

Initial Environmental Examination Report (Addendum)

June, 2021

India: Odisha Skill Development Project (OSDP)

Prepared by the Skill Development and Technical Education Department, Government of Odisha for the Asian Development Bank

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ABBREVIATIONS

BMC	- Bhubaneswar Municipal Corporation
BDA	- Bhubaneswar Development Authority
CGWA	- Central Ground Water Authority
CO	- Carbon Monoxide
DG	- Diesel Generator
DPR	- Detailed Project Report
DTET	- Directorate of Technical Education & Training
EHS	- Environment, Health & Safety
EMP	- Environmental Management Plan
ESMC	- Environment and Social management Cell
GoI	- Government of India
GoO	- Government of Odisha
GRC	- Grievance Redressal Committee
IT	- Information Technology
ITC	- Industrial Training Centre
ITES	- Information Technology Enabled Service
ITI	- Industrial Training Institute
LPG	- Liquid Petroleum Gas
MoEFCC	- Ministry of Environment, Forest and Climate Change
MoSDE	- Ministry of Skill Development and Entrepreneurship
MSME	- Micro Small and Medium Enterprises
NCVT	- National Council for Vocational Training
NOC	- No Objection Certificate
NOx	- Oxides of Nitrogen
OSDA	- Odisha Skill Development Authority
OSDP	- Odisha Skills Development Project
OSDS	- Odisha Skill Development Society (now known as OSDA)
OSEM	- Odisha State Employment Mission
OSPCB	- Odisha State Pollution Control Board
PEC	- Precision Engineering Centre
RPL	- Recognition of Prior Learning
RSPM	- Respirable Suspended Particulate Matter
SDTED	- Skill Development and Technical Education Department
SDEC	- Skill Development and Employment Centre
SEIAA	- State Environment Impact Assessment Authority
SO ₂	- Sulphur dioxide
SPCB	- State Pollution Control Board
SPM	- Suspended Particulate Matter
SPS	- Safeguard Policy Statement
STP	- Sewage Treatment Plant
ToT	- Training of Trainers
WSC	- World Skill Center

CURRENCY EQUIVALENTS

(As of 15 June 2021)

Currency unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	\$0.014
\$1.00	=	Rs 73.25

WEIGHTS AND MEASURES

dB(A) A-weighted decibel
ha - hectare
km-kilometer
km²-square kilometer
µg-microgram
m - Meter
m²-square meter
MW (megawatt) –megawatt

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EXECUTIVE SUMMARY

1. Background. The Government of Odisha (GoO) has taken several initiatives to improve its skills development system and address skills shortages. It had set up a high-level Odisha State Employment Mission (OSEM) in 2005–2006 to specifically address the problems of youth unemployment and underemployment. It has established the Skill Development and Technical Education Department (SDTED)¹ to bring together Directorate of Technical Education and Training (DTET), OSEM, employment generation services, and labor regulation under one department. While the establishment of SDTED improved coordination among different agencies, it has not necessarily enhanced the operational efficiency of its sub-units. DTET is unable to meet industry demands due to poor infrastructure and outdated standards, assessment, and certification processes.

2. The existing training capacity and quality in the state is inadequate to meet the 12th five-year plan target of training one million people. Recognizing weak institutional capacity for market-relevant training, the GoO has also established an autonomous implementation institution, the Odisha Skill Development Society (OSDS) in 2015 (now named as Odisha Skill Development Authority (OSDA)), to implement market-responsive skills programs. This institutional arrangement aims to train one million people and provide greater access to quality training in tribal interior areas of Odisha. In May 2016, the GoO also established the Odisha Skill Development Authority (OSDA) headed by an eminent industry leader with the aim of bringing OSEM and OSDS under one umbrella to ensure effective formulation, implementation and monitoring of skill development programs in Odisha. The Odisha Skill Development Project (OSDP) will help the GoO to streamline this arrangement. In Odisha, the Industrial Training Institutes (ITI) and Industrial Training Centers (ITC) have an estimated combined capacity of around 75,000 seats per year, far below to address the skill potential in the state. Hence, to assist in overcoming these challenges and to enhance the employability of the youth of Odisha and their productivity on employment, the Asian Development Bank (ADB) is supporting the GoO to foster the skill initiatives in the state. OSDP will provide training to about 151,000 working age population during the project period mainly in the age group of 15-34 years in the state of Odisha in higher level manufacturing and services skills aligned to human development strategies of the state. The project will reach out to the youth, disadvantaged groups, and workers in the unorganized, informal and formal sectors by adopting a menu-driven approach to build their skills and increase their employment potential.

3. The Initial Environmental Examination (IEE) report for OSDP was prepared and approved in April 2017. At that time there was a proposal to establish eight Advanced Skills Training Institutes (ASTIs) at different locations in the State. These ASTIs were to act as Hub for the nearby ITIs. But owing to some administrative difficulties and other reasons, GoO decided to establish a World Skill Center (WSC) at Bhubaneswar. Due to this, there were changes in project components, specially pertaining to infrastructure. Hence, environmental impacts and /or issues changed due to minor change of scope. On account of these facts, the ADB approved IEE report was updated in November 2019 and this report was approved by the ADB In January 2020. Later OSDP requested ADB for inclusion of damage training equipment in 4 selected ITIs namely Bhubaneswar, Puri, Cuttack and Barahampur. The IEE report was updated to reflect associated environmental impacts and mitigation measures due to inclusion of training equipment at above mentioned 4 ITIs. The updated IEE was approved by ADB in November 2020. Now this addendum to the IEE is proposed on account of addition of Precision Engineering Centre (PEC) for the study of Precision Engineering Trade. The site for Precision Engineering Centre is adjacent to the

¹In 2012, Odisha established the Employment, Technical Education and Training Department, which was renamed as Skill Development and Technical Education Department (SDTED) in 2015

site of World Skill Centre. The PEC is part of World Skill Centre. Due to space and structural constraints, it could not be accommodated in IDCO Tower 2010, where WSC is being established.

Project description: The Precision Engineering Centre will be set up by Odisha Skill Development Authority (OSDA). The physical infrastructure involves construction of Precision Engineering Centre with a built-up area of 4386.08 sq m. This will be constructed on vacant land in the Mancheswar Industrial Estate, Bhubaneswar at a distance of 200 m from the World Skill Centre. All the project related infrastructure will be provided on the unencumbered land belonging to the Odisha Skill Development Authority (Government of Orissa). The scope in this location includes construction of Precision Engineering Centre on 4.5 Acre land and the installation of laboratory Equipment. The civil works involve construction of a G+1 building entailing Built up area of 2461.72 sqm on the Ground floor and 1924.36 sqm on the First floor. The Precision Engineering laboratories will be set up on the ground floor, while classrooms and IT laboratory will be set up on the First floor.

Precision Engineering Centre will have following laboratories/sections:

- i. Inspection Techniques Laboratory
- ii. Turning Section
- iii. CNC Turning Section
- iv. Milling Section
- v. CNC Milling Section
- vi. 3D CAD/CAM Application Laboratory
- vii. CNC Sheet Metal Fabrication Laboratory
- viii. Multi-Axis Machining Laboratory
- ix. CNC Sheet Metal Fabrication CAD/CAM Studio
- x. Multi-Axis CAM Studio
- xi. Grinding Section

4. The major equipment to be included in the 11 laboratories of Precision Engineering Centre will be measuring instruments in inspection techniques laboratory, Centre Lathe in turning section, CNC Lathe in CNC turning section, Vertical milling machine in milling section, CNC milling machine in CNC milling section, Workstation computer in 3D CAD/CAM Laboratory, CNC Laser (CO₂) cutting machine with CNC controller in CNC Sheet Metal Fabrication Laboratory, Workstation Computers in CNC Sheet Metal Fabrication CAD/CAM Studio and Multi Axis CAM Studio, and Surface grinder with digital readout in Grinding Section. The detailed specifications of these equipment have been provided in Section III of the report.

5. Based on the field based due diligence, and the environmental investigations undertaken, the Environment Category of project remains 'B' (after including PEC) as per ADB's *Safeguard Policy Statement (SPS) 2009*. The layout plans for Precision Engineering Centre are being finalized and detailed bill of quantities for civil works are in progress. The list and specifications of training equipment and machinery for the Precision Engineering Centre has been finalized and is under procurement process. The addendum to the initial environmental examination (IEE) report has been prepared considering the environmental implications due to the additional scope of civil works involved in the construction of Precision Engineering Centre (Construction phase) and the environmental implications due to the usage of machinery and laboratory equipment during operation phase of the Precision Engineering Centre. The same has been quantified. An environmental assessment and review framework (EARF) have been prepared separately in accordance with ADB's SPS, 2009 for OSDP. Accordingly, environmental assessment will be taken up as per the EARF, if any additional component is added for ADB funding in future.

6. **Implementation arrangements.** The SDTED will be the executing agency (EA) for the OSDP. The implementing agency (IA) will be Odisha Skill Development Authority (OSDA). A team of technical, administrative, and financial officials, including safeguards specialists, will be provided at the SDTED under a Project Management Unit (PMU) to implement, manage and monitor project implementation activities. An Environment and Social Management Cell (ESMC) will be established within PMU for management of safeguards. This ESMC cell will comprise of (a) Environmental Safeguard specialist, (b) Social Safeguard Specialist and (c) Gender Specialist. The PMU will be assisted by a Project Management Consultant (PMC). The Odisha State Industrial Infrastructure Development Corporation (Idco) has been entrusted with the responsibility of civil works for the construction of Precision Engineering Centre.

7. **Description of the environment.** The baseline environmental status in and around the Precision Engineering Centre site has been defined based on the primary data generated for the WSC component, as the proposed site for Precision Engineering Centre is in close vicinity of the WSC site, secondary data available in public domain, site visits, discussion with various relevant government agencies and stakeholder consultations. The Precision Engineering Centre is proposed on a vacant plot 200 m from the WSC site in the Mancheswar Industrial Estate area which is within the urban limits of Bhubaneswar city in the state of Odisha. There are no national parks, sanctuaries, tiger reserves and bio-spheres within 15 km of Precision Engineering Centre site. There is no requirement for cutting of any trees or shrubs for the construction and operation of Precision Engineering Centre.

