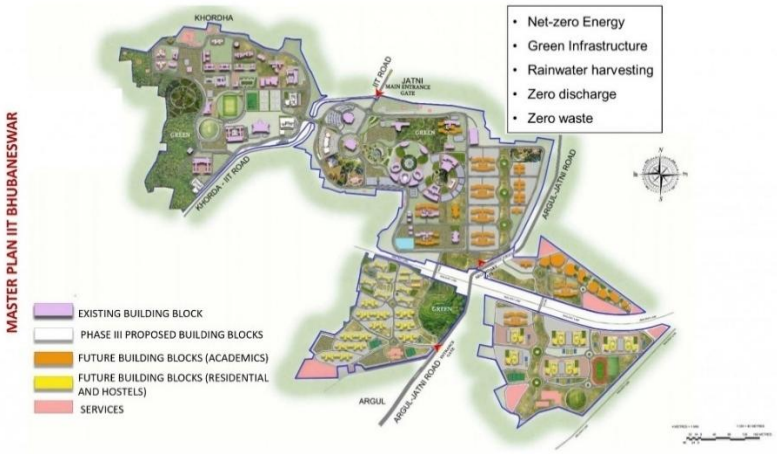
The audit team conducted detailed site inspections as per the approved Audit Plan, covering academic buildings, hostels, residential areas, substations (MRS and LCS units), the Sewage

Treatment Plant (STP), water supply systems, chiller plants, laboratories, landscaped areas, and utility zones.
All applicable checklist points were assessed using objective evidence obtained through:

- On-site observations
- Review of records and documents
- Examination of operational practices
- Interactions with facility personnel, Staff, Students, and other stakeholders.

Non-applicable inspection points were marked as “N/A” as per the evaluation protocol.

Area Covered:



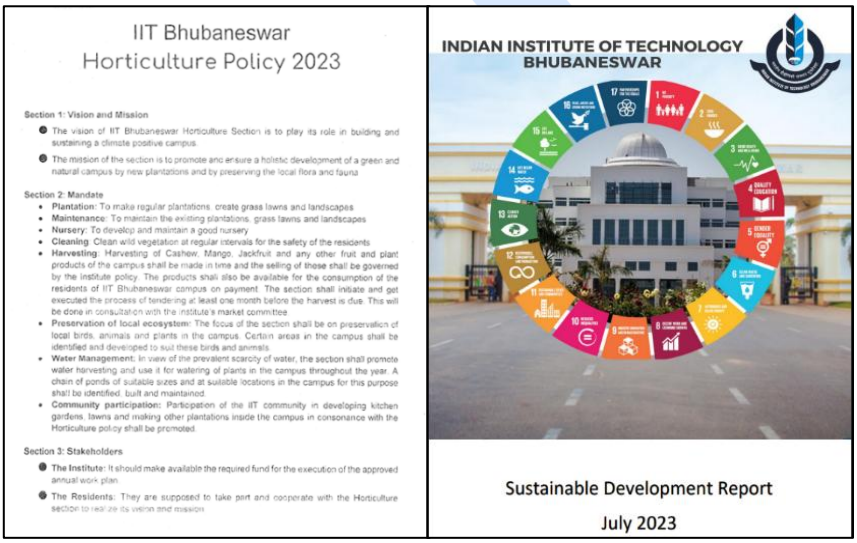
Closing Meeting:

The audit concluded with a Closing Meeting held on 21st November 2025, during which the audit team presented the findings, explained the classification of nonconformities and opportunities for

improvement, and discussed the next steps for corrective actions. The meeting summarized key strengths, areas requiring attention, and recommendations to enhance the Institute's environmental performance.

4. Environmental Governance

This section aligns with Clause 3 (Approach to Sustainability) and Clause 5 (Implementation of Sustainability Measures) of NBC Part 11. These clauses relate to institutional governance, sustainability policies, planning, committee structures, monitoring mechanisms, and stakeholder engagement. The following assessment reflects the governance practices observed at IIT Bhubaneswar. Currently Institute has only Horticulture Policy in place, but additional institutional policies covering energy, water, waste, procurement, biodiversity, environmental safety, and


IIT Bhubaneswar
Horticulture Policy 2023

Section 1: Vision and Mission

- The vision of IIT Bhubaneswar Horticulture Section is to play its role in building and sustaining a climate positive campus.
- The mission of the section is to promote and ensure a holistic development of a green and natural campus by new plantations and by preserving the local flora and fauna

Section 2: Mandate

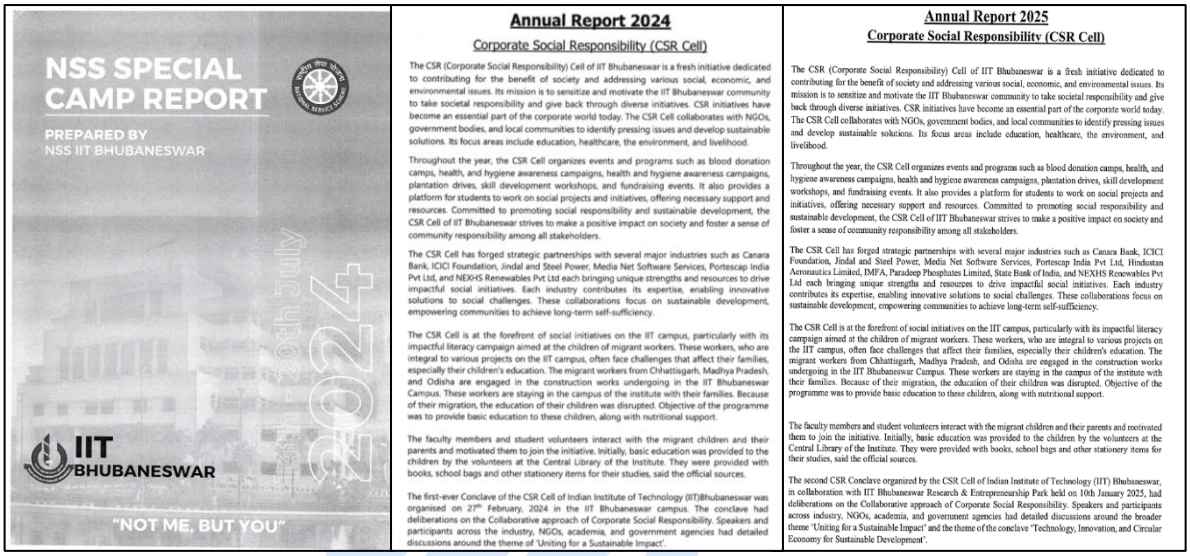
- **Plantation:** To make regular plantations, create grass lawns and landscapes
- **Maintenance:** To maintain the existing plantations, grass lawns and landscapes
- **Nursery:** To develop and maintain a good nursery.
- **Cleaning:** Clean wild vegetation at regular intervals for the safety of the residents
- **Harvesting:** Harvesting of Cashew, Mango, Jackfruit and any other fruit and plant products of the campus shall be made in time and the selling of these shall be governed by the Institute policy. The products shall also be available for the consumption of the residents of IIT Bhubaneswar campus on payment. The section shall initiate and get executed the process of tendering at least one month before the harvest is due. This will be done in consultation with the institute's market committee.
- **Preservation of local ecosystem:** The focus of the section shall be on preservation of local birds, animals and plants in the campus. Certain areas in the campus shall be identified and developed to suit these birds and animals.
- **Water Management:** In view of the prevalent scarcity of water, the section shall promote water harvesting and use it for watering of plants in the campus throughout the year. A chain of ponds of suitable sizes and at suitable locations in the campus for this purpose shall be identified, built and maintained.
- **Community participation:** Participation of the IIT community in developing kitchen gardens, lawns and making other plantations inside the campus in consonance with the Horticulture policy shall be promoted.

Section 3: Stakeholders

- **The Institute:** It should make available the required fund for the execution of the approved annual work plan.
- **The Residents:** They are supposed to take part and cooperate with the Horticulture section to realize its vision and mission.

climate action were not available during the audit. The presence of only one documented policy indicates that the overall governance framework would benefit from broader policy coverage to support a more structured sustainability approach. Also it was found that the Horticulture Policy is not available on Institute's Website for Public view.

An Annual Sustainability Report, Annual CRS reports, NSS Special Camp report exists and was made available during the audit. This reflects institutional commitment to environmental management. The policy is reviewed periodically through the Swachta Committee and other functional groups, demonstrating an active internal mechanism for periodic evaluation. The policy is publicly displayed through the Institute's website and communication channels, ensuring visibility and accessibility to stakeholders. It also references broader sustainability principles, including linkages to the Sustainable Development Goals, supporting alignment with recognized environmental priorities.



The Institute has established committees related to environmental and cleanliness initiatives, including the Swachhta Committee, NSS, and other functional groups. These bodies indicate a functional governance structure for campus improvement activities. Committee membership includes faculty, staff, and students, reflecting cross-stakeholder participation, though expanding representation and formalizing structures could further strengthen governance. Meetings are conducted, and evidence of recent meetings was available, although increasing frequency and maintaining more structured documentation would enhance oversight. A sustainability action plan exists but would benefit from more detail, including measurable objectives and time-bound activities.

No records of previous Green Audits or external environmental certifications such as ISO 14001, ISO 50001, IGBC, or GRIHA were available during the audit. This does not affect compliance but indicates potential areas for institutional advancement. A "Certificate of Outstanding Performance in Plantation/Afforestation work by District Forest Officer" was found.

Forest, Environment & Climate Change Department, Government of Odisha

CERTIFICATE FOR OUTSTANDING PERFORMANCE

This Certificate is Awarded

In Recognition of Outstanding Performance

In Plantation / Afforestation Work to

Indian Institute of Technology, Bhubaneswar Of Bhubaneswar

Sub Division of Khorcha District as Best Educational Institute

On World Forestry Day, 2025

Asst. Conservator of Forest
Khordha Division, Khordha

Divisional Forest Officer
Khordha Division, Khordha

Tracking of sustainability KPIs such as energy, water, and waste is carried out, however, the documentation requires better organization, clarity, and a consolidated information management / dashboard system to strengthen monitoring practices.

The Institute publishes annual sustainability-related information on its website, showing transparency and commitment to environmental reporting. Activities conducted on campus are mapped to the Sustainable Development Goals, demonstrating strategic alignment with global sustainability efforts. Budget is allocated for green initiatives, and some activities are additionally supported through CSR funding, indicating institutional willingness to invest in sustainability improvements.

Legal compliance records exist, but complete documentation was not available during the inspection. Improved record centralization and systematic filing is recommended to support verification and regulatory alignment. The Institute complies with applicable national and local environmental guidelines based on the information reviewed.

Roles and responsibilities related to environmental policy implementation are clearly assigned, as confirmed through staff interviews. Environmental performance is periodically reviewed by top management, demonstrating oversight at the leadership level. Students actively participate in environmental awareness programs and campus activities, reflecting strong engagement and community support for sustainability. A grievance mechanism for environmental issues is available and functioning, allowing stakeholders to raise concerns effectively.