8. **Environmental management.** As the construction of building for educational institutions has been exempted from obtaining prior environmental clearance under the provisions of the EIA Notification, 2006 subject to sustainable environmental management (Guidelines of sustainable environmental management stipulated in the MoEFCC notification no, S.O. 3252 (E) of 22 December 2014), there is no requirement of prior environmental clearance for the construction of building for Precision Engineering Centre and the installation of equipment in the workshops and laboratories. The anticipated environmental risks and impacts during pre-construction, construction and operation phase have been presented in Chapter-V of the report. The environmental management plan (EMP) and the environmental monitoring plan including the budget during pre-construction, construction and operation stages have been presented in Chapter-VIII of the report. For the operation phase, the EMP has been prepared to address impacts of equipment and machinery operations as well as periodic scheduled maintenance. This EMP will be followed by the Precision Engineering Centre Administration. The Precision Engineering Centre will have septic tanks/ sock pits of adequate capacity for wastewater disposal. The municipal solid waste generated will be segregated and disposal will be integrated with Bhubaneswar city waste disposal. To take care of storm water runoff rainwater harvesting recharge pits have been planned in the building. The EMP will be made part of the bid and contract documents of contractor. The EMP budget has been estimated INR 0.25 million. This budget will be part of approved cost of the project.

9. The construction waste generated will be maximum utilized in fill works in the campus while for the remaining waste generated during conducting of practical classes the waste disposal will be done as per regulatory requirements in consultation with concerned authorities.

10. To ensure compliance with the EMP for the Precision Engineering Centre the contractor shall prepare the diagrams of the facilities, which depict the location of the stockpiles, chemicals, fuel, sanitation facilities and other construction materials within building premises. The proper placing and storage of materials are important to ensure that no hazard originates from the storage facility onto nearby water bodies and the neighboring

community. Necessary COVID-19 Protection measures will be taken at the Precision Engineering Centre site as per GoI and GoO guidelines.

11. Public Consultation, information disclosure and grievance redress. The stakeholder's consultations have been undertaken with stakeholders at the PEC site. In these consultations' opinions of stakeholders and their suggestions have been obtained and those feasible have been incorporated in sub-project design. In general stakeholders have welcomed the establishment of Precision Engineering Centre. This addendum to the IEE report once approved by ADB (in electronic version) will be disclosed at OSDA website and also the relevant sections of report will be translated in local language by OSDA. The copies of the addendum to the IEE report will be made available at Precision Engineering site office, OSDA office, Odisha Industrial Infrastructure Development Corporation Office, WSC site office and Bhubaneswar Municipal Corporation (BMC) office. In order to establish a documented and structured approach towards understanding community expectations and manage their concerns, a Grievance Redressal Mechanism (GRM) for the community has been formulated. The GRM outlines the process and steps to be taken and the time limit within which the issue would need to be resolved to the satisfaction of the complainant. The team of safeguards specialists with the site manager will endeavor to get all complaints recorded and addressed in a uniform and consistent manner. This grievance mechanism will respond to the concerns and grievances of local communities, NGOs and any other aggrieved party or stakeholder(s). OSDP will share information about these mechanisms to the stakeholders through locally appropriate communication tools.

12. Monitoring and Reporting. The OSDA will be responsible for environmental monitoring. The Odisha Industrial Infrastructure Development Corporation, the agency responsible for implementation of civil works at site, will submit semi-annual environmental monitoring reports (EMRs) to the ESMC at PMU. The ESMC will consolidate the semi-annual EMRs and submit to OSDA and SDTED for onward submission to ADB. ADB will review and disclose the EMRs on its website. The approved semi-annual EMRs will also be disclosed at OSDA website.

13. Conclusions and recommendations. All clearance(s) /NOC(s) /permission(s) /approval(s) as applicable for water withdrawal, power supply, layout plan of premises, will be obtained before start of construction activities. The establishment of Precision Engineering Centre is unlikely to cause any significant adverse impacts. The potential impacts that are associated with design, construction and operation can be mitigated without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures, SOPs and procedures. Based on the findings of this addendum to the IEE report, the environment category of OSDP continues to "B". No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS, 2009 or Government of India's EIA Notification, 2006.

I. INTRODUCTION

A. Project Background

1. With a total population of 42 million, Odisha's economy is shifting from agriculture to industry and services. However, Odisha's economic transformation has not generated equitable income growth for the state's population. Odisha has one of the highest poverty rates in India. More than half of the working population continues to be engaged in agriculture, while only 24% are employed in industry and another 25% in services. A mere 15% of households in Odisha report to have a regular salary earner². The core problem in Odisha is the low employability of its young workforce in the formal sector due to low education and skill levels. Nearly 34% of Odisha's population is in the ages of 15-34, yet, 33% of this 15-34 age group have education just up to grade 8 and another 25% up to grade 10. Only about 7% have diploma or above certificate and exceedingly small proportion of the youth in Odisha have any formal vocational training (1.1% compared to 2.8% for India).

2. The Government of India (GoI) is emphasizing skilling the youth for quality jobs and higher wages in manufacturing and services sectors. However, states like Odisha, comprising a large tribal and disadvantaged population and a large young workforce with inadequate vocational training, face significant challenges in moving its workforce to more productive formal sectors from less productive agriculture and informal sectors. According to the 2012 skill-gap study commissioned by the National Skill Development Corporation for the State of Odisha, demand for semi-skilled and skilled workers will be increasingly high. It is estimated that the incremental demand-supply gap in its workforce for 2011-2026 will be around 4 million, mainly in healthcare, hospitality/tourism, information technology (IT) and IT enabled services, construction, transport/logistics, and food processing. Since Odisha is also a net exporter of workers to other parts of India and abroad, demand for skilled workers is likely to be even greater.

3. While Odisha aimed to train one million people by the end of 12th five-year plan i.e. 2017, the existing training capacity and quality could not meet this target. The state has only been able to train about 10.38 lakhs people in the last five years and now aims to train 15 lakhs people in next five years. The current skills development system of Odisha faces many constraints: (i) the system is fragmented with weak institutional coordination; (ii) access to training institutions is not geographically even and their capacity is insufficient to meet the 12th plan target; (iii) quality and relevance of training is weak due to outdated curriculum, inadequate equipment, and lack of industry experienced trainers, especially in ITIs; (iv) training programs are not closely linked to employers or labor market demand; (v) there is a lack of reliable labor market information system; (vi) a robust quality assurance system is lacking to benchmark training institutions to international standards; (vii) lack of mentor institutions makes it difficult for exiting ITIs to transform into more effective institutions; and (viii) lack of viable training models for higher-cost capital intensive manufacturing hampers the development of more advanced training programs (ix) lack of dedicated training centres for Precision Engineering trade

4. The GoO has taken several initiatives to improve its skills development system and address skills shortages. It had set up a high-level Odisha State Employment Mission (OSEM) in 2005–2006, chaired by the Chief Minister, to specifically address the problems of youth unemployment and underemployment. It has established the Skill Development and Technical Education Department (SDTED)³ to bring together Directorate of Technical

²National Sample Survey, 2011-12

³In 2012, Odisha established the Employment, Technical Education and Training Department, which was renamed as Skill Development and Technical Education Department (SDTED) in 2015

Education and Training (DTET), and labor regulation under one department. While the establishment of SDTED improved coordination among different agencies, it has not necessarily enhanced the operational efficiency of its sub-units. DTET is unable to meet industry demands due to poor infrastructure and outdated standards, assessment, and certification processes.

5. Recognizing weak institutional capacity for market-relevant training, the GoO established an autonomous implementation institution, the Odisha Skill Development Society (OSDS) in 2015 (now OSDA), to implement market-responsive skills programs. This institutional arrangement aims to train one million people and provide greater access to quality training in tribal interior areas of Odisha. In May 2016, the GoO also established the Odisha Skill Development Authority (OSDA) headed by an eminent industry leader with the aim of bringing OSEM and OSDS under one umbrella to ensure effective formulation, implementation and monitoring of skill development programs in Odisha. The Odisha Skill Development Project (OSDP) will help the government to streamline this arrangement.

6. The proposed OSDP will support the GoO to improve the employability, productivity, and income of its working-age population by enhancing the capacity to supply high-quality, market-responsive skills training in line with the state's development strategies in priority sectors, such as manufacturing, construction, and services. The project design incorporates emerging national and international good practices. The impact of OSDP will be increased employability and productivity of Odisha's working age population. The outcome will be increased skills and employment in priority sectors for males and females. With minor change of scope, now the OSDP will set-up and operationalize World Skill Center (WSC) in an existing 18 Storey building of the Government known as "Idco Tower 2010" at Bhubaneswar. The WSC will have hostel facility, house classrooms, laboratories, libraries, and other associated utilities. OSDP will also upgrade all Government Industrial Training Institutes (ITI), out of which, 49 are existing, 21 are under construction and remaining 01 will be newly constructed. OSDP will also establish a Precision Engineering Centre with 11 laboratories for the study of Precision Engineering. The PEC is also a part of WSC. The WSC and Precision Engineering are in Mancheswar industrial area in Bhubaneswar. The PEC along with WSC will be operated by Odisha Skill Development Authority (OSDA) with support from an international knowledge partner. There are four outputs of the OSDP project:

7. **Output 1: Equitable access to market-responsive skills development programs increased-** This output will support a network of WSC as hub and all government ITIs as spokes under a hub-and-spoke model. The network will support changes in the skill ecosystem covering WSC training (19,000), ITI training (60,000), polytechnic training (32,000), Precision Engineering Training (10,000) Self-employment initiative (15,000) and RPL certification (25,000) across the state of Odisha. This output has four sub-outputs: (i) increased access to quality training through a hub-and-spoke model, with the provision of already constructed building for WSC⁴ and hostels, workshops, and laboratory equipment for WSC, Precision Engineering Centre and all government ITIs⁵ (ii) improved access to training for women and disadvantaged social groups; (iii) market-responsive training programs delivered for the state's priority sectors in collaboration with key industry players; and (iv) RPL systems established.

8. **Output 2: Quality and relevance of skills development programs improved-** This output focuses on ensuring the quality of training programs by supporting the following sub-outputs: (i) a robust quality assurance system established to ensure that training programs

⁴The ADB loan will finance WSC equipment and refurbishment for WSC.

⁵The Government will finance hostels, workshops, and laboratory equipment for the ITIs including WSC hostel

meet acceptable standards and apply credible assessment and certification procedures; (ii) a pool of about 250 master trainers created and a mechanism developed to train about 6,000 trainers, including about 1,000 assessors; (iii) WSC, Precision Engineering Centre and all government ITIs benchmarked against a set of key performance indicators to be identified; and (iv) technology-enabled training and learning programs promoted.

9. **Output 3: Skills ecosystem strengthened-** In line with the national priority to consolidate and strengthen training programs within a common framework at the state level, this output comprises the following sub-outputs: (i) partnerships with international and national knowledge institutions and other government departments promoted; (ii) career counseling and placement centers established in WSC, Precision Engineering Centre and all government ITIs; (iii) self-employment initiatives piloted to train 15,000 people to demonstrate viable replication and scaling-up schemes; and (iv) a skill database and inventory developed to help recruit appropriate candidates and to link trainees with potential employers before training begins.

10. **Output 4: Institutional capacity strengthened-** This output aims to strengthen the capacity of institutions, including the SDTED, OSDA, DTET, and ITIs, to ensure the effective implementation of planned activities. There are four sub-outputs: (i) financial and administrative autonomy of OSDA strengthened; (ii) International knowledge partner engaged to build capacity and support OSDA set-up and operate the WSC; (iii) a robust and unified monitoring and evaluation system institutionalized; and (iv) a project management consultant (PMC) team engaged to support capacity building of ITI, OSDA, SDTED, and DTET.

11. OSDP will provide training to about 151,000 working age population during the project period mainly in the age group of 15-34 years in the state of Odisha in higher level manufacturing and services skills aligned to human development strategies of the state. The project will reach out to the youth, disadvantaged groups, and workers in the unorganized, informal and formal sectors by adopting a menu-driven approach to build their skills and increase their employment potential.

12. Skill Development and Technical Education Department (SDTED), Government of Odisha will be the executing agency (EA) and Odisha Skill Development Authority (OSDA) will be the implementing agency (IA). The executing and implementing agencies will hire project management consultant (PMC), contractors, and operators, and other expert agencies for various activities to be carried out during design, pre-construction, construction and operation phases.

13. The Initial Environmental Examination (IEE) report for OSDP was prepared and approved in April 2017 to establish eight Advanced Skills Training Institutes (ASTIs) at different locations in the State. The IEE was updated in the year 2019 for establishment of a World Skill Center (WSC) at Bhubaneswar instead of ASTIs. The IEE report was again updated for the equipment and machinery inclusion in existing workshops and laboratories of four ITIs namely Bhubaneswar, Cuttack, Puri and Barhampur. This report was approved in November, 2020. Now addendum to the approved IEE report is prepared for addition of component- Establishment of a Precision Engineering Centre equipped with 11 laboratories and Equipment for the study of Precision Engineering. This activity of Construction of PEC during project lifecycle (pre-construction, construction and operation phases) will result into additional environmental impacts which have been covered in the respective sections.

B. ADB Safeguard Policies and Environment Category of the Project

14. The Asian Development Bank has defined its Safeguard requirements under its *Safeguard Policy Statement 2009* (SPS 2009). The SPS 2009 requires environmental assessment, mitigation and commitment towards environmental protection. The prime objectives of SPS 2009 is to (i) avoid adverse impacts of projects on the environment and affected people, where possible; and (ii) minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible. ADB as per SPS 2009 classifies a project into Environment Category⁶ A, B or C depending on potential adverse environmental impacts.

15. Based on the field based due diligence, and the environmental investigations undertaken, the OSDP Environment Category continues to be 'B' as per ADB's SPS 2009. The environmental impacts for retrofitting and refurbishment of the existing building for the equipment installation for 7 trades to be taken up at the WSC building and the environmental impacts associated with the new equipment inclusion in laboratories and workshops at the four ITIs (Bhubaneswar, Puri, Cuttack and Barhampur) have been covered in the previously updated IEE report (Approved November, 2020). This addendum to the IEE report includes mitigation and monitoring measures to address environmental impacts for the establishment and operations of Precision Engineering Centre. The land for Precision Engineering Centre has been acquired close to the WSC site in the Mancheswar Industrial area in Bhubaneswar city. The environmental assessment for this additional component has been carried out in accordance with the Environmental Assessment and Review Framework (EARF) prepared for the project as per ADB's SPS, 2009. The environmental assessment for any additional subproject, if planned, will also be taken up as per EARF. The updated Rapid Environmental Impact Assessment (REA) checklist is given in **Appendix- 1**.

C. Report Structure

16. This addendum to IEE report contains ten sections including this introductory section: (i) Introduction; (ii) Legal Framework and Legislative Requirements (iii) Description of project; (iv) Description of the environment; (v) Environmental impacts and mitigation measures; (vi) Institutional arrangements and responsibilities; (vii) Environmental management plan; (viii) Public consultation and information disclosure; (ix) Grievance redress mechanism; (x) Findings and conclusions.

⁶ **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.

Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.

Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

II. LEGAL FRAMEWORK & LEGISLATIVE REQUIREMENTS

17. The legal framework and legislative requirements⁷ are covered in this chapter. The Ministry of Environment, Forest, and Climate Change (MoEFCC), Govt. of India (GoI) has the overall responsibility to set policy and standards for environment, flora & fauna protection in close coordination with the Central Pollution Control Board. This includes setting of air, noise, and water quality standards, and the requirements for environment clearance, forest clearance, and wildlife clearance and for other activities/projects to be taken up. The implementation of this project will be governed by the national, state and local level relevant acts, rules, regulations, and standards. The executing and implementing agencies will ensure that full compliance with statutory environmental requirements at the national, state, municipal, and local levels by the facility owners and the contractors in all stages of the project implementation including design, construction, operation and maintenance. Some of the major laws and acts that will be applicable during construction and operation phases are detailed below.

18. The Environmental Impact Assessment (EIA) notification, 2006 by the Ministry of Environment, Forests and Climate Change (MoEFCC, GoI) specifies the mandatory environmental clearance requirements. Accordingly, all projects and activities are broadly categorized into two categories⁸- Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man-made resources. Given that the sub-project is not covered in the ambit of the EIA notification, Environment clearance requirements from the GoI/GoO are not triggered.

The Environment (Protection) Act, 1986 and the Environmental Impact Assessment Notification, September 2006 and amendments thereof

19. The Environment (Protection) Act, 1986 (EPA Act, 1986) was enacted for the nationwide protection and improvement of environment which includes water, air and land and their interaction with human beings and other ecosystem. The Central Government may make rules in respect of quality of air, water or soil for various areas and purposes if it deems necessary. It can also specify maximum allowable limits of concentration of various environmental pollutants.

20. According to Environmental Impact Assessment (EIA) Notification, 2006 and amended thereof, developmental projects are classified as category A and Category B (Category B is further subdivided into B1 and B2 categories) based on their size, nature, location and possible environmental impacts. The Expert Appraisal Committee (EAC) will issue environmental clearance for Category 'A' projects. All the projects included in Category

⁷ SPS 2009 mandates all ADB-financed activities to be compliant with the host country environmental regulatory framework/regulations

⁸All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, will require prior environmental clearance from the Central Government in the Ministry of Environment, Forests and Climate Change (MoEFCC) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification; All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfil the General Conditions (GC) stipulated in the Schedule, will require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In addition, General Condition (GC) of the notification specifies that any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries

B1 shall require prior Environmental Clearance from State/Union territory Environment Impact Assessment Authority (SEIAA), based on recommendations of a State level Expert Advisory Committee (SEAC). The list of projects or activities requiring environmental clearance and their categorization is given in schedule of this notification. According to this notification, all building/construction/infrastructure projects and townships are classified as Category B irrespective of their size, nature, location and possible environmental impacts.

21. As per MoEFCC notification (**Appendix 2**) dated 22 December 2014(S.O. 3252 (E)) the educational institutes, college, hostel for educational institution shall not require any environmental clearance and shall ensure sustainable environmental management.

Applicability of legal framework

22. The legal framework with respect to environmental issues, relevant legislation, its applicability, enforcement agency and responsibility lies to have been listed in **Table 1**.

Table-1: The Legal Framework

Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
Environmental Clearance	EIA notification, 14 September, 2006 and amendments thereof.	As per MoEFCC notification (Appendix 2) dated 22 December 2014 (S.O. 3252(E)) the schools, colleges, educational institutes and hostels for educational institutions shall not require any environmental clearance, and shall ensure sustainable environmental management as per guidelines provided in Annexure-1 of the Notification. Hence EIA Notification 2006 is not applicable ⁹ . There is no requirement of clearance for Establishment of PEC	OSPCB /MoEFCC / Local Urban Bodies and the Development Authorities	Contractor and Implementing agency as applicable
Water	<div> The Water (Prevention and Control of Pollution) Act, 1974 and amendments thereof </div> <div> The Water (Prevention and Control of Pollution) Cess Act, 1977 and amendments </div>	<ul style="list-style-type: none"> Not Applicable For the establishment of Precision Engineering Centre, no CTO or CTE required. The OSPCB circular showing exemption is appended in Appendix 3. Water from municipal supply will be used and being educational activities to be taken up no 	OSPCB	Contractor and Implementing agency as applicable

⁹Since building was earlier planned for commercial utilization so an environmental clearance was obtained. Since now building is planned to be utilized for education purposes, therefore, Odisha Industrial Infrastructure Development Corporation has submitted application to the State Level EIA Authority for the revision of environmental clearance and /or for information of Authority for the purpose of future directions.