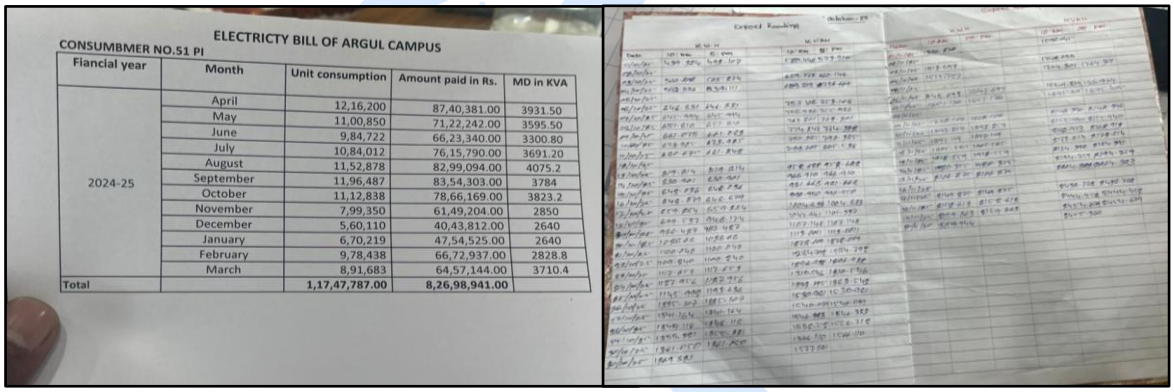
Overall, IIT Bhubaneswar displays meaningful strengths in environmental governance, including policy commitment, committee structures, stakeholder involvement, reporting practices, and budgetary support. However, improvements are recommended in expanding policy frameworks, strengthening documentation, improving legal compliance transparency, enhancing KPI systems, and formalizing sustainability action planning to further elevate governance effectiveness in alignment with NBC Part 11 expectations.

Detail of Observation observered can be found in SECTION 15 of this report.

5. Energy Management

This section aligns primarily with Clause 11 (Building Services Optimization) of NBC Part 11, and also supports Clause 3 (Approach to Sustainability) and Clause 5 (Implementation of Sustainability Measures). These clauses relate to optimizing building services, improving energy performance, integrating efficient systems, adopting renewable technologies, and ensuring effective monitoring and operational control. The following assessment reflects the energy management practices observed at IIT Bhubaneswar.

IIT Bhubaneswar maintains comprehensive and well-organized records of electricity consumption. Monthly electricity bills and consumption registers were reviewed during the audit and found to be accurate and consistently maintained. The Institute recorded 89,44,963 kWh of electricity usage between April 2025 and October 2025, and 1,17,47,787 kWh for the financial year 2024–25, demonstrating a strong institutional system for monitoring overall energy demand. Building-wise energy meters are installed across major campus facilities, and individual building consumption data is available, although this information is not yet consolidated into a single dashboard, which limits comparative analysis and centralized review.



ELECTRICTY BILL OF ARGUL CAMPUS

CONSUMBMER NO.51 PI

Fiancial year	Month	Unit consumption	Amount paid in Rs.	MD in KVA
2024-25	April	12,16,200	87,40,381.00	3931.50
	May	11,00,850	71,22,242.00	3595.50
	June	9,84,722	66,23,340.00	3300.80
	July	10,84,012	76,15,790.00	3691.20
	August	11,52,878	82,99,094.00	4075.2
	September	11,96,487	83,54,303.00	3784
	October	11,12,838	78,66,169.00	3823.2
	November	7,99,350	61,49,204.00	2850
	December	5,60,110	40,43,812.00	2640
	January	6,70,219	47,54,525.00	2640
	February	9,78,438	66,72,937.00	2828.8
	March	8,91,683	64,57,144.00	3710.4
Total		1,17,47,787.00	8,26,98,941.00	

Diesel generator operations are monitored through digital DG logbooks, and annual diesel consumption was verified at approximately 4,326 litres, reflecting controlled use and adherence to safe storage practices. While solar energy is already integrated into the Institute's system, the percentage share of solar energy relative to total campus consumption has not yet been established as a formal performance indicator.

Energy efficiency measures have been widely adopted across the campus. LED lighting is extensively implemented, including 634 LED street lights, 272 LED post-top lights, 20 solar street lights, and 70 solar bollard lights, supported by façade lighting at major academic and

administrative buildings. BEE star-rated appliances such as energy-efficient air conditioners and ceiling fans are used campus-wide, following replacement initiatives implemented after 2015. Streetlights are automated using timer-based control systems, reducing unnecessary energy use.

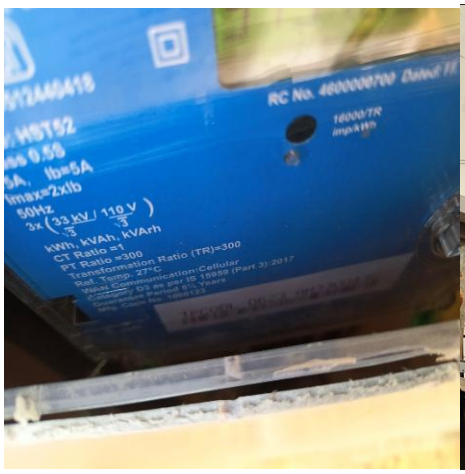
The Institute's HVAC infrastructure is substantial and consists of 2,200 TR water-cooled chillers, 1,425 TR air-cooled chillers, 1,225 TR VRF systems, 500 split AC units, 11 precision AC units, and tower AC systems. Motors, pumps, and auxiliary equipment operate using IE3 motors and VFD controls, significantly improving system efficiency and reducing energy losses. Cooling setpoints across academic buildings are standardized at 26°C, which aligns with recommended energy-efficient cooling practices.

Awareness initiatives promoting energy conservation are visible throughout the campus in the form of posters, public notices, email advisories, and behavioural campaigns such as Earth Day activities, encouraging staff and students to switch off appliances when not in use. Initiatives such as "Switch-Off" drives and low-energy-use days have been conducted periodically.

Although energy consumption is monitored at the campus level, the Institute has not yet calculated performance indicators such as kWh per student per year nor developed building-wise energy intensity metrics. Similarly, formal year-on-year benchmarking of energy consumption has not been established. Introducing these metrics would help evaluate efficiency improvements, identify high-consumption buildings, and guide long-term planning and investment decisions.

Overall, IIT Bhubaneswar demonstrates strong capabilities in energy management through its modern electrical infrastructure, highly efficient HVAC systems, extensive LED deployment, automated controls, renewable energy integration, and campus-wide awareness programmes. Opportunities for further improvement include centralized consolidation of building-wise consumption data, implementation of benchmarking indicators, and establishment of a comprehensive energy performance review system to enhance alignment with NBC Part 11 expectations.

Table 4: Equipment and Systems Verified During Audit

Sr. No.	Equipment / System	Capacity / Specification	Quantity Installed	Location / Building Name	Condition (Good / Needs Repair)
1	Main Receiving Station	33/11 kV, 2 × 5 MVA	1	Power Control Building	**Good**
	     				
2	LCS1 Transformer	500 kVA	2	LCS1	**Good**
3	LCS1 Transformer	800 kVA	1	LCS1	**Good**
4	LCS2 Transformer	750 kVA	2	LCS2	**Good**
					

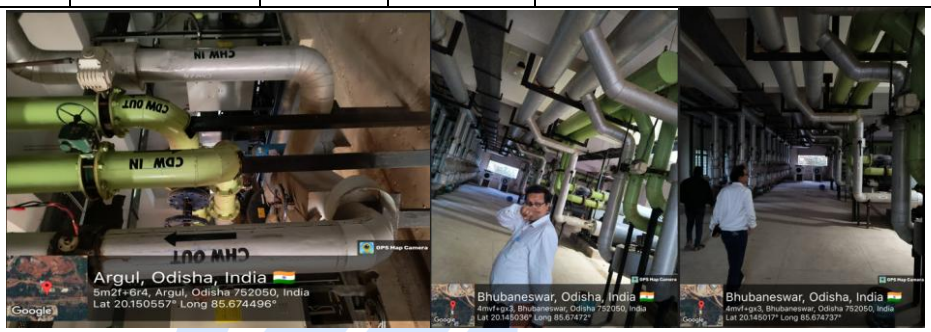
5	LCS3 Transformer	1600 kVA	2	LCS3	**Good**

6	LCS4 Transformer	750 kVA	2	LCS4	**Good**

7	LCS4 Transformer	630 kVA	1	LCS4	**Good**

8	LCS5 Transformer	1600 kVA	3	LCS5	**Good**

9	LCS6 Transformer	750 kVA	2	LCS6	**Good**
					
10	LCS6 Transformer	5000 kVA	1	LCS6	**Good**
					
11	LCS7 Transformer	750 kVA	2	LCS7	**Good**
12	LCS7 Transformer	500 kVA	1	LCS7	**Good**
					
13	DG Set	1010 kVA	1	-	**Good**
14	DG Set	500 kVA	3	-	**Good**

15	DG Set	250 kVA	3	-	**Good**
16	DG Set	125 kVA	1	-	**Good**
17	DG Set	63 kVA	3	-	**Good**
18	DG Set	10 kVA	1	-	**Good**
19	Passenger Lifts	Capacity varies	**89 Nos.**	All buildings	**Good**
20	Water Cooled Chiller	4×275 TR	2	HVAC Plant Room	**Good**
					
21	Air Cooled Chiller	325 TR & 225 TR	2	HVAC Plant Room	**Good**
22	VRF Systems	-	Multiple	Buildings	**Good**
					
23	STP	600 KLD	1	STP Area	**Good**


24	Solar PV	-	Installed	Roof	**Good**
25	LED Lights	Star Rated	Multiple	All Campus	
26	VFDs in AC Systems	-	Installed	Central HVAC	**Good**

28	Composting	-	Installed	-	**Good**



27	Water Level Sensors	-	Installed	UG/ OH Tanks	**Good**

6. Biodiversity & Green Cover

This section aligns with NBC Part 11 – Clause 7 (External Development & Landscape), which emphasizes ecological conservation, green cover enhancement, native species protection, biodiversity support systems, and sustainable landscape management practices. The following assessment reflects the biodiversity and green cover initiatives observed at IIT Bhubaneswar.

IIT Bhubaneswar has an active horticulture program with well-maintained records of campus trees and plantations. A tree census and botanical inventory are maintained by the Horticulture Department, and the Institute keeps year-wise records of plantation activities. The audit verified documented plantation data showing 2,489 seedlings planted in 2024–2025, 8,031 seedlings and 2,000 plants planted in 2023–2024, and 2,870 seedlings planted in 2022–2023. Records also included species lists and scientific names, and on-ground verification confirmed that a variety of native trees and shrubs are prioritized, including Almond, Arjuna, Aonla, Bauhinia, Bakul, Banyan, Champa, Neem, Mango, Jamun, Pipal, Peltophorum, Saal, and others. Shrubs such as Bougainvillea, Tecoma, and Thuja and hedges such as Murraya and Duranta were also observed. The Institute organizes a wide range of green initiatives such as plantation drives, World Environment Day events, Vana Mahotsav, “Plant for Mother”, Ek Ped Mere Naam, Mission LiFE campaigns, and NSS-led programmes, all of which support biodiversity conservation and environmental awareness among students.

While the Institute’s horticulture activities are extensive, the measurement of total green area is not maintained with precise documentation. The campus Master Plan is available publicly; however, exact quantified green cover area and percentage of green cover are not formally calculated. Green cover data is recorded year to year, but documentation practices require improvement to ensure consistency, structured reporting, and ease of verification. Although the campus supports several natural water bodies, these were not specifically designed or monitored as biodiversity-supporting habitats. There is potential to designate and enhance certain zones as butterfly, bird, and pollinator gardens. Some areas already support such activity, but they are not labeled or formally recognized. An information board indicating native species, ecological significance, and pollinator-friendly areas would strengthen public awareness.

Management practices for controlling invasive species were found effective, and on-site interviews confirmed that the Institute identifies and removes invasive vegetation periodically. Landscape management practices are sustainable; treated water from the 600 KLD STP is used for irrigation, supporting water-efficient gardening. While horticulture staff reported minimizing chemical pesticide use, documentation and purchase records were not available, indicating a need for stronger recordkeeping and monitoring of organic or low-chemical landscape practices. Grass pruning waste is not burned; instead, it is occasionally repurposed informally for natural composting, demonstrating compliance with sustainable biomass handling practices.

The Institute conducts regular plantation drives and engages students actively in green cover and biodiversity projects. NSS annual reports show participation in plantation activities, including verification of a drive conducted on 18th July 2024. Bird and butterfly sightings are observed on

campus, and informal monitoring exists, although developing a structured eco-health monitoring program would enhance biodiversity assessment. The campus also hosts a medicinal plant garden, verified physically during inspection. Tree guards and ID tags were found in limited numbers; this practice can be expanded to include systematic tree tagging, protection, and numbering for improved traceability.

Awareness and signage related to biodiversity, native species, and ecological features are limited. Only a few trees have identification markers, and dedicated biodiversity information boards are sparse. Although some information is available on the Institute's website, it is not comprehensive, and the Horticulture Department's activities are not prominently highlighted. Improved signage, digital documentation, and increased visibility of biodiversity initiatives would enhance public engagement and institutional transparency.

Overall, IIT Bhubaneswar demonstrates a strong foundation in green cover expansion, native species plantation, horticulture management, and student-led biodiversity activities. Key opportunities for improvement include formal documentation of green area calculations, improved pesticide-use records, systematic tree tagging, enhanced biodiversity signage, and the creation of designated butterfly or pollinator zones. Strengthening these aspects will bring the Institute into closer alignment with the sustainability expectations of NBC Part 11 and further reinforce its commitment to ecological conservation.

7. Innovation & Design Process

This section aligns with several themes under NBC Part 11, particularly Clause 5 (Implementation of Sustainability Measures), Clause 6 (Siting, Form and Design), Clause 8 (Building Envelope

Optimization), Clause 9 (Materials & Resource Efficiency) and Clause 12 (Constructional & Site Practices). Collectively, these clauses emphasize environmentally responsible design, energy-efficient planning, circular materials management, and innovation in campus development. The following assessment reflects the innovative and sustainable design practices observed at IIT Bhubaneswar.

IIT Bhubaneswar has demonstrated intent to adopt recognized green building frameworks for upcoming infrastructure projects. During the audit, it was observed that the Institute plans to pursue GRIHA certification for future buildings; however, formal initiation of the certification process has not yet begun. Although passive design strategies such as orientation, shading analysis, and daylight integration were not supported by detailed design documentation during the audit, the Institute's long-term planning indicates an openness to expand sustainable design criteria in future developments. Tracking of design-based vs. actual energy performance for newly constructed buildings is not yet carried out and presents an area for strengthening evidence-based design validation.

In terms of innovation in resource efficiency, IIT Bhubaneswar has implemented several modern systems such as smart automation for lighting and water management, beyond standard timer-based controls, and the presence of multiple intelligent operational systems reflects a forward-looking campus infrastructure. Innovative energy-saving practices and sensor-driven systems are deployed in several locations. In laboratories and workshops, many energy-efficient fabrication and equipment systems are in use, although this is not uniformly documented across all departments; defining the proportion of green equipment and improving inventory clarity will help strengthen this area.

The Institute has also advanced innovation through research and development. Notably, it has implemented campus-level pilots such as electric vehicle (EV) charging stations, bio-digester, waste recycling systems, and other small-scale sustainability prototypes. Faculty and students contribute to several research papers, articles, and projects related to sustainability design, demonstrating strong academic linkage to environmental innovation. Student-led innovation pilots are also being implemented or planned, further enhancing a culture of experimentation and applied sustainability on campus.

Procurement practices reviewed during the audit indicate inclusion of green clauses such as references to low-VOC materials and recycled content in tender documents, demonstrating integration of sustainability considerations into purchasing and construction processes. However, construction and demolition (C&D) waste management practices require significant improvement. A formal SOP for handling, storage, reuse, or recycling of construction waste was not available; some waste from Phase I campus development was reportedly reused for land filling or level correction, but documented evidence of structured management was limited. This is an area where the Institute should develop clear guidelines, recordkeeping, and compliance measures.

Future-ready design aspects such as modular construction, prefabrication, and recyclability considerations were not explicitly incorporated in building design documentation, nor were material footprints (such as steel or cement per square foot) readily available for audit review. While staff interviews indicated some internal tracking, supporting records were not produced;

establishing systematic material footprint documentation would help measure the embodied carbon of future projects.

Architectural and site design considerations supporting biodiversity and climate adaptation were evident. Built infrastructure includes features such as porous surfaces, shaded walkways, reflective roofing materials, and integration of natural green elements near buildings, aligning with climate-responsive design principles. The campus also incorporates biodiversity-supportive landscape elements, such as native plantation belts, which contribute to ecological stability and microclimate improvement.

The Institute encourages research and innovation through internal R&D mechanisms, though formal records of sustainability-focused R&D grants were not available for verification. Nonetheless, the technology ecosystem at IIT Bhubaneswar includes incubated startups working on environmental innovation, material research, waste management, and renewable energy solutions. Faculty-led initiatives such as water treatment innovations, bio-digester systems, rainwater harvesting improvements, and resource recovery projects reflect strong academic contributions to the green campus framework.

Overall, IIT Bhubaneswar has adopted several new sustainability design practices in the past three years and continues to explore improved design solutions through research, innovation projects, and campus-level pilots. Key opportunities for enhancement include formal initiation of green building certifications, structured documentation of passive design strategies, development of SOPs for construction waste management, systematic material footprint tracking, and improved documentation of R&D funding mechanisms. Strengthening these areas will bring the Institute into closer alignment with the sustainability-driven design expectations articulated in NBC Part 11.

8. Awareness & Training

This section aligns with NBC Part 11 – Clause 3 (Approach to Sustainability) and Clause 13 (Operation & Maintenance, Training, and Monitoring), which emphasize institutional capacity building, behavioral change, communication systems, and the ability to sustain environmental performance through stakeholder engagement. The following assessment reflects the status of environmental awareness and training practices at IIT Bhubaneswar.

IIT Bhubaneswar conducts various awareness and training activities through individual committees, departments, and functional units; however, a formal Institute-wide environmental awareness and training plan or consolidated annual training calendar does not exist. Each group maintains its own training structure, but the absence of a unified framework limits the ability to systematically track, evaluate, and improve long-term awareness outcomes. Despite this, all new students and newly recruited staff receive orientation on campus environmental practices, including waste segregation, responsible resource use, and sustainability expectations.

Housekeeping and sanitation staff receive regular training on primary waste segregation, specifically managing wet and dry waste streams, and the audit confirmed their understanding through on-site verification and interviews. Training sessions occur at intervals of approximately

once every two to three months, though a defined schedule and formally documented training logs would improve consistency and institutional oversight.

The review of training content showed that while several topics are covered, comprehensive training material addressing all Green Audit themes energy, water, waste, biodiversity, and climate action is not fully developed. Some modules rely on verbal or visual communication rather than standardized manuals or structured presentations. However, IIT Bhubaneswar makes strong use of creative awareness mediums, including posters, informational boards, on-campus displays, and video-based campaigns, many of which were observed during the audit. Digital communications through emails and circulars also reinforce energy-saving and environmental messaging.

Skill-based environmental training such as composting methods, energy conservation techniques, biodiversity protection, and sustainable lifestyle practices—was confirmed during interviews, but documentary evidence such as attendance sheets, photographs, or training minutes was not available, indicating a need for improved documentation. Despite this, several awareness programs were conducted over the past 12 months, including major events for World Environment Day, Energy Conservation Day, NSS-led sustainability campaigns, and plantation drives, all supported by photos and circulars.

Student involvement in environmental activities is strong, and students regularly participate in campaigns, plantation events, and campus clean-up activities. NSS units and student clubs actively organize environmental outreach programs, verified through attendance records and annual NSS activity reports, including an event reviewed for 18th July 2024. The Institute also collaborates with NGOs and government bodies for awareness drives and sustainability programs, demonstrating community engagement beyond the campus.

Environmental communication is well-supported across the campus through boards, signage, posters, and public messages, promoting waste segregation, energy saving, and responsible behavior. The Institute also publishes newsletters and sustainability-related updates on its website and social media channels, providing a transparent communication pathway for environmental activities and initiatives.

In terms of impact measurement, interviews confirmed that feedback-based evaluations of environmental awareness exist informally, however, formal surveys, feedback forms, or

structured assessments of awareness levels were not available for review. Despite this gap, measurable improvements such as reduction in littering, increased participation in plantation drives, and improved waste segregation compliance reflect positive behavioral outcomes from past awareness efforts.

The Institute has allocated a dedicated budget for environmental training and awareness activities, supplemented by support from CSR contributions, ensuring financial backing for ongoing initiatives. A nominated officer responsible for training and awareness exists, and the audit verified the details through institutional records and website information.

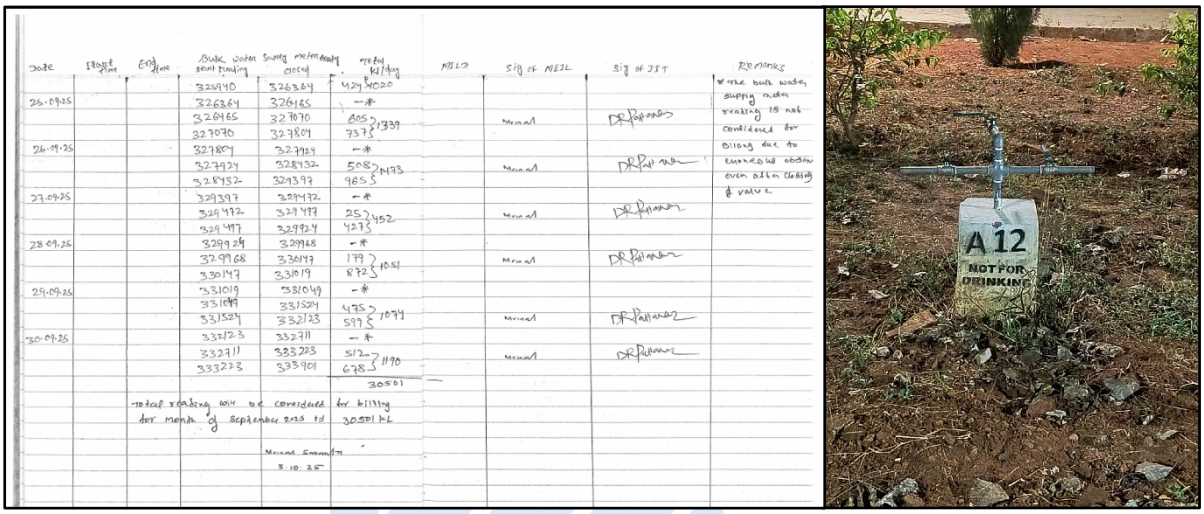
Overall, IIT Bhubaneswar demonstrates strong participation, creativity, and engagement in environmental awareness. Key strengths include induction-based orientation, housekeeping staff training, active NSS involvement, regular observance of national environmental days, and widespread communication tools. Improvement areas include establishing a unified annual training plan, developing comprehensive training materials, enhancing documentation of training records and skill-based workshops, and implementing formal evaluation mechanisms to measure awareness impact. Strengthening these elements will support long-term behavioral transformation and enhance alignment with NBC Part 11 requirements.