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Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
	thereof	water cess returns required.		
Ambient Air	The Air (Prevention and Control of Pollution) Act, 1981 and amendments thereof	<ul style="list-style-type: none"> The DG set have already been installed in Tower close to WSC Tower and not planned for the Precision Engineering Centre as part of OSDP. Hence this is not applicable. 		
Noise	The Environment (Protection) Second Amendment Rules, 2002 (Noise Limits for New Generator Sets) The Noise Pollution (Regulation and Control) Rules, 2000 and amendments thereof	<ul style="list-style-type: none"> Applicable during construction phase- civil works for Precision Engineering Centre. Noise limit standards for ambient noise level as prescribed under these act and rules. These rules will be applicable during construction of Precision Engineering Centre. 		Contractor and Implementing agency as applicable
Hazardous Substances & Wastes	The Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016	<ul style="list-style-type: none"> Not Applicable No hazardous waste generation in construction and operations of Precision Engineering Centre subproject; Small waste oil generated during operation phase will be disposed off through authorized recyclers. 	OSPCB	Contractor and Implementing agency as applicable
Batteries waste	The Batteries (Management and Handling) Rule, 2001 and amendments thereof	<ul style="list-style-type: none"> Applicable Disposal of battery waste through OSPCB authorized recyclers will be taken up during construction and operations of Precision Engineering Centre 	OSPCB	Contractor and Implementing agency as applicable
e-waste	The e-waste (Management and Handling) Rule, 2016 and amendments thereof	<ul style="list-style-type: none"> Applicable Disposal of e-waste through OSPCB authorized recyclers 	OSPCB	Contractor and Implementing agency as applicable
Groundwater withdrawal	Guidelines for ground water extraction prescribed by the Central Ground Water Authority (CGWA) , 2012	<ul style="list-style-type: none"> Not Applicable Permission from the State Water Resource Department for extracting ground water in accordance with the conditions stipulated in the CGWA guidelines. This 	Odisha State Water Resource Department;	Contractor and Implementing agency as applicable

Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
		<p>will not be applicable as water supply from PHED is planned for WSC operations ;</p> <ul style="list-style-type: none"> Similarly, permission will be required, if the source of water is going to be municipal or river, from the municipality or irrigation department respectively. This will not be applicable as water supply from Bhubaneswar Municipal Corporation and /or Public Health Engineering Department is planned to be used. For the establishment and operations of Precision Engineering Centre, no ground water withdrawal required. 		
Labor	<ul style="list-style-type: none"> Building and Other Construction Workers Act, 1996 and amendments thereof; The Child Labor (Prohibition and Regulation) Act, 1986 and amendments thereof; Minimum Wages Act, 1948 and amendments thereof; Workmen's Compensation Act, 1923 and amendments thereof; <p>The other labor related legislations applicable for the Project include the following:</p> <ul style="list-style-type: none"> Equal 	<ul style="list-style-type: none"> Applicable Obtain "certificate of registration" in case ten or more building workers or other construction worker will be employed and ensure issues related to building workers such as hours of work, welfare measures and other, safety and health, etc. Ensure that no child labor is engaged at site for construction or operation works either directly or by the sub-contractors. Ensure payment of minimum wages as fixed by the government. In case of any personal injury caused to workman during construction or operational phase, ensure the payment of compensation in accordance with the provisions of Act Ensure equal 	District Labor Commissioner	Contractor and Implementing agency as applicable

Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
	<p>remuneration Act, 1976 and amendments thereof</p> <ul style="list-style-type: none"> • The employees state insurance act, 1948 • The E.P.F. and Miscellaneous Provisions act, 1952 and amendments thereof • Payment of Bonus Act, 1965 and amendments thereof • Payment of Gratuity Act, 1972 and amendments thereof • Public Provident Fund Act, 1968 and amendments thereof • The maternity benefit Act, 1961 and amendments thereof • The personal injuries (compensation insurance) act, 1963 and amendments thereof • The personal injuries (emergency) Provisions Act, 1962 and amendments thereof • ESI (Employees State Insurance) Act, 1948 and amendments thereof • The Contract Labor (Regulation & 	<p>remunerations to either of the gender.</p> <ul style="list-style-type: none"> • Ensure appropriate insurance cover is taken to cover un-skilled, semi-skilled and skilled laborers. • Ensure implementation of all labor related acts/rules. 		

Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
	<p>Abolition) Act, 1970 and Rules and amendments thereof</p> <ul style="list-style-type: none"> • The inter-state migrant workmen (Regulation of employment and conditions of service) Act, 1979 and amendments thereof • Employer's Liability Act, 1938 and amendments thereof • The Bonded Labor (Abolition) Act, 1976 			
Layout design, Occupancy certificate	<ul style="list-style-type: none"> • National Building Code -2005 and amendments thereof; • Relevant district/city development authority and municipal corporation regulations 	<ul style="list-style-type: none"> • Wherever applicable • This code and its various provisions including, but not limited to, landscaping, fire safety plan, structural design etc. will be followed during design and planning. • Development Authority (ies) has delegated the power for approval of layout plan and issuing occupancy certificate to the Municipal Corporation in case the land is coming under Municipal Corporation otherwise approval shall be granted by respective Development Authority. • Approval of layout plan before commencing construction and Occupancy certificate before occupying constructed building will be required from respective municipal corporation/local development authority (as applicable). • Fire approval will be obtained at the time of issuing of occupancy 	<ul style="list-style-type: none"> • Respective Development Authority; • Respective Municipal Corporation; • Respective Chief Fire Officer; • Civil Aviation Authority; 	Contractor and Implementing agency as applicable

Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
		<p>certificate.</p> <ul style="list-style-type: none"> The height restrictions with respect to approach Funnels and Transitional area of Airport will be adhered to. Precision Engineering Centre is a G+1 building. It will comply with all the prescribed standards as per development authority's rules and regulations. 		
Usages of designated forest land	<ul style="list-style-type: none"> Forest Act 1980 and Rules 1981 and amendments thereof The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 & Rules 2007 and amendments thereof 	Not applicable	MoEFCC, and State Forest Department	Contractor and Implementing agency as applicable
Presence of wild life sanctuary within an area of 10 Km radius around the project site	Wild life (protection) Act 1972 and amendments thereof	Not Applicable as proposed Precision Engineering Centre is beyond 10 km from Nandan Kanan Wildlife sanctuary. This sanctuary is beyond 15 km from the Precision Engineering Centre site.	National Wild Life Board	Contractor and Implementing agency as applicable
Presence of wetlands	Wetlands (Conservation and Management) Rules, 2010 and amendments thereof	Not applicable	State Wetland Authority	Contractor and Implementing agency as applicable
Clearance for CRZ	Coastal Regulation Zone (CRZ) Notification, 2011 and amendments thereof	Not applicable	State Coastal Management Authority	Contractor and Implementing agency as applicable
Removal of trees	Relevant district/city development authority and	Not applicable, no tree cutting required at Precision Engineering Centre site	City Forest Division	Contractor and Implementing agency as applicable

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Issues	Relevant Legislation	Applicability	Enforcement Agency	Responsibility
	municipal corporation regulations			
Natural Disaster	<ul style="list-style-type: none"> • National Disaster Management Act, 2005, and amendments thereof; • Odisha State Disaster Management Policy; • Odisha State Disaster Management Plan 	<ul style="list-style-type: none"> • Applicable Measures, as outlined in the State Disaster Management Plan, will be adopted for prevention and mitigation of disasters 	Odisha State Disaster Management Authority	Contractor and Implementing agency as applicable
Vehicular Movement	Motor Vehicles Act, 1988 and Rules, 1989 and amendments thereof	<ul style="list-style-type: none"> • Applicable • Project will follow up Central Motor Vehicle (CMV) rules for transportation of diesel or any other hazardous substance 	Local Transportation Authority	Contractor and Implementing agency as applicable

III. DESCRIPTION OF THE PROJECT

A. Preamble

23. The OSDP project components include WSC and ITI upgradation (through equipment procurement and installation with support infrastructure such as hostels) and Precision Engineering Centre for the study of Precision Engineering. This section covers brief description of project components:

B. Scope of OSDP

24. The scope of sub-projects under OSDP includes (i) setting up of WSC at Bhubaneswar (ii) support to existing 4 ITIs (Bhubaneswar, Cuttack, Barahampur and Puri) through inclusion of equipment, machinery in the existing laboratories and workshops and (iii) setting up of Precision Engineering Centre in a vacant plot of 4.58 acre about 200 m from the WSC building. For the OSDP implementation OSDA has signed a memorandum of understanding with ITE Education Services (ITEES), Singapore.

25. The Precision Engineering Centre will be established on a 4.58-acre vacant plot at a distance of 200 m from the WSC site at Mancheswar Industrial Estate in the outskirts of Bhubaneswar city. Precision engineering is the discipline of designing a machine or instrument so it can maintain, measure, or move to a position or follow a path with a level of accuracy that is many orders of magnitude smaller than the size of the machine or instrument itself. The scope of work in the sub project entails civil works for the establishment of Precision Engineering Centre and the installation of machines and equipment in the laboratories. The location of the Precision Engineering Centre has been shown in **Figure-1** below. The site photographs where Precision Engineering Centre is to be established are given in **Appendix -4**.

26. The Precision Engineering Centre is envisaged to train students in Precision Engineering- applying and developing new manufacturing methods, and designing machines, equipment and systems for producing components within micrometer to nanometer tolerance ranges. Precision engineering deals with the design and building of complicated tools and instruments whose parts must be exactly right in size and position. The goals of Precision Engineering are:

- Creating a highly precise movement.
- Reducing the dispersion of the product's or part's function.
- Eliminate fitting and promote assembly, especially automatic assembly.
- Reducing the initial cost.
- Reducing the running cost.
- Extending the life span.
- Enabling the design safety factor to be lowered.
- Improving the interchange ability of components so that corresponding parts made by other factories or firms can be used in their place.
- Improving qualities control through higher machine accuracy capabilities and hence reduce scrap, rework, and conventional inspection.
- Achieving a greater wear/fatigue life of components.
- Making machine functions independent of one another.
- Achieving greater miniaturization and packing densities.
- Achieving further advances in technology and the underlying sciences

- Precision engineering is incredibly significant as it ensures a longer running life along with less wear or fatigue, giving a better lifespan compared to manually manufactured parts. Having a longer running life reduces costs and means lower running costs overall, the whole production speed is faster and needs fewer inspections.