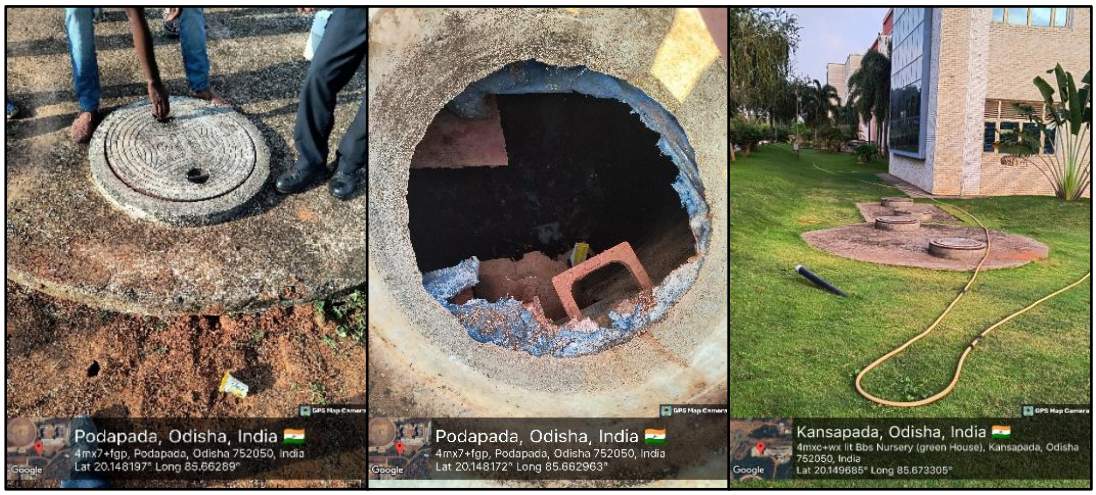
9. Water Management

This section aligns with NBC Part 11 – Clause 10 (Water and Waste Management), which emphasizes sustainable water sourcing, metering, treatment, recycling, rainwater harvesting, leak prevention, and responsible effluent discharge. The assessment of IIT Bhubaneswar indicates that the Institute has established a strong foundational water management system supported by municipal sourcing, extensive storage capacity, and documented planning tools, while also exhibiting several operational gaps requiring corrective action.

IIT Bhubaneswar receives its primary water supply through a bulk municipal supply system under PPP mode operated by MEIL, ensuring consistent and controlled distribution across campus. Several borewells exist within the premises; however, they remain unused and are maintained solely for emergency purposes, and no open wells were identified during inspection. Potable water is supplied through RO and filtration units located in academic, residential, and administrative facilities. Monthly water consumption is monitored effectively, with total water usage for October 2025 recorded at approximately 33,377 KL. During the audit, the flow meter installed at the inlet point of Over Ground Reservoir-1 (OGR-1) was checked and found operational, confirming accurate bulk water measurement. The Institute has three major Over Ground Reservoirs supporting its distribution network OGR-1 (100,000 gallons), OGR-2 (50,000 gallons), and OGR-3 (50,000 gallons) along with multiple overhead tanks and sumps, all validated through the water tank capacity records. Although water consumption is tracked, groundwater withdrawal permission/CGWA authorization was not available, representing a compliance gap given the existence of emergency borewells.

The campus master water layout was reviewed and includes 13 recharge pits and 5 natural/artificial water bodies, reflecting thoughtful integration of stormwater management and aquifer recharge measures. Rainwater harvesting systems were observed on several academic building rooftops. Recharge pits in the academic zone were well maintained, while those near hostels exhibited clogging, silt accumulation, and poor upkeep, requiring desilting and restoration to maintain efficiency. These conditions reflect partial implementation of NBC sustainability measures and highlight the need for systematic maintenance.





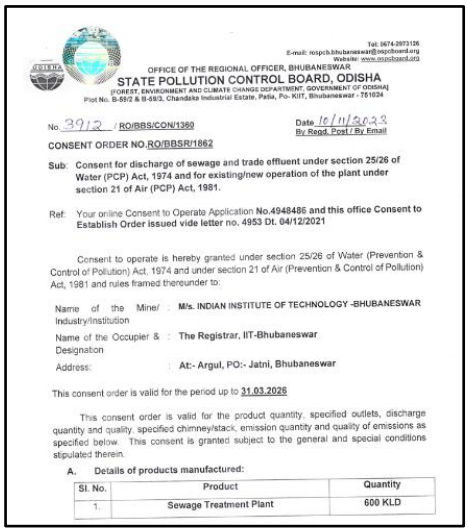
Wastewater generated on campus is intended to be treated through the 600 KLD Sewage Treatment Plant (STP). Documentation confirming STP capacity and design was verified, along with the valid Consent to Operate (CTO) issued under the Water and Air Acts by the Odisha State Pollution Control Board. Despite this, the STP was not operational on the day of inspection, and untreated wastewater overflow, leakage into adjoining soil, and odor issues were observed. This condition represents significant non-compliance with CTO conditions and poses risks of soil and groundwater contamination.

Also, Review of laboratory test reports from April/May 2025 showed that when the STP was functional earlier, it consistently produced treated water meeting prescribed norms: Biological Oxygen Demand (BOD) (7.69–9.66 mg/L), Chemical oxygen Demand (COD)OD (19–27 mg/L), Total Suspendedn Solid (29–30 mg/L), and faecal coliform (<92 MPN/100 mL). This confirms that treatment capability exists, but continuous operation and preventive maintenance are lacking. A treated water analysis report (2023) and multiple inlet/outlet test reports were reviewed and validated. Field pH and TDS tests conducted during the audit showed generally acceptable values (pH 6.56, TDS 132 ppm), though one instance of elevated TDS (972 ppm) suggests variability in raw water quality and the need for routine monitoring.

Treated wastewater is reused extensively for horticulture and campus landscaping, reducing dependence on freshwater supplies. However, due to the STP being non-functional during the audit, treated water availability was inconsistent. No sludge disposal records or logs were available, indicating a gap in waste management documentation. Furthermore, leakages were identified at two critical points: the main inlet pipeline to OGR-1 and piping near the pump house, in addition to the wastewater leakage at the STP. These issues highlight the need for strengthened maintenance practices and better oversight of distribution infrastructure.

A valid Consent to Operate (CTO) under the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, issued by the Odisha State Pollution Control Board, was reviewed and found in place. However, statutory compliance documentation such as periodic effluent monitoring reports, quarterly submissions to the Board, and annual environmental statements was not presented during the audit, indicating deficiencies in regulatory recordkeeping.

The CTO includes several mandatory obligations, including monthly NABL-accredited effluent testing, prohibition of untreated effluent discharge, odor and nuisance control, proper sludge handling, and continuous maintenance of leak-proof wastewater conveyance systems. While the consent remains valid, the absence of supporting compliance records underscores the need for improved documentation, tracking, and timely submission of all regulatory reports to maintain full adherence to CTO conditions.



OFFICE OF THE REGIONAL OFFICER, BHUBANESWAR
STATE POLLUTION CONTROL BOARD, ODISHA
[FOREST, ENVIRONMENT AND CLIMATE CHANGE DEPARTMENT, GOVERNMENT OF ODISHA]

No. 3912 / RO/BBS/CON/1360 Date 16/11/2022
By Regd. Post / By Email

CONSENT ORDER NO.RO/BBSR/1862

Sub: Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing/new operation of the plant under section 21 of Air (PCP) Act, 1981.

Ref: Your online Consent to Operate Application No.4948486 and this office Consent to Establish Order issued vide letter no. 4953 Dt. 04/12/2021

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to:

Name of the Mine/ Industry/Institution : M/s. INDIAN INSTITUTE OF TECHNOLOGY -BHUBANESWAR
Name of the Occupier & Designation : The Registrar, IIT-Bhubaneswar
Address : At:- Argul, PO:- Jatni, Bhubaneswar

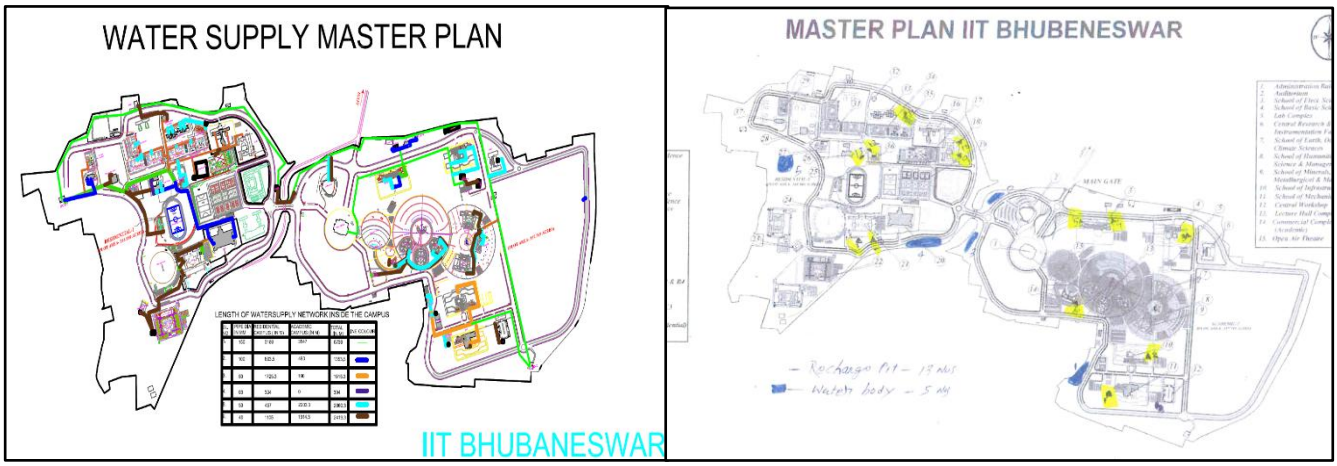
This consent order is valid for the period up to 31.03.2026

This consent order is valid for the product quantity, specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. Details of products manufactured:

Sl. No.	Product	Quantity
1.	Sewage Treatment Plant	600 KLD

Overall, IIT Bhubaneswar has established a robust water supply, distribution, and recharge framework supported by municipal sourcing, extensive storage capacities, filtration units, and a campus-wide master plan. However, to fully comply with NBC Part 11 and CTO requirements, the Institute must urgently address operational shortcomings particularly restoring continuous STP functionality, repairing leakages, improving sludge management documentation, strengthening recharge pit maintenance, enhancing monitoring processes, and ensuring consistent statutory reporting. Addressing these gaps will significantly improve the sustainability and resilience of water and wastewater management across the campus.



10. Waste Management

This section aligns with NBC Part 11 – Clause 10 (Waste Management), which emphasizes source segregation, safe collection, material recovery, scientific handling of recyclables, environmentally sound disposal of hazardous and e-waste, and awareness across stakeholders. The assessment at IIT Bhubaneswar shows that the Institute has implemented several foundational waste management practices, but significant gaps remain in segregation infrastructure, storage conditions, documentation, and compliance for specialized waste streams.