Figure-1: Location of Precision Engineering Centre



27. In the Precision Engineering Centre 11 laboratories will be established, which will help in providing training to students on modern day industry requirements. Training in Precision Engineering Trade will be imparted through following laboratories:

- i. Inspection Techniques Laboratory
- ii. Turning Section
- iii. CNC Turning Section
- iv. Milling Section
- v. CNC Milling Section
- vi. 3D CAD/CAM Application Laboratory
- vii. CNC Sheet Metal Fabrication Laboratory
- viii. Multi-Axis Machining Laboratory
- ix. CNC Sheet Metal Fabrication CAD/CAM Studio
- x. Multi-Axis CAM Studio
- xi. Grinding Section

28. Equipment will be procured and installed in the laboratories. Not all equipment procured will be required to be installed as some will be used as procured e.g. accessories kits. The installation will be of heavy machines e.g. CNC Turning machine. The equipment list for 11 laboratories (as in shown above), has been given in the **Table-2**.

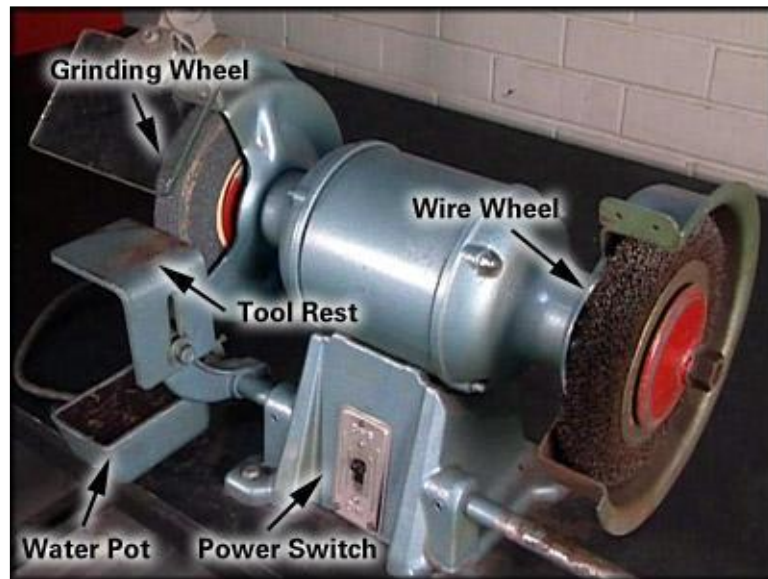
Table-2: List of in Precision Engineering Laboratories

Laboratory-Equipment & Machines	Numbers
1. Inspection Techniques Laboratory	
Vernier Caliper 150 mm with metric/imperial scale - Accuracy 0.02mm	1 set
Digital Vernier Caliper 150 mm with metric/imperial scale - Accuracy 0.01mm	1 set
Vernier Height Gauge (0 ~ 200 mm)	1 set
Vernier Depth Gauge (0 ~ 150 mm)	1 set
External Micrometer (0 ~ 25 mm) - Accuracy 0.01mm	1 set
Digital External Micrometer (0 ~ 25 mm) - Accuracy 0.001mm	1 set
External Micrometer (25 ~ 50 mm) - Accuracy 0.01mm	1 set
Digital External Micrometer (25 ~ 50 mm) - Accuracy 0.001mm	1 set
Internal Micrometer Caliper Type (5 ~ 25 mm) - Accuracy 0.01mm	1 set
Digital Internal Micrometer Caliper Type (5 ~ 25 mm) – Accuracy 0.001mm	1 set
2. Turning Section	
Centre lathe with digital readout (X & Z axis)	20
Pedestal grinder c/w grinding wheel star dresser	1
3. CNC Turning Section	
CNC Lathe and equipped with basic tooling system and interlocking safety features	10
Mobile workstation/Notebook c/w CAD/CAM software and processors for CNC Turning – 2 seats license - able to create part geometry and generate NC part program for CNC turning	2
4. Milling Section	
Vertical milling machine with digital readout (X, Y & Z axis) c/w standard tool kit and equipped with safety features and low voltage lamp	20
5. CNC Milling Section	
CNC Milling machine with 3-axis simultaneous functions and equipped with automatic tool changer and interlocking safety features	10

Laboratory-Equipment & Machines	Numbers
Accessories to suit item 1	1
Mobile workstation c/w CAD/CAM software and processors for CNC milling – 4 seats license - able to create part geometry and generate NC part program for CNC machining	4
6. 3D CAD/CAM Application Laboratory	
Workstation computer	21
CAD software – 21 seats license (For 2D/3D surface, wireframe and solid modelling)	21
CAM software – 21 seats license (CAM Turn and CAM Mill with post processor)	21
7. CNC Sheet Metal Fabrication Laboratory	
CNC Laser (CO2) cutting machine with CNC controller, standard tool and equipped with safety features	1
CNC Turret Punching machine with CNC controller, standard tool and equipped with safety features	1
CNC Bending (press Brake) machine with CNC controller, standard tool and equipped with safety features	1
Air compressor with dryer Working pressure 1000 liter/min maintain at 6 Bar	1
8. Multi-Axis Machining Laboratory	
5-axis CNC Universal Machining Centre with simultaneous axes movement functions and equipped with basic tooling system and interlocking safety features	4
9. CNC Sheet Metal Fabrication CAD/CAM Studio	
Workstation computer	21
CAD/CAM software – 21 seats license (For 2D/3D sheet-metal working) for Laser, Turret Punch and Press Brake with post processor	1
Multi-Axis CAM Studio	
Workstation computer	21
10.Grinding Section	
Surface grinder with digital readout (Vertical down feed & Cross feed) and equipped with safety features	15
Universal cylindrical grinder with digital readout, equipped with safety features	5

29. The photographs of equipment proposed to be used in laboratories of Precision Engineering Trade have been shown below in **Figure-2**.

Figure-2: Photographs of Equipment Proposed to Use in the Precision Engineering Trade



Grinding Machine



CNC Milling Machine



Vernier Calipers



CNC Lathe



Tool Set

30. The Precision Engineering Centre shall be constructed on a land of area approx. 4.58 acres. The total built up area is 4386.08 m². It will be a G+1 building with built up area of Ground floor 2461.72 sqm and First floor is 1924.36 sqm. The Ground floor will have laboratories of CNC Turning Section, Milling Section, CNC Milling Section, Grinding Section, Multi Axis Machining Laboratory, CNC Sheet Metal Fabrication Laboratory, CNC Sheet Metal Fabrication CAD/CAM studio and Electrical Panel Room. The First floor will have Inspection Techniques laboratory, Admin Room, Classrooms, Staff room, Store rooms, Multi Axis CAM studio, 3D CAD/CAM Application Library, IT room and Meeting room. Both Ground and First floor will have toilets.

31. The layout plans of Precision Engineering Centre are given in **Appendix-5**.

C. Executing and Implementing Agencies

32. The SDTED will be the executing agency for the proposed OSDP. The OSDA is the implementing agency. A project management unit (PMU) will be established by the SDTED at OSDA. For the civil works component, it will be assisted by Odisha Industrial Infrastructure Development Corporation who is well aware of the state's and India's building codes and environmental rules and regulations. The PMU will also have environmental safeguard specialist. PMU and Odisha Industrial Infrastructure Development Corporation will be responsible for overall planning and implementation of the civil works. They will ensure that the EARF is adhered to during project implementation. The Project Management Consulting (PMC) firm to be engaged under the proposed loan will have designated Environment and Social Safeguards specialists. They will assist PMU and Odisha Industrial Infrastructure Development Corporation in supervising the civil works, ensuring that the updated IEE and EMP are implemented properly. The PMC will also assist OSDA in preparing semi-annual safeguards monitoring reports. PMU will consolidate the semi-annual reports, and submit them to ADB. ADB will post the environmental monitoring reports on its website.

D. Implementation Schedule

33. The implementation period for the Precision Engineering sub project is one year. The lay out plans and preliminary drawings have been prepared and these are in the process of approval. The bidding process will be started by September 2021. The sub-project will be awarded for construction by November/December 2021. The contractor is expected to be mobilized to site by December 2021 and construction works of sub-project will begin in January 2022 and work will be completed by December 2022.

IV. DESCRIPTION OF THE ENVIRONMENT

34. This section presents a brief description of the existing environment around the Precision Engineering Centre, in Mancheswar Industrial Estate area in Bhubaneswar. The description covers physical resources, ecological resources, socio-economic development and social and cultural resources of subproject area. Broad aspects on various environmental parameters such as geography, climate and meteorology, physiographic, geology, seismology, ecology, socio-cultural and economic development parameters that are likely to be affected by the proposed Precision Engineering Centre are presented. Secondary information was collected from relevant government agencies like the Forest Department, State Environment Department, and Odisha State Pollution Control Board, and India Meteorological Department.

A. Environmental Profile

Air and Noise Quality

35. The site for Precision Engineering Centre is located at a distance of 200 m from the existing site of WSC in Mancheswar Industrial Estate. The site is located in built-up area (Industrial estate). The subproject site is not close to any National Highway or State Highway. Traffic on the local road connecting to site is low. The ambient air quality data generated for the WSC site is presented to present ambient air Quality status. The Ambient air Quality data is given below in **Table-3** and noise levels are given in **Table-4**.

Table-3: Ambient Air Quality Data

Sl. No.	Location	Year	Parameter Value (µg/m ³)				CO
			SO ₂	NO _x	PM _{2.5}	PM ₁₀	
1	Pandra	Feb, 2020	9.2	14.8	37.5	70.6	0.2
2	Patrapada	Feb, 2020	9.8	16.8	32.6	65.4	0.3
Applicable National Ambient Air Quality Standards		-	80	80	60	100	4.0
Source: Ambient Air Quality Monitoring for WSC site							

36. It is clear from the above tables that values of ambient air quality parameters are well within the limits. Ambient air quality monitoring for the Precision Engineering Centre will be conducted by the contractor prior to start of construction works with an aim of establishing baseline conditions.

Table-4: Ambient Noise Levels

Location	Noise Levels dB(A)	
	Day	Night
Pandra	56.8	47.8
Ambient Noise Level Standards	75	70
Source: Ambient Noise levels Monitoring for WSC site		

37. From the ambient noise levels monitoring results of WSC site which is at a distance of 200 m from the proposed site for Precision Engineering Centre, it was observed that noise levels are well within the limits at industrial area. Ambient noise level monitoring will be conducted by the Contractor prior to start of construction prior to establish baseline conditions.

Climate

38. The project site is located in Bhubaneswar, which is on the coastal plains of Odisha. The project area experiences typical tropical weather conditions, and succumbs to the heat and cold waves that sweep in from north India. The summer months from March to May are hot and humid, and temperatures often shoot past 46°C in May. Pleasant weather conditions prevail during November, but December and January face the chilly winds from the North North-east at average speeds of 7 miles/hour. Temperatures drop to approximately 15°C during these months. The climatic data of Bhubaneswar is given below in **Table-5**.

Table-5: Climate Data of Project Area

Climate data for Bhubaneswar													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C	35.8	42.7	42.0	45.0	46.5	46.3	41.3	37.4	37.9	36.6	37.6	33.6	46.5
Average high °C	28.7	31.4	34.9	36.9	37.2	35.3	32.2	31.6	32.1	32.2	30.4	28.4	32.6
Daily mean °C	22.2	25.1	28.6	30.9	31.7	30.7	28.7	28.4	28.5	27.6	24.9	22.0	27.4
Average low °C	15.6	18.7	22.2	25.0	26.2	26.1	25.2	25.1	24.8	23.0	19.4	15.6	22.2
Record low °C	8.6	9.6	14.6	17.0	15.0	16.8	20.0	18.4	18.5	16.1	9.7	8.2	8.2
Average Precipitation (mm)	4	27	28	26	67	209	317	389	241	127	48	9	1,492
Average rainy days	0.4	2.3	2.8	3.1	5.1	12.0	18.0	19.1	14.6	8.8	2.1	0.7	89

Average relative humidity (%)	60	61	63	66	66	74	83	85	83	76	66	60	70
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Source: India Meteorological Department Bhubaneswar (Year 2018)

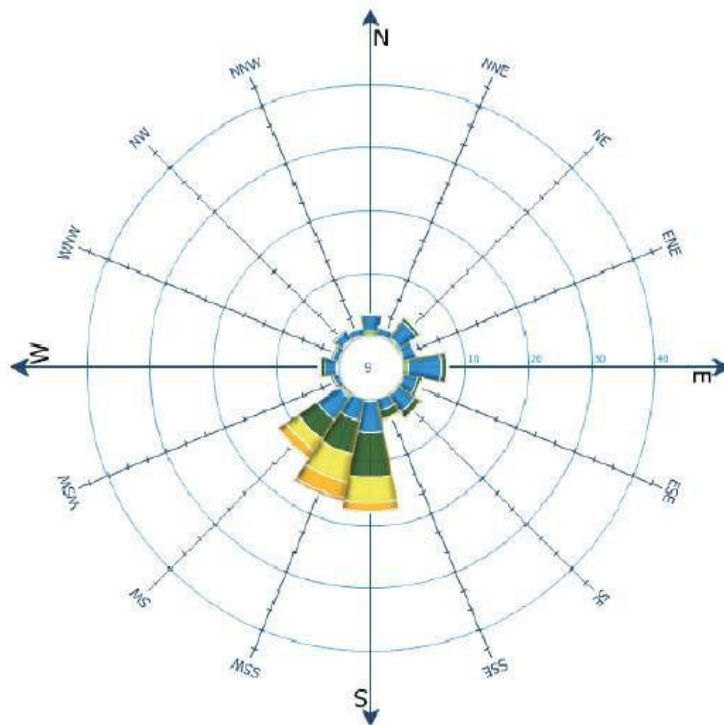
39. **Temperature:** The temperature exhibits seasonal variation with minimum during the winter and higher during the summer. April, May, June and July are the hottest months while January, February and December are the cold months. The maximum temperature rises to about 46°C and the minimum temperature falls to about 8.0°C.

40. **Rainfall:** The sub-project area experiences maximum rainfall during Monsoon season from June to September while as least Rainfall is received in December and January. The average annual rainfall is 1449.10 mm.

41. **Humidity:** Based on long-term climatologically data of subproject region, it is found that relative humidity increases rapidly with the onset of monsoon and reaches maximum (around 85% in the morning and 70% in the evening) during August, when peak monsoon period sets in. Relative humidity is the minimum during the winter months (December and January). Skies are heavily clouded during the monsoon months. The monthly humidity variation for has been given in **Table-7** above.

42. **Wind Speed and Directions:** Two broad wind patterns are observed in the project area viz. South to North (January to May) and south westerly to north easterly (June to October). The average wind speed is in the range of 1-- 6 m/s at Bhubaneswar (maximum in April and minimum in December). The annual wind rose diagram has been given in **Figure-3** below:

Figure-3: Annual Wind Rose Diagram for Bhubaneswar



Topography and Soils

43. The topography of Precision Engineering site is on plain land. The elevation of the site is around 45 m above mean sea level as Bhubaneswar lies on the western fringe of the

mid-coastal plain of Odisha with an average elevation of 45 m above the main sea level. The topography of project region lies on the low lateritic plateaus and the erosion has made its topography a valley-and-ridge one. The area can be divided into two broad physiographic divisions, namely (a) the Western Upland and (b) the Eastern Lowland.

44. It has been observed that the texture of soil is mostly sandy clay in the subproject area and surroundings. As per the secondary data /information the pH of the soil is in the range of 6.7 to 7.8. The ranges of electrical conductivity, phosphorus, nitrogen and potassium are 37.0 to 137.0 $\mu\text{S}/\text{cm}$, 1.7 to 40.50 kg/ha, 20.70 to 83.20 kg/ha, and 28.50 to 219.20 kg/ha respectively (*Source: Environmental Impact Assessment Report of Proposed Sea Food Park at Haripur and Haridamda Villages in Bhubaneswar Tehsil, Year 2017*).

Surface water and Ground water

Ground Water Resources

45. The dynamic ground water resource estimated by the Central Ground Water Board for Bhubaneswar Tehsil is given below in **Table-6**. It is clear that subproject region is not in exploited category of CGWA and good quantity of ground water is available.

Table-6: Estimated Dynamic Ground Water Resource of Bhubaneswar Tehsil

Sl. No.	Particulars	Quantity (HAM)
1	Net Annual Ground Water Availability	6810
2	Existing gross ground water draft for irrigation	1243
3	Existing gross ground water draft for domestic and industrial water supply	2076.89
4	Existing gross ground water draft for all uses	3320
5	Allocation for domestic and industrial requirement supply up to next 25 years	3497
6	Net ground water availability for future irrigation development	2070
7	Stage of Ground Water Development (%)	48.75 (Safe)

Source: CGWB Report Khorda District May, 2013

46. The baseline ground water quality data generated for the WSC site is given in **Table-7**. As the proposed site for Precision Engineering Centre is very close to WSC site, the monitoring data generated for WSC site is used. It is clear from the table that some parameters of ground water quality are exceeding the limits. Due to this reason, ground water needs treatment to make it amenable for drinking. However, no usage of ground water is envisaged in the project during construction and Operation phases.

47. The surface water source close to the Precision Engineering Centre site is river Kuakhai. The water quality data of this river has also been obtained. This data has been given in **Table-8**. It may be mentioned that data is for Mancheswar where Precision Engineering Centre is to be established. It is clear that River water does not meet the drinking criterion of CPCB for surface water sources as well as drinking water standards specified in IS:10500. The ground and surface water quality monitoring will be conducted by the contractor prior to the start of construction works.

Table-7: Ground Water Quality in Sub-Project Area

Sl. No.	Parameter	Unit	IS:10500 limits	GW1	GW2
1	pH	-	6.5-8.5	6.8	6.83
2	Color	Hazen	-	<5	<5
3	Taste	-	-	-	-
4	Odor	-	-	Agreeable	Agreeable
5	Total Alkalinity as CaCO ₃	mg/l	200	40	46
6	Turbidity	NTU		<1	<1
7	Total Dissolved Solids	mg/l	500	284.8	312.4
8	Total Hardness as CaCO ₃	mg/l	200	152	160
9					
10	Calcium as Ca	mg/l	75	41.7	45.7
11	Magnesium as Mg	mg/l	30	<0.05	<0.05
12	Residual Chlorine as Cl ₂	mg/l	1	ND	ND
13	Mercury as Hg	mg/l	0.001	<0.001	<0.001
14	Chloride as Cl	mg/l	250	21.2	19.8
15	Sulphate as SO ₄	mg/l	200	12.4	14.5
16	Fluoride as F	mg/l	1.0	<0.05	<0.05
17	Nitrates as NO ₃	mg/l	45	2.4	2.6
18	Pesticides	mg/l	\$	Absent	Absent
19	Aluminum as Al	mg/l	0.03	<0.01	<0.01
20	Phenolic Compound as C ₆ H ₅ OH	mg/l	0.001	<0.001	<0.001
21	Cyanides as CN	mg/l	0.05	ND	ND
22	Anionic Detergents	mg/l	\$	<0.05	<0.05
23	Oil and Grease	mg/l	\$	ND	ND
24	Cadmium as Cd	mg/l	0.01	<0.003	<0.003
25	Arsenic as	mg/l	0.01	<0.001	<0.001
26	Copper as Cu	mg/l	0.05	<0.03	<0.03
27	Lead as Pb	mg/l	0.01	<0.01	<0.01
28	Manganese as Mn	mg/l	0.10	<0.05	<0.05
29	Iron as Fe	mg/l	0.30	0.14	0.16
30	Chromium as Cr+6	mg/l	0.05	<0.05	<0.05
31	Selenium as Se	mg/l	0.01	<0.001	<0.001
32	Zinc as Zn	mg/l	5	<0.05	<0.05
33	E-coli		\$	Absent	Absent
34	Total Coliform	MPN /100 ml		<2.0	<2.0
<p><i>Note :\$= Limits not specified</i> <i>Source: Ground Water Quality Analysis Report Carried for the WSC site at Borewell in Pandra (GW1) and Chakeisani (GW2)</i></p>					