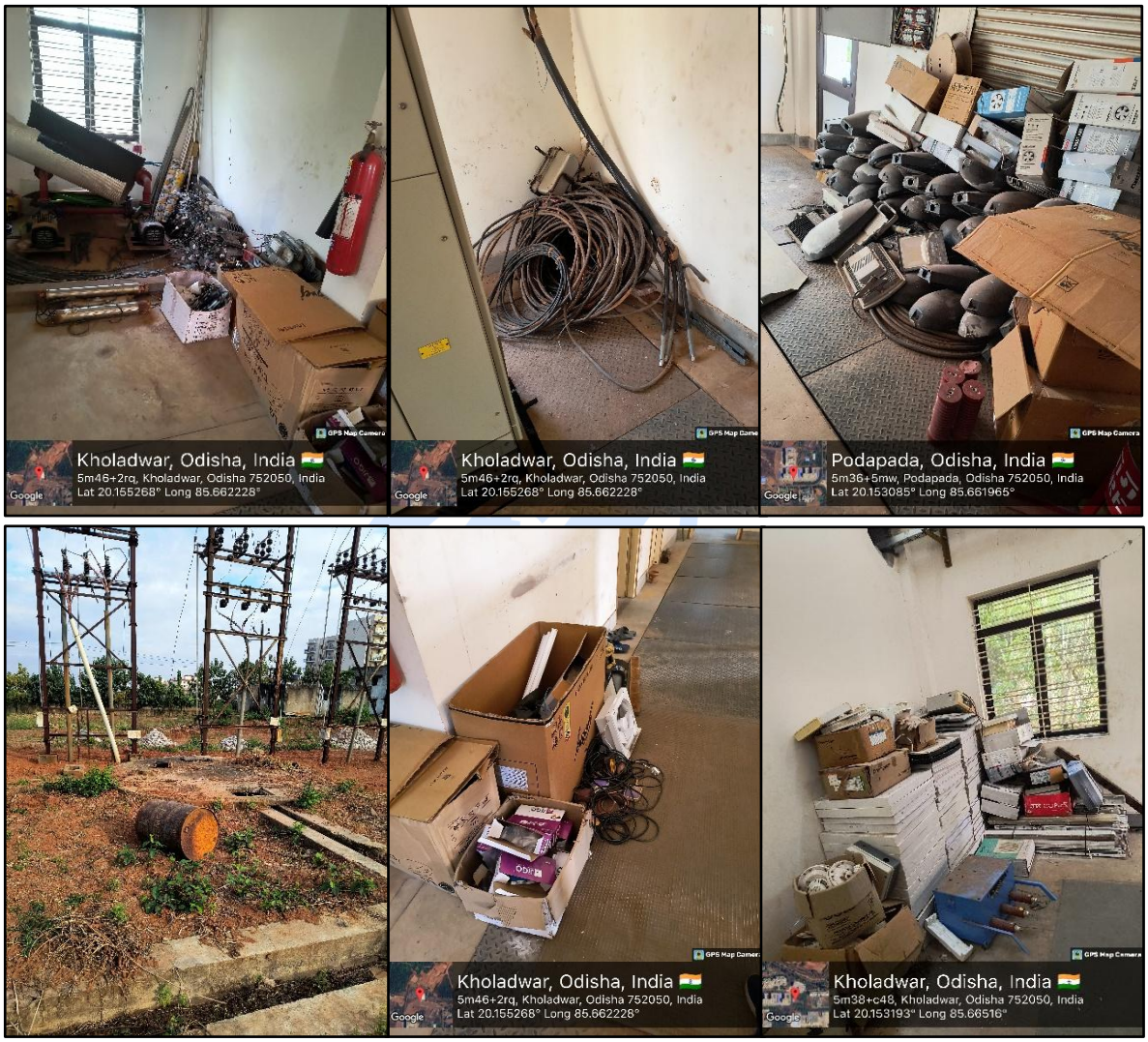
Across the campus, separate bins for wet and dry waste have been provided in academic blocks, hostels, and common areas, and segregation at source was observed to be maintained reasonably well. Color-coded bins consistent with the Solid Waste Management Rules, 2016 were in use at multiple locations. However, while basic segregation exists, the system would benefit from expansion into four-stream segregation wet/biodegradable, dry/recyclable, hazardous, and e-waste as discussed with Institute staff. At present, sanitary waste handling systems and dedicated plastic only collection bins are not widely deployed.

Food waste is not yet quantified regularly, and no daily or weekly measurement logs were available. A pilot-level composting initiative has been started on campus, demonstrating intent toward decentralized organic waste treatment; however, the system is not yet scaled to match actual waste generation volumes. Where compost is produced, it is effectively utilized by the Horticulture Department for landscaping. Expanding composting capacity and formalizing monitoring records would significantly strengthen organic waste management.

Recyclable waste such as paper, cardboard, and certain plastics is handed over to authorized municipal authorities (Jatni Municipality, Khurda) and to private collectors, including “Biswanath Suppliers,” whose waste collection vehicle was observed during the audit and verified through interviews with staff.

It was Found that scrap storage areas were found to be poorly organized, particularly for metal scrap, cables, packaging waste, and solar panel debris. Several broken solar panels were seen lying on rooftops, cable waste was found scattered near substations and used oil containers were stored dangerously close to electrical panels, creating fire and environmental risks. These

conditions indicate that waste storage is neither labelled nor secured and does not comply with safe-storage norms.



Plastic waste is currently mixed in the dry-waste stream and lacks separate storage or clear handling mechanisms. Additionally, at all Local Control Stations (LCS), large volumes of plastic

packaging waste from electrical and mechanical equipment were found dumped directly on soil, indicating poor supervision and high potential for environmental contamination. These areas require immediate corrective action and infrastructure improvements.

E-waste management is one of the weakest areas observed on campus. There is no designated, secure e-waste storage room, and the Institute has not yet finalized or contracted a CPCB-authorized e-waste recycler. E-waste was found scattered in various locations including broken solar panels on rooftops, obsolete cables near substations, and old components in open areas all of which pose safety, environmental, and compliance concerns. No records of annual e-waste generation were available, and systematic tracking has not yet begun. Establishing a centralized e-waste depot and engaging a certified recycler are critical next steps.

With regard to hazardous and biomedical waste, only the hospital generates biomedical waste, and it is handled according to biomedical waste regulations; however, supporting documentation for authorized disposal was only partially available. Laboratory chemical waste is minimal in most departments, and interviews confirmed that hazardous chemical usage is limited, but more structured SOPs for safe handling and disposal would strengthen compliance.

Awareness and training efforts for students and staff were evident, with periodic orientation sessions conducted annually and housekeeping staff trained through a third-party facility management company, AIS Management Ltd. Waste-handling staff demonstrated familiarity with basic segregation practices. A designated Waste Management Officer/Nodal Person has been appointed and verified through institutional records and interviews, supporting continuity of coordination.

Overall, IIT Bhubaneswar demonstrates meaningful strengths in basic waste segregation, recycling through authorized vendors, compost utilization, staff training, and administrative oversight. However, substantial improvements are required in waste quantification, composting scale-up, proper scrap and e-waste storage, hazardous waste management, documentation, and enforcement of safe handling practices. Addressing these gaps will bring the Institute into much stronger alignment with the waste management expectations of NBC Part 11 and national waste management rules.

11. Air & Noise Management

This section aligns with NBC Part 11 – Clause 11 (Building Services), which emphasizes ventilation quality, indoor environmental comfort, acoustic performance, and compliance of emission sources. The assessment at IIT Bhubaneswar shows that the Institute maintains generally good air quality conditions across classrooms, laboratories, hostels, and administrative buildings, supported by natural ventilation, adequate mechanical systems, and preventive maintenance practices.

Most classrooms and teaching spaces are naturally ventilated, with adequate window openings and cross-ventilation, and no issues related to stale air or poor ventilation were reported. Laboratories and kitchen areas are equipped with functional exhaust fans, and AC-equipped rooms are provided with fresh air vents, ensuring balanced airflow. Visual checks confirmed that low-VOC paints and finishes have been used in the recently maintained areas. No foul odors,

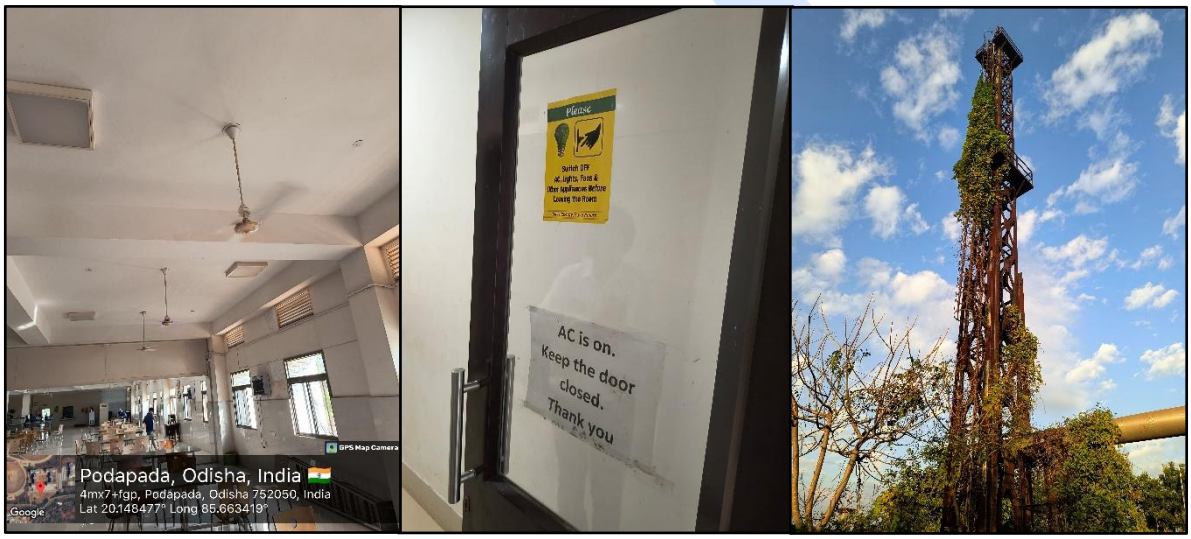
ventilation failures, or indoor air complaints were reported during staff interactions or physical inspections, indicating that indoor air conditions remain satisfactory.

Outdoor emission sources are limited mainly to DG sets, which are critical backup power systems for hostels, academic buildings, and substations. All DG sets observed were silent DG models, which inherently operate with reduced noise levels, although they are placed in open areas rather than within full acoustic enclosures. Required stack heights for DG exhaust were found to be installed, complying with dispersion norms. Diesel usage and maintenance logs are maintained digitally, providing structured records of operational hours, refueling, and servicing activities.

Noise levels around DG locations appeared acceptable, and no noise-related complaints have been recorded in the Institute's grievance channels. Signage identifying DG units as "Silent DG" was displayed at multiple locations. Certain high-noise areas do not require isolation due to low noise generation during normal operation, and therefore this category was not applicable to several campus zones.

In terms of regulatory compliance, IIT Bhubaneswar maintains manufacturer certificates for DG emission compliance; however, third-party emission monitoring reports were not available, and CPCB approval from local authorities was not provided during the audit, indicating partial compliance. Fire safety documentation for DG installations was also not fully available, though on-ground checks confirmed the presence of multiple fire extinguishers, sand buckets, and basic fire-safety measures near major electrical equipment and DG clusters. Maintenance records for DG sets were available and well maintained.

Indoor environmental monitoring such as CO_2 or IAQ surveys has reportedly been conducted in the past, but related documentation could not be provided during the audit. Air filter maintenance documentation was not applicable in many naturally ventilated areas, though overall AC servicing records at the central HVAC plant were reviewed and found to follow planned maintenance schedules under AMC provisions.