Table-8: Surface Water Quality in Sub-Project Surroundings

Sl. No.	Parameter	Unit	IS:10500 limits	Result
1	pH	-	6.5-8.5	7.4
2	TSS	mg/l	\$	6.2
3	Total Dissolved Solids	mg/l	500	164.8
4	Total Hardness as CaCO ₃	mg/l	200	34
5	Total Alkalinity as CaCO ₃	mg/l	200	54
6	Calcium as Ca	mg/l	75	21
7	Magnesium as Mg	mg/l	30	11
8	Chloride as Cl	mg/l	250	6.6
9	Sulphate as SO ₄	mg/l	200	1.80
10	Nitrates as NO ₃	mg/l	45	0.41
11	BOD	mg/l	\$	2.40
12	COD	mg/l	\$	8.40
13	DO	mg/l	\$	8.50
14	Phosphates as PO ₄	mg/l	\$	0.007
15	Iron as Fe	mg/l	0.30	1.38
16	Total Coliform	MPN/100 ml	10	1100
17	Faecal Coliform	MPN/100ml	\$	800

Note :\$= Limits not specified

Source: Evaluation of Water Quality of River Kuakhai by KSIT Jatni, Year 2015

Drainage of Sub-project Region

48. The subproject falls in Khorda district and this district is drained by a number of streams which are mostly tributaries and distributaries of the river Mahanadi and a few other streams discharging in to Lake Chilika. The important distributaries of Mahanadi are the Kuakhai, Bhargabi, Kushabhadra and the Daya River. The tributaries of the Mahanadi are the Ran and Kalijiri. The streams draining the southern parts of the district are Sulia, Kharia and the Kusumi. All the streams are ephemeral and effluent in nature. Chilika, the largest salt water lake of India is situated in the southeastern part of the district.

49. Although the Bhubaneswar city lies on the western side of the Mahanadi Delta on the bank of river Kuakhai, a distributaries of Mahanadi along with river Daya, branching off from Kathajodi that flows along the southern part of the city, 35% of water supply depends heavily on dug well and bore wells. The Bhubaneswar city is drained by the Mahanadi River basin.

Geology and Seismology

50. Geologically the sub-project district Khorda is formed from various geological formations namely Anorthosite, Garnetiferous Granite Gneiss, Granites, Charnokite, Kondalite/quartzite Granite Sill and Schist/Quartzite etc. of Pre-Cambrian. Athagarh formation of Sand stone, Shale, Silt stone and Conglomerate etc. of Mesozoic Laterite occur as capping over the country rocks with average thickness of 5 to 6 m and a maximum of 20 m. Unconfined Sediments are composed of Clay, Sand, Silt, Gravel Pebbles etc. and also calcareous and ferruginous concretions of Quaternary.

51. Geologically the Bhubaneswar region belongs to the Gondwana land mass, one of the oldest and most stable landmass in the world. So the rock ranges from the Archean to

the recent period. But the major part of the area is covered with the quaternary alluvium and lateritic soil (*Source: International Journal of Current Engineering and Technology (Vol.4, No.1 (February 2014))*).

52. India's seismic code divides the country into five seismic zones (I to V). The project area comes under seismic zone III as defined by Urban Earthquake Vulnerability Project (UEVP) and the Atlas prepared by the Building Materials Promotion and Technology Council (BMTPC), Government of India and UNDP [IS 1893 (Part I : 2002)]. The Precision Engineering Centre has been designed considering seismic zone III. Even though the Bhubaneswar City¹⁰ is located on Earthquake Zone-III, it is the high density of residential buildings which makes it more vulnerable to damage and loss. The Local Resilience Action Plan (LRAP) says that about 34 percent residential built-up areas constituting about 33 percent of residential houses are in the extreme and high earthquake risk zones of the City. More than half of wards 30 and 38 of Bhubaneswar Municipal Corporation come under the extreme and high earthquake risk categories. Besides, the impact of an earthquake could be felt most in commercial areas which are concentrated in central parts while industries are in the fringe areas of Bhubaneswar.

B. Ecological Resources

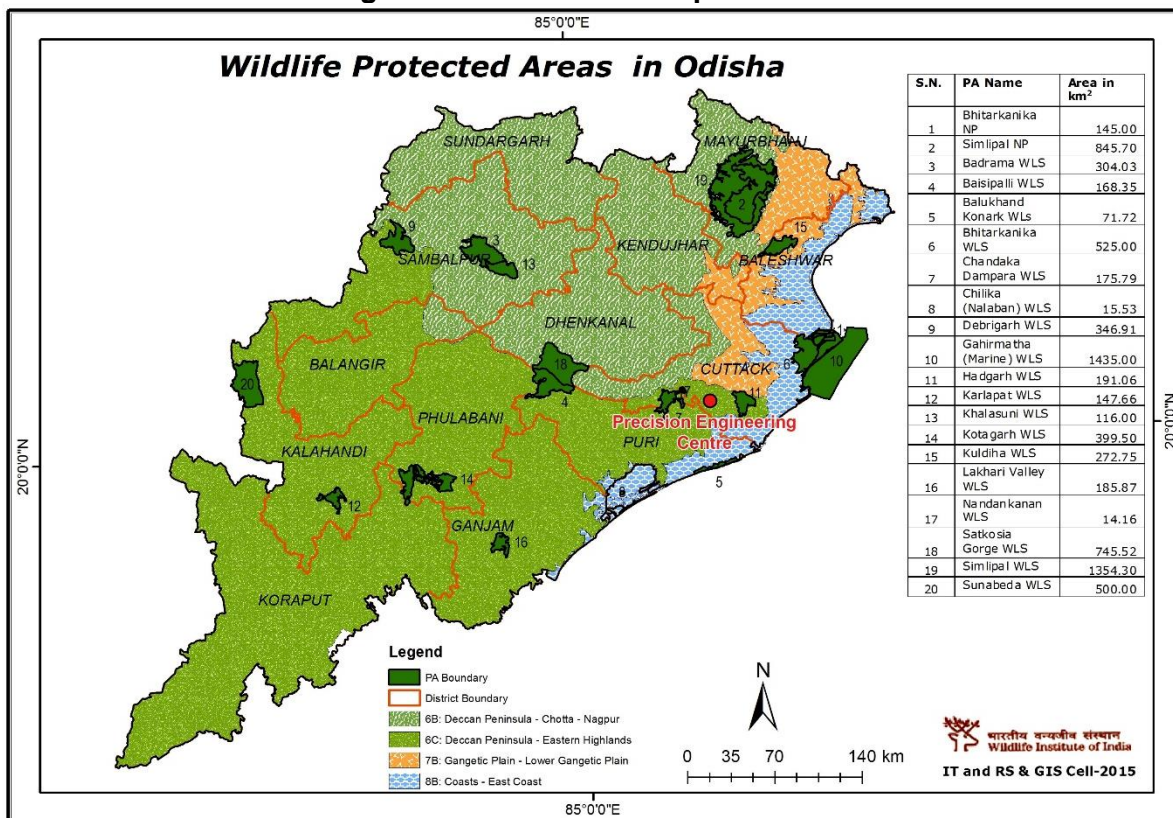
Forests

53. The forest cover in Odisha state¹¹ is 51345 sq. km of which 6967 sq. km is very dense forest. The moderately dense forest extends over 21,370 sq. km while open forest is over 23,008 sq. km. The forest cover in the state constitutes 32.98% of the geographical area. Besides this, there exists tree cover outside the forest over 2.85% of the geographical area of the State. Thus, the forest and tree cover in the state is 35.83% of the geographical area. Forest cover map is shown in **Figure -4**.

¹⁰ <http://www.newindianexpress.com/states/odisha/Bhubaneswar-Cuttack-Fall-in-Moderate-Damage-Risk-Zone/2015/05/10/article2807609.ece>

¹¹ Forest and Tree Resources in States and Union Territories , 20017

Figure-4: Forest cover Map of Odisha



Source: Wild Life Institute of India

54. The Precision Engineering Centre site is located in Mancheswar industrial estate and within the Bhubaneswar city boundaries. There are no reserved, protected, or revenue forests in the surroundings. The common flora observed in the surroundings of Precision Engineering Centre Site is given in **Table-9**.

Table-9: List of Flora in Surroundings of Sub-Project Site

Sl. No.	Scientific name	Common name	Family
1	<i>Acacia auriculoformis</i>	Ear leaf acacia	Mimosaceae
2	<i>Anacardium occidentale</i>	Kaju	Anacardiaceae
3	<i>Artocarpus heterophyllus</i>	Katahal	Moraceae
4	<i>Azadirachta indica</i>	Neem	Meliaceae
5	<i>Alstonia scholaris</i>	Devil tree	Apocynaceae
6	<i>Aegle marmelos</i>	Bel	Rutaceae
7	<i>Bridelia retusa</i>	Kasai	Phyllanthaceae
8	<i>Bauhinia variegata</i>	Kachnar	Caesalpinaceae
9	<i>Cassia fistula</i>	Amaltas	Cesalpinaceae
10	<i>Dendrocalamus strictus</i>	Male bamboo	Poaceae
11	<i>Mangifera indica</i>	Aam	Anacardiaceae
12	<i>Pongamia pinnata</i>	Karanj	Fabaceae

Sl. No.	Scientific name	Common name	Family
Shrubs			
13	<i>Lantana camara</i>	Lantana	Verbanaceae
14	<i>Calotropis gigantean</i>	Arka	Asclepiadiaceae
15	<i>Adhatodavasica</i>	Basaka	Acanthaceae
16	<i>Carissa spinarum</i>	DudhKoli	Apocynaceae
Herb& climbers			
17	<i>Tinosporacordifolia</i>	Guduchi	Menispermaceae
18	<i>Cuscutareflexa</i>	Dodder Plant	Convolvulaceae

Source: Consultant's Field Visits

55. The list of fauna observed in the surroundings of project sites at Bhubaneswar is given in **Table-10**. From this list it is clear that none of faunal species is rare and endangered.

Table-10: List of Fauna in Sub-project Surroundings

Sl. No.	Scientific name	Common name	WPA Schedule
Mammals			
1	<i>Funambulus palmarum</i>	Palm Squirrel	Sch-IV
2	<i>Presbytis entellus</i>	Common langur	Sch-II
3	<i>Macaca mulatta</i>	Rhesus monkey	Sch-II
4	<i>Herpestisedwardsii</i>	Common mongoose	Sch-IV
Reptiles & Amphibians			
1	<i>Calotes versicolor</i>	Garden Lizard	Sch-IV
2	<i>Pythasmucosus</i>	Rat Snake	Sch-II
3	<i>Najanaja</i>	Cobra	Sch-II
4	<i>Rana tigrina</i>	Indian Bullfrog	Sch-IV
AVES			
1	<i>Corvus splendens</i>	Common Crow	Sch-V
2	<i>Columba livia</i>	Blue Rock Pigeon	Sch-V
3	<i>Passer domesticus</i>	Common Sparrow	Sch-IV
4	<i>Merops orientalis</i>	Small Green Bee Eater	Sch-IV
5	<i>Vanellus indicus</i>	Red Wattled Lapwing	Sch-IV
6	<i>Bubulcus ibis</i>	Cattle Egret	Sch-IV
Insects			
1	<i>Papilio demoleus</i>	Lemon Butterfly	-

Source: Consultant's Field Visit and WSC Site Visit

56. The water bodies around project sites have not been seen as the Precision Engineering site is located in an industrial area in Bhubaneswar city. Hence, it can be presumed that there are no aquatic life concerns in the project.

Protected Areas

57. Odisha hosts rich biodiversity in variety of habitats. There are two National parks, 18 Sanctuaries and one Biosphere Reserve in the State. There are two notified and one proposed Tiger Reserves namely Similipal, Satkosia and Sunabeda (proposed). There are

three elephant reserves in the State namely Mayurbhanj, Sambalpur and Mahanadi. The protected area for wildlife management constitutes 4.25% of the total geographical area of the State. The wetland management in the State has received International accreditation. Chilika Ramsar site is the Asia's largest brackish water lagoon having rich estuarine and marine fauna including 152 Irrawaddy dolphins (as per 2013 Jan, census). The list of National Parks and Wildlife Sanctuaries in Odisha is given in **Table-11**. The proposed Precision Engineering Centre site is located beyond 15 km from the Wildlife sanctuaries.

Table-11: National Parks and Wildlife Sanctuaries in Odisha

Sl. No.	Name of National Park and Wild life Sanctuary	District	Area (Km. sq.)
NATIONAL PARK			
1	Similipal	Mayurbhanj	845.70
2	Bhitarkanika	Kendrapara	145.00
SANCTUARY			
1	Bhitarkanika	Kendrapara	672.00
2	Similipal	Mayurbhanj	2200.00 Core:845.70 Buffer :1924.30
3	Satkosia	Gorge Angul/Baudh/ Cuttack / Nayagarh	795.52
4	Hadgarh	Keonjhar	191.06
5	Nandankanan	Khorda	4.40
6	Baisipalli	Nayagarh	168.35
7	Kotagarh	Kondhmal	399.05
8	Chandaka-Dampara	Khorda/Cuttack	175.79
9	Khalasuni	Sambalpur	116.00
10	Balukhand-Konark	Puri	71.72
11	Kuldiha	Balasore	272.75
12	Debrigarh	Bargarh	346.91
13	Lakhari Valley	Gajapati	185.78
14	Chilika (Nalaban)	Puri	15.53
15	Badrama	Sambalpur	304.03
16	Sunabeda	Nuapada	500.00
17	Karlapat	Kalahandi	147.66
18	Gahiramatha (Marine)	Kendrapara	1435.00

Source: Odisha State Forest Department (Year 2017)

C. Economic Resources

Industries

58. There are 10 major and medium scale industries in Khorda district. There are 7113 small scale industrial units. The types of industries and employment have been shown in **Table-12**.

Table-12: Details of Existing Micro and Small Enterprises and Artisan Units in Khorda District

NIC No	Code	Type of Industry	Number of Units	Investment (Lakh Rs.)	Employment
20&22		Agro and Soda based	673	10052.68	5293
23, 24, 25, and 26		Textile Based	415	1288.83	3102
27.		Wood/wooden based furniture	246	820.96	2020
28.		Paper & Paper products	282	2719.98	1927
29.		Leather based	15	40.99	106
31.		Chemical/Chemical based	233	2865.90	1873
30.		Rubber, Plastic & petro based	161	4304.11	1336
32.		Mineral based	385	3202.37	7969
33 and 35		Metal based (Steel Fab.) and Engineering Units	915	6167.18	6471
36.		Electrical machinery and transport equipment	261	2000.02	1995
97.		Repairing & servicing	3023	10919.77	12368
01.		Others	504	2840.53	3008
Total			7113	47223.32	47468

Source: Government of Odisha, District Industry Centre, Bhubaneswar (Year 2014)

Transportation

59. As 2010-11 Censuses, district Khorda has 166 km of National Highways (NH), 30 km of state highways (SH), 273 km major district roads (MDR), 673 km of other district roads (ODR), 833 km of rural roads, 3367 km of Gram Panchayat roads and 242 km of forest roads. Besides, 117.39 km of Railway lines with 23 nos. of railway stations including passenger halts are continuing in the district. Bhubaneswar International Airport is also operating in the district.

Land Use

60. A study of the land use (**Table-13**) shows that majority of the area of the project districts is under Agriculture and non-agriculture uses. The land under permanent pastures and grazing is not significant. The land use of the Precision Engineering site is industrial area and plot is in possession of Odisha Industrial Infrastructure Development Corporation, GoO and is under transfer process to OSDA (**Appendix 6**).

Table-13: Land Use Pattern of Khorda District

Land use	Khorda District
Geographical Area	281
Net Area Shown	108
Forests	62
Land put to non-Agriculture Use	46
Permanent Pastures	5
Culturable waste land	8

Source: Odisha Agriculture Statistics-2013-2014, Directorate of Agriculture, Government of Odisha

Agricultural Development.

61. During the year 2010-11, the net area sown was 105 thousand hectares against 5421 thousand hectares of the state. The production of paddy was 2560764 quintals and 23 quintals wheat, 1308 quintals maize, 200 quintals ragi, 29567 quintals mung, 5727 quintals biri, 2830 quintals kulthi, and 1374 quintals till, 9028 quintals groundnuts, 62 quintals mustard, and 25203 quintals potatoes and 370757 quintals sugarcane were also produced. During 2010-11, the total fertilizers used in Khorda district was about 10438 MT with a breakage of 6118 MT nitrogenous, 2976 MT phosphatic and 1344 MT potash and the consumption of fertilizer per hectare was 51 kg.

Electrification

62. Consumption of electricity in Khorda district during the year 2010-2011 Census, covered 1173.350 million units and villages electrified as on 2010-11 were 1358 which constituted 92.4 % to the total villages of the district.

Social and Cultural Resources

Population and Communities

63. The Khorda district has an area of 2813 sq.km and 22.52 lakhs of population as per 2011 census. The district accounts for 1.81 percent of the state's territory and shares 5.36 percent of the state's population. The density of population of the district is 800 per sq. km as against 270 persons per sq.km of the state. It has 1551 villages (including 193 uninhabited villages) covering 10 blocks. 10 Tehsils and 2 subdivisions. As per 2011 census the schedule caste population was 297472 (13.2 %) and schedule tribe population 115051 (5.1 %). The literacy percentage of the district was 86.9 against 72.9 of the state.

Health facilities

64. The medical facilities in the Khorda district are provided by different agencies like Government, private individuals and voluntary organizations. There were 178 numbers of the Allopathic medical institutions with 456 beds facilities, 27 numbers of Homoeopathic dispensaries and 22 numbers of Ayurvedic dispensaries in the district during the year 2010-11 Census.

Education facilities

65. There are good educational facilities in Khorda district and particularly in Bhubaneswar city. There were 1297 numbers of primary schools, 542 numbers of middle schools, 282 numbers of secondary schools and 55 numbers of general colleges in the district during 2010-11. Besides, there were 19 numbers of polytechnic schools and 84 numbers of engineering colleges in the district during year 2010-11 to impart technical education.

Archaeological Resources

66. There are no heritage sites notified by Archaeological Survey of India (ASI) within or near the Precision Engineering. Similarly, no common property resources such as public wells, water tanks, playgrounds, common grassing grounds or pastures, market areas and community buildings will be affected by the development and operations of Precision Engineering Centre.

V. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Environmental Impacts

67. Any project creating physical infrastructure will cause some impacts on the environment. This Addendum to the IEE report examines the potential impacts anticipated during the construction and operation of the Precision Engineering Centre, including:

- (i) **Location impacts:** Impact associated with site selection including effect on the environment and resettlement or livelihood related impacts on communities;
- (ii) **Design impacts and Pre-Construction Impacts:** Impact arising from project design, including the technology used, scale of operations, discharge standards, topographic survey, geotechnical survey, etc.;
- (iii) **Construction impacts:** Impact resulting from construction activities including site clearance, earthworks, civil works, etc.; and
- (iv) **Operation and Maintenance impacts:** Impact associated with the operation and maintenance of the Precision Engineering Centre

68. ADB's REA checklist was used while screening the site and recommending mitigation measures for the component of Precision Engineering of OSDP.

B. Location Impacts

69. The Precision Engineering Centre is to be established on a vacant plot in the Mancheswar Industrial estate. There are no significant ecological resources in the surroundings of the site as it is in the industrial estate in the outer skirts of Bhubaneswar, the capital city of Odisha State. There are no heritage sites notified by ASI or State Archaeological Department within the 300 m distance. No significant impacts can arise due to Precision Engineering Centre's location as the building components will not impinge upon any area of ecological, archaeological or historical importance. The site will also not require change in land use as being within industrial estate boundary. Hence Precision Engineering Centre activities will be in conformance with the master plan. The land for the Precision Engineering Centre is not in the immediate vicinity of national highway (approx. 150 m distance). Hence