Overall, IIT Bhubaneswar demonstrates strong foundational practices in ventilation, indoor air management, DG operation, and noise control, supported by functional systems and routine maintenance. Opportunities for improvement include obtaining third-party DG emission monitoring reports, securing formal CPCB approval documentation, establishing periodic IAQ surveys with recordkeeping, and enhancing fire-safety compliance documentation for DG installations. Strengthening these areas will ensure better alignment with the performance and compliance expectations of NBC Part 11.

12. Sustainable Procurement

This section aligns with NBC Part 11 – Clause 9 (Materials and Resource Efficiency), which emphasizes responsible sourcing, environmentally preferable purchasing, life-cycle considerations, and institutional systems that reduce the environmental footprint of goods and services. The assessment at IIT Bhubaneswar indicates that the Institute has begun integrating basic sustainability principles into procurement practices; however, a formalized and comprehensive sustainable procurement framework has yet to be developed.

The Institute currently does not have a dedicated Green or Sustainable Procurement Policy, with the only existing policy being the Horticulture Policy, which has been formally approved by the competent authority. While this demonstrates administrative intent, the absence of broader institutional policies covering procurement of energy-efficient appliances, low-impact materials, recycled goods, and environmentally responsible services highlights an area for improvement. Some sustainability considerations have begun appearing in departmental purchase SOPs, and sample tenders reviewed during the audit—for example, those related to waste segregation services—contained relevant environmental clauses, indicating that sustainability is being informally incorporated into procurement decisions. However, life-cycle costing, an essential aspect of NBC-aligned sustainable procurement, is not yet practiced or documented.

At the product level, IIT Bhubaneswar demonstrates stronger performance. The Institute consistently procures BIS/BEE star-rated appliances, a practice in place since 2015, contributing to long-term energy efficiency. Use of recycled paper and reduction of virgin paper dependency were confirmed, and several departments have adopted plastic-free practices to the extent possible. PET water bottles are discouraged in academic zones, and no significant plastic disposable items were found in canteens, hostels, or administrative buildings. Compostable or

sustainable food packaging is encouraged, though formal verification through invoices was not available during the audit. The use of eco-friendly cleaning supplies could not be confirmed due to missing documentation, and this area requires strengthened supplier coordination and recordkeeping.

Vendor-related sustainability controls are still emerging. No consistent requirement was found for suppliers to submit environmental compliance declarations, nor was there evidence of preferential procurement from local vendors to reduce transportation-related emissions. E-waste vendor agreements and EPR-compliant partnerships have not yet been formalized, contributing to ongoing challenges in e-waste management observed in the waste management section. While plastic-free practices are encouraged, complete elimination of single-use plastic is yet to be achieved; however, awareness campaigns and internal communications indicate a strong behavioral push toward plastic reduction. Plastic waste is currently handled within the dry-waste stream, and the Institute is encouraged to establish designated collection, recycling pathways, and procurement of reusable alternatives.

Despite the absence of a formal sustainable procurement tracking system, several positive institutional purchases were identified. The Institute has procured 50 kWp of solar photovoltaic installations, extensive LED lighting, and energy-efficient electrical systems, demonstrating alignment with green procurement principles. Repair and refurbishment of electrical equipment are prioritized before issuing new purchase orders, helping reduce material consumption and extend asset life. Annual reports reviewed during the audit reflected multiple green campus initiatives supported through procurement processes, including renewable energy, landscaping improvements, and energy-efficient retrofits.

However, IIT Bhubaneswar does not maintain a procurement tracking register or data that records the percentage of eco-friendly purchases, nor has it initiated any internal audits for sustainable procurement compliance. Establishing such mechanisms would significantly improve accountability and monitoring and enable the institution to quantify sustainability-driven purchasing decisions.

Overall, IIT Bhubaneswar demonstrates good intent and several isolated examples of environmentally responsible purchasing, particularly in energy-efficient equipment and green campus initiatives. To fully align with NBC Part 11 expectations, the Institute must adopt a formal sustainable procurement policy, integrate life-cycle costing into decision-making, document vendor compliance more rigorously, strengthen plastic reduction efforts, formalize e-waste return systems, and develop monitoring tools and audits to track progress in sustainable procurement.

13. Legal & Regulatory Compliance

This section aligns with NBC Part 11 – Clause 14 (Statutory and Legal Compliance), which emphasizes adherence to environmental laws, operational consents, safety certifications, and structured compliance tracking. The assessment at IIT Bhubaneswar shows that while several essential consents and systems are in place, significant gaps exist in documentation, monitoring, and centralized regulatory management.

A Consent to Operate (CTO) under the Water and Air Acts issued by the Odisha's State Pollution Control Board (SPCB) is valid and was verified during the audit, however, the Institute does not possess consent coverage for all relevant emission and pollution sources. In particular, DG sets do not appear to be covered under an updated air consent, and there is no evidence of separate approvals for laboratory operations where applicable. This indicates partial compliance with statutory requirements. No CGWA or State groundwater withdrawal permission was available despite the Institute having borewells for emergency use, representing a compliance gap under the Water (Prevention and Control of Pollution) Act and groundwater abstraction rules.

STP discharge compliance is partially met. External laboratory test reports for STP inlet and outlet samples were available, showing periodic monitoring; however, the data provided was incomplete and not accompanied by required statutory reporting to the State Pollution Control Board. Records of treated water reuse percentages such as volumes diverted for horticulture were also not maintained, limiting the Institute's ability to demonstrate compliance with CTO reuse conditions.

Handling of hazardous and e-waste also shows deficiencies. No Hazardous Waste Authorization under Rule 6 was available for DG waste oil, although waste oil was seen stored in drums at several LCS locations. While staff indicated that used oil may be handed over to authorized vendors, no manifests or invoices were provided as evidence. E-waste is not yet being routed to a CPCB-authorized recycler, and significant quantities including broken solar panels, old cables, and electrical scrap were found stored improperly across rooftops and substations. No annual e-waste tracking record or disposal register was available.

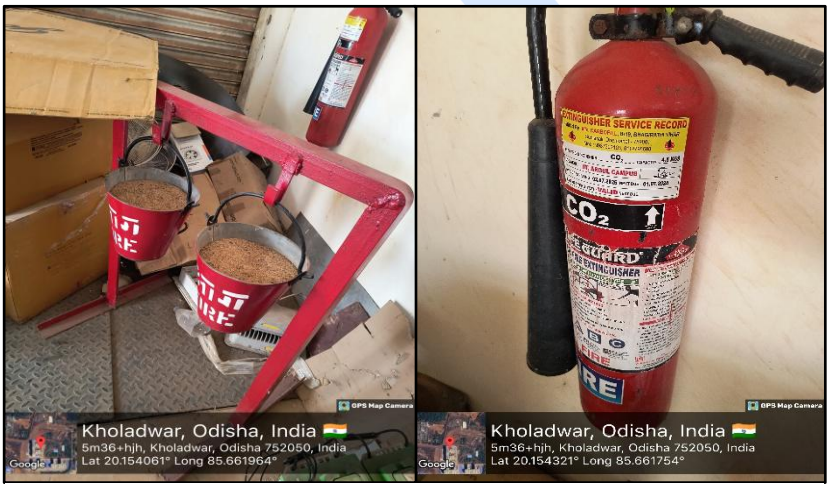


Figure 1: At Fire bucket and Fire Extinguisher at LCS

Fire and life safety compliance is partially in place. A valid Fire NOC was not available for all blocks; Phase 1 buildings reportedly have clearances, while Phase 2 is still under process. Fire

extinguishers at many locations, including LCS areas, pumping stations, and academic buildings, were found maintained and labeled, however, several extinguishers in the Guest House, Administrative Block, and hostels were past their refill due dates some last filled in March 2021, others overdue since March 2022. Evacuation signage and fire exit indicators were visible in academic buildings, but a formal evacuation plan or documented emergency preparedness protocol was not provided.

Figure 2: Expired/Due Refill Fire Extinguisher

DG compliance also requires improvement. Emission testing certificates for DG sets were not available, and the last known tests were reportedly conducted in 2017, which does not meet CPCB and SPCB requirements for periodic monitoring. Diesel storage, however, falls within acceptable limits, as no bulk diesel storage is maintained on campus; DG sets are operated with filled tanks only, eliminating the need for a PESO license.

Figure 3: Fire Fighting Water Supply System

Solid waste management compliance aligns with the Swachh Bharat and Solid Waste Management Rules through municipal engagement, and a pilot-scale composting system is operational. These practices reflect partial conformity with national waste regulations.

Compliance monitoring is decentralized. Different departments maintain their own regulatory records, but no centralized legal compliance register exists to consolidate statutory obligations, consent conditions, renewal deadlines, or audit histories. Renewal tracking is weak and several important dates appear to have been missed or not recorded. No previous year environmental or internal audit report was available for reference. Establishing a centralized digital compliance tracker would significantly improve oversight and preparedness.

Overall, while IIT Bhubaneswar possesses key statutory consents and demonstrates compliance in several areas including solid waste management, pilot composting, and partial fire safety there are substantial gaps in DG emission compliance, hazardous waste authorization, e-waste disposal, groundwater regulation, fire system maintenance, and statutory reporting. Strengthening documentation, establishing a centralized compliance system, formalizing vendor agreements, and enhancing monitoring practices are critical steps toward full alignment with NBC Part 11 and environmental regulatory requirements.

14. Monitoring & Reporting

This section aligns with NBC Part 11 – Clause 13 (Commissioning, Operation & Maintenance, and Performance Monitoring), which emphasizes systematic data recording, internal reporting, transparency, and periodic environmental performance evaluation. The assessment at IIT Bhubaneswar indicates that while several monitoring and reporting mechanisms are in place, the Institute does not yet maintain a comprehensive, KPI-driven environmental monitoring framework.

IIT Bhubaneswar currently does not maintain a structured monthly or annual KPI tracking system covering key environmental indicators such as water consumption, energy use, waste generation, and greenhouse gas emissions. Although individual departments keep partial records, the absence of a consolidated environmental dashboard limits the Institute's ability to evaluate trends or benchmark performance against sustainability targets. Monitoring for parameters such as water, energy, and waste is taking place informally, but a formal integrated monitoring system has yet to be developed.

Some performance records particularly DG set maintenance logs, operational hours, and fuel tracking are digitally documented, reflecting partial adoption of MIS-based recordkeeping. Broader environmental data, however, is not centrally stored in a digital format accessible for analysis or review.

The Institute does, however, publish an annual environmental sustainability report, which was verified during the audit and is available on the official website. This demonstrates the Institute's commitment to transparent communication and institutional reporting. The Green/Environment Committee maintains some internal reporting practices, but complete meeting minutes, action-tracking records, and structured submissions were not available during the onsite audit, indicating a need for better documentation and consistency in committee operations.

Environmental monitoring updates and sustainability initiatives are periodically shared with stakeholders, primarily through the Institute's website, circulars, and public announcements. Senior management reviews environmental and operational performance at defined intervals, and interviews confirmed that key insights and observations are escalated through internal channels for decision-making.

Overall, IIT Bhubaneswar demonstrates meaningful strengths in sustainability reporting, digital maintenance of select operational records, and leadership-level review mechanisms. However, establishing a centralized environmental monitoring system, strengthening documentation for committee reporting, and integrating KPI-based performance tracking will be essential to align fully with the monitoring and reporting expectations of NBC Part 11.

15. Observation and Scope of Improvement

Observation 01: It was observed that formalized and approved Standard Operating Procedures (SOPs) and policies pertaining to energy management, Emergency Preparedness waste management, water management, green-cover monitoring, air and noise monitoring, and regulatory compliance management were not available for review during the audit.

Observation 02: During the onsite verification, it was noted that handling and storage practices for hazardous waste, including used oil from substation maintenance, and E-waste such as cables, plastic cable covers, old solar panels, fans, and streetlight components, were not maintained in an organized or compliant manner.

Observation 03: Serious safety concerns were observed across all seven LCS substations, where flammable materials and waste oil were stored in a manner that may lead to fire-related risks and potential environmental leakage.

Observation 04: Emission testing reports for the installed DG sets, from the time of commissioning to date, were not available for verification.

Observation 05: Quantified records for waste management, including STP output logs, biomedical waste, E-waste, hazardous waste, and agreements with authorized waste handlers, were not available in complete form. Limited sample data was observed, but centralized quantified data across departments was not maintained.

Observation 06: Valid copies of Consent to Establish (CTE) and Consent to Operate (CTO) from SPCB for the STP, borewell permissions, fire-safety approvals, and other statutory licenses were not available for review.

Observation 07: Documentation related to the Life Cycle Analysis (LCA) of chillers, coolers, and other key sustainability initiatives was not found during the audit.

Observation 08: Evidence supporting the use of eco-friendly materials for cleaning, construction, or other operational activities, including any applicable LCA assessment records, was not available.

Observation 09: The cleanliness and maintenance conditions of substations were observed not adequate during the onsite assessment.

Observation 10: In the over-ground reservoirs visited, observations indicated water wastage and improper maintenance, impacting the operational efficiency of these facilities.

Observation 11: Required safety equipment was not found available or installed at several substations.

Observation 12: Records related to training schedules, including fixed frequencies, competency-based training, or periodic technical/ safety trainings, were not available for verification.

Observation 13: Although several awareness campaigns and activities are carried out across the campus, documented evidence and systematic record maintenance for these initiatives were not found.

Observation 14: STP sludge management logs or disposal records were not available at the time of audit.

Observation 15: During the physical inspection near the Academic Area, a collection tank holding contaminated wastewater was found adjacent to a natural pond/water body. Leakage from sludge and wastewater seepage into the natural pond area was also observed.

Observation 16: A dedicated storage area for scrap, E-waste, and spare parts was not present in the Engineering Department, which manages the substation, water chiller plant, air-cooled chiller plant, lighting system, etc.

Observation 17: Multiple buildings were found to have expired fire extinguishers or units that had exceeded the refilling due date.

Observation 18: The STP was observed to be overflowing during the site visit, accompanied by noticeable odour, indicating operational concerns.

Observation 19: During document review, the Lux level assessment report, Indoor Air Quality Report and Noise level monitoring report for the campus premises were not available for verification at the time of audit.

Observation 20: It was observed that the Institute does not have a designated butterfly zone, bird habitat, pollinator garden, or similar biodiversity conservation areas within the campus.

Observation 21: During the inspection, it was noted that the inspection team measured CO_2 levels, pH levels, and TDS levels using the instruments available at the institute. However, the calibration certificates for these instruments were not provided by the institute at the time of inspection. To ensure the reliability and accuracy of the measurements taken, the institute is kindly requested to submit valid calibration certificates for all instruments.

Observation 22: No documented evidence was available to demonstrate avoidance or minimization of chemical pesticides in landscape management or horticulture activities.

Observation 23: No records, plans, or initiatives were found that indicate the Institute's efforts toward exploring modular or prefabricated construction methods to reduce embodied carbon or to address emissions associated with both on-site and off-site construction activities.

Observation 24: Quantified internal records for waste categories, specifically food waste generated from canteens, mess facilities, and residential areas, were not available or not maintained in a consolidated manner.

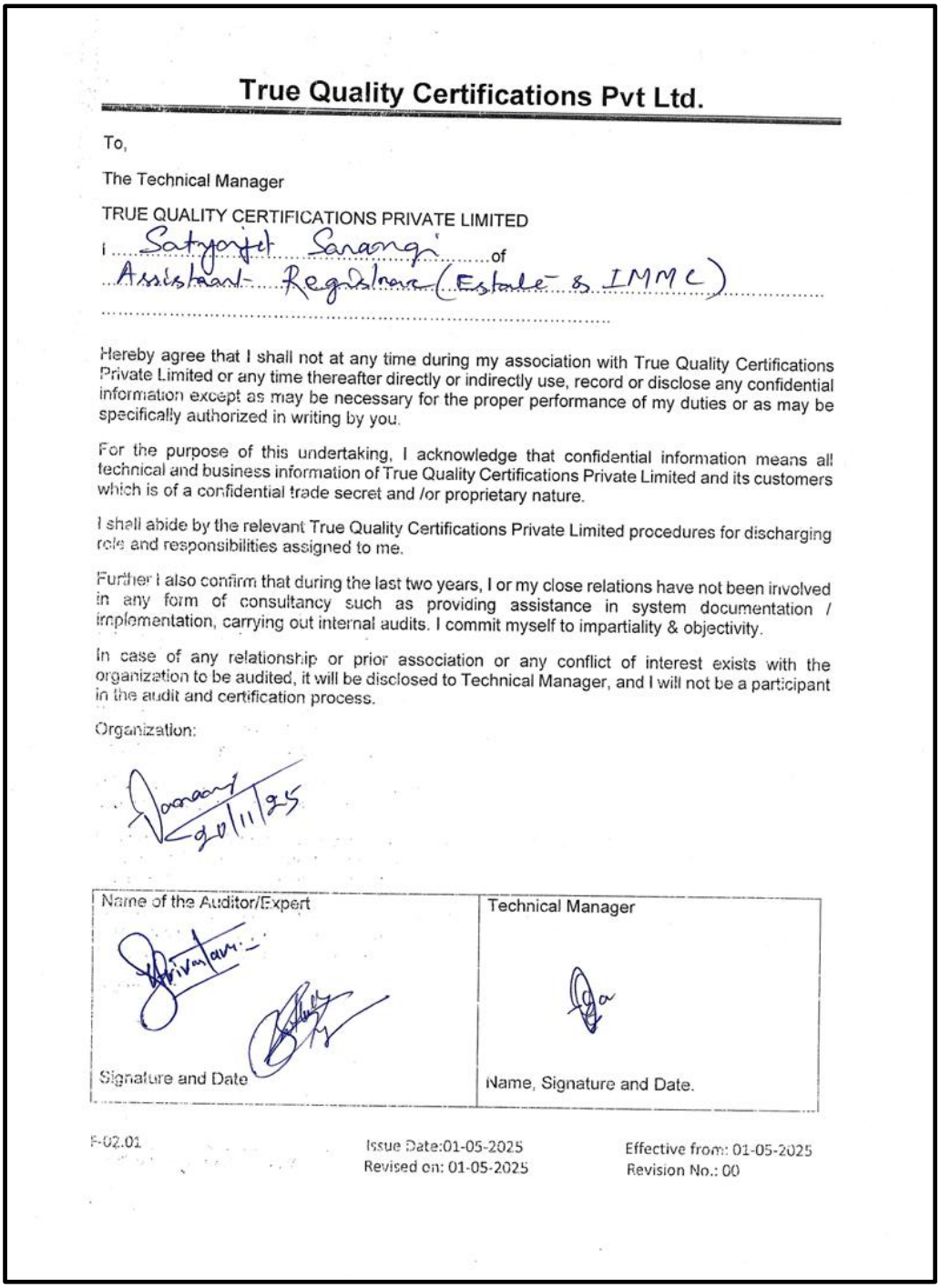
Observation 25: It was noted that E-waste is reportedly supplied or proposed to be supplied to CPCB/SPCB-authorized recyclers; however, supporting documentation or evidence of such transfer arrangements was not available during the audit.

Observation 26: During onsite interactions, it was informed that composting activities are being performed; however, data, logs, or quantification records related to the composting process were not available for review.

Observation 27: A bio-methanation plant was observed on campus; however, it was found to be non-operational at the time of visit. Clarification regarding its operational status, maintenance, and associated records was not available.

Appendix-1:- Site Visit

COI and NDA form:



True Quality Certifications Pvt Ltd.

To,

The Technical Manager

TRUE QUALITY CERTIFICATIONS PRIVATE LIMITED

I Satyajeet Sarangi of
Assistant Registrar (Estate & IMMC)

Hereby agree that I shall not at any time during my association with True Quality Certifications Private Limited or any time thereafter directly or indirectly use, record or disclose any confidential information except as may be necessary for the proper performance of my duties or as may be specifically authorized in writing by you.

For the purpose of this undertaking, I acknowledge that confidential information means all technical and business information of True Quality Certifications Private Limited and its customers which is of a confidential trade secret and /or proprietary nature.

I shall abide by the relevant True Quality Certifications Private Limited procedures for discharging role and responsibilities assigned to me.

Further I also confirm that during the last two years, I or my close relations have not been involved in any form of consultancy such as providing assistance in system documentation / implementation, carrying out internal audits. I commit myself to impartiality & objectivity.

In case of any relationship or prior association or any conflict of interest exists with the organization to be audited, it will be disclosed to Technical Manager, and I will not be a participant in the audit and certification process.

Organization:

9/11/25

Name of the Auditor/Expert	Technical Manager
Signature and Date	Name, Signature and Date.

F-02.01 Issue Date:01-05-2025 Revised on: 01-05-2025 Effective from: 01-05-2025 Revision No.: 00

Attendance Sheet (Opening Meeting):

TRUE QUALITY CERTIFICATIONS

True Quality Certifications Pvt. Ltd. **Attendance Sheet**

OPENING ~~AND FINAL~~ MEETING// ATTENDANCE LIST

Project Name: Green Audit for Indian Institute of Technology, Bhubaneswar.

Address: IIT Bhubaneshwar

Date of Visit: 20&21/Nov/2025

Objective of Visit: Green Audit

Visiting Team: Mr. Ishan Srivastava & Mr. Sarthak Jain.

Name:	Company and position:	Date:	Signature:
Gajendra Behera	AE(Elect.) IIT Bhubaneswar	20/11/2025	
Dharitri Satapathy	APRO IIT Bhubaneswar	20.11.2025	Satapathy
Kamireddy Viswesware Reddy	Asst. Horticulturist, IIT Bhubaneswar	20/11/25	Viswesware
Smruti Smaranika Kumar	Jr. Superintendent AC&R, IIT BBSR	20/11/25	Smruti
Pradip Kr Padda	PHI, IITBBS	20/11/25	Pradeep
Marshal Tudu	Jr. superintendent IMMC section	20/11/25	
Satyajeet Sawangi	Asst Registrar, Estate & TMMC	20/11/25	
K. Robin Le Dore	Superintending Engineer (Civil)	20/11/25	

Page 1 of 2

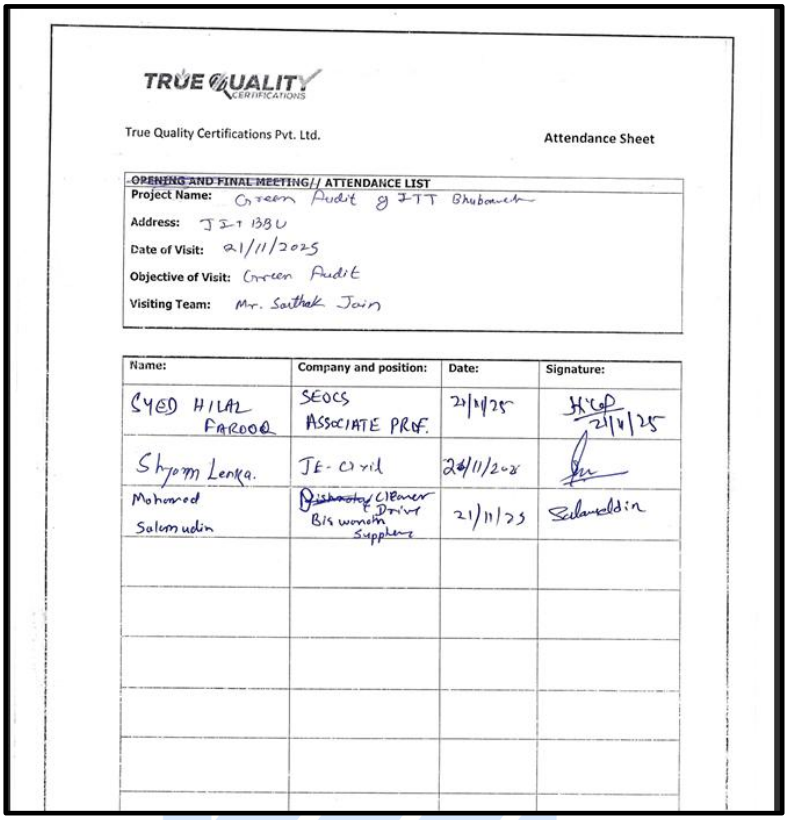
Attendance Sheet (onsite Interview / Meeting):

TRUE QUALITY CERTIFICATIONS

True Quality Certifications Pvt. Ltd. **Attendance Sheet**

~~OPENING AND FINAL MEETING~~ // ATTENDANCE LIST // site visit
Project Name: Green Audit for Indian Institute of Technology
Address: IIT Bhubaneswar.
Date of Visit: 20/11/2025
Objective of Visit: Green Audit
Visiting Team: Mr Santosh Jain

Name:	Company and position:	Date:	Signature:
Pradip Kr Padalan	PHI, IITBBS	20/11/25	Pradip
Dr Mohit Somani	Assistant Professor SIF, IITBBS	20/11/25	
Baidyanath, Bhanja	HVAC Operator	20/11/25.	
Nilanchal Jena	HVAC Supervisor	20/11/25	
Bibhuti Bhusan baliarsingh	Pump Operator opr Reserv-1	20/11/25	
Ramakanta Tripathy	Electrician (IIT)	20/11/25	
Pruthviraj Pradhan Pruthviraj Pradhan	Electrician (IIT)	20/11/25	
Pritish Tenga	HVAC Tech. -2	20/11/25	



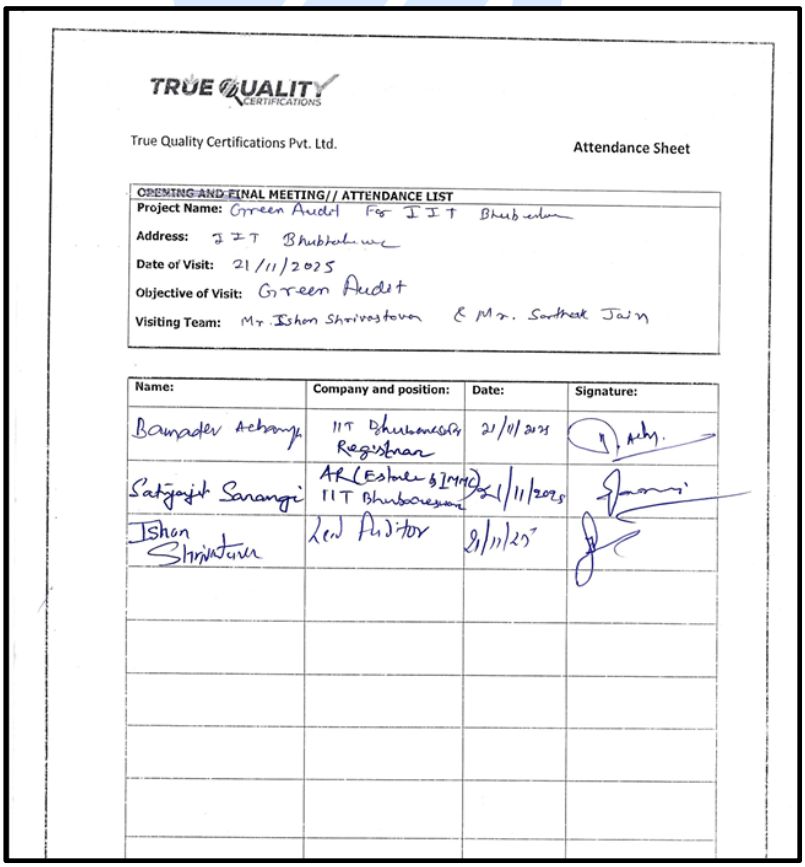
TRUE QUALITY CERTIFICATIONS

True Quality Certifications Pvt. Ltd. Attendance Sheet

OPENING AND FINAL MEETING// ATTENDANCE LIST

Project Name: Green Audit @ IIT Bhubaneswar
Address: IIT BBSR
Date of Visit: 21/11/2025
Objective of Visit: Green Audit
Visiting Team: Mr. Sathak Jain

Name:	Company and position:	Date:	Signature:
SYED HILAL FARODA	SEOCS ASSOCIATE PROF.	21/11/25	21/11/25
Shyam Lenka.	JE-Civil	21/11/2025	
Mohamed Salemuddin	Driver/Cleaner Bio women Suppliers	21/11/25	Salemuddin



TRUE QUALITY CERTIFICATIONS

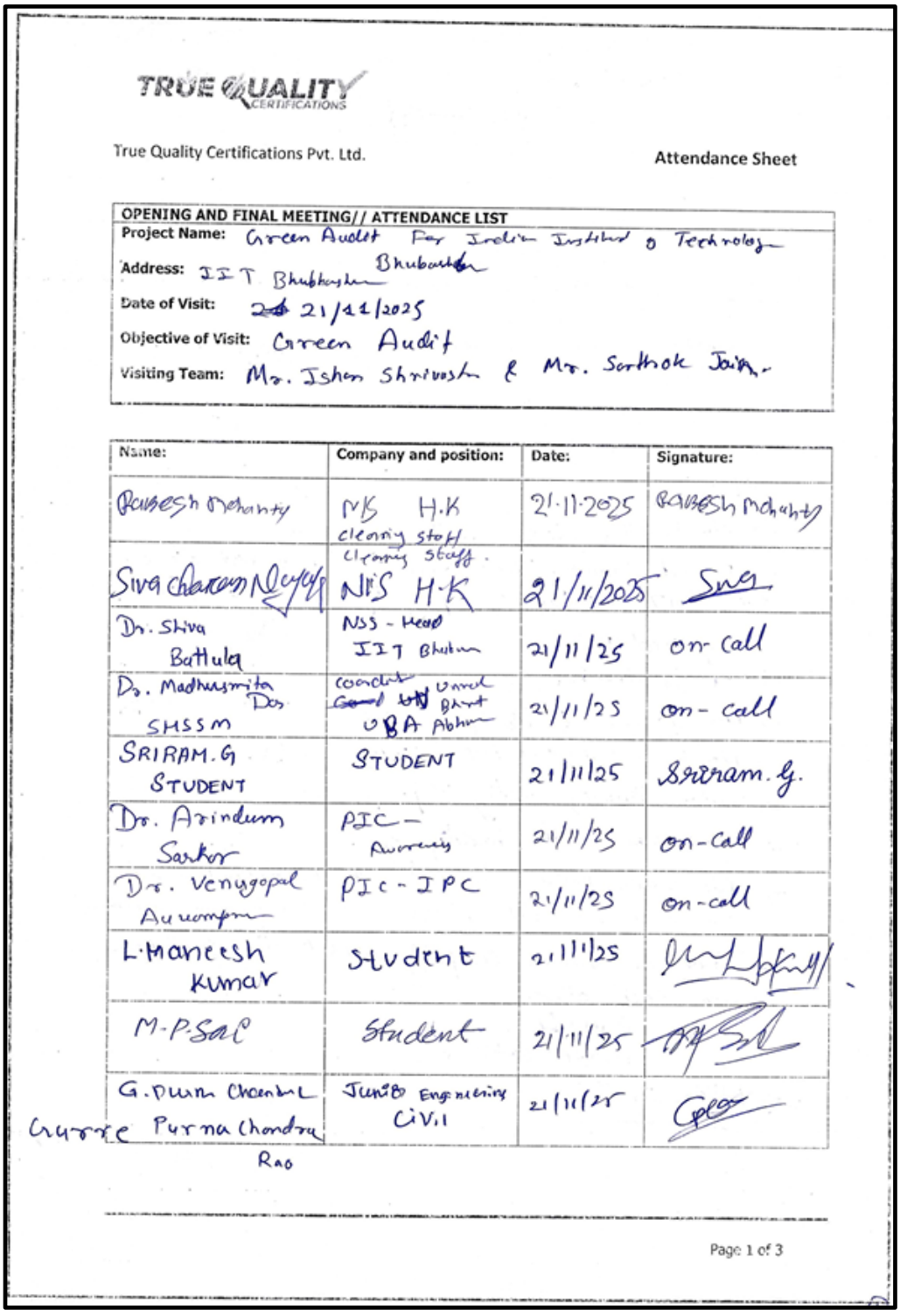
True Quality Certifications Pvt. Ltd. Attendance Sheet

OPENING AND FINAL MEETING// ATTENDANCE LIST

Project Name: Green Audit For IIT Bhubaneswar
Address: IIT Bhubaneswar
Date of Visit: 21/11/2025
Objective of Visit: Green Audit
Visiting Team: Mr. Ishan Shrivastava & Mr. Sathak Jain

Name:	Company and position:	Date:	Signature:
Bamadev Acharya	IIT Bhubaneswar Registrar	21/11/2025	
Satyajit Sarangi	AR (Estate & Civil) IIT Bhubaneswar	21/11/2025	
Ishan Srivastava	Lead Auditor	21/11/25	

Attendance Sheet (Closing Meeting):



TRUE QUALITY CERTIFICATIONS

True Quality Certifications Pvt. Ltd. — Attendance Sheet

OPENING AND FINAL MEETING// ATTENDANCE LIST

Project Name: Green Audit For Indian Institute of Technology Bhubaneswar
Address: IIT Bhubaneswar
Date of Visit: ~~2nd~~ 21/11/2025
Objective of Visit: Green Audit
Visiting Team: Mr. Ishan Shrivastva & Mr. Sarthak Jain.

Name:	Company and position:	Date:	Signature:
Rakesh Mohanty	M/S H.K cleaning staff	21.11.2025	Rakesh Mohanty
Siva Charan Nayak	M/S H.K cleaning staff.	21/11/2025	Siva
Dr. Shiva Bathula	NSS - Head IIT Bhubaneswar	21/11/25	on-call
Dr. Madhusmita Das SMSSM	Coordinator UBA Abhiruchi	21/11/25	on-call
SRIRAM.G STUDENT	STUDENT	21/11/25	Sriram.G.
Dr. Arindam Sarkar	PIC - Awareness	21/11/25	on-call
Dr. Venugopal Achampra	PIC - IPC	21/11/25	on-call
L.Maneesh Kumar	Student	21/11/25	
M.P.Sai	Student	21/11/25	
G.Purna Chandra Rao	Junior Engineering Civil	21/11/25	

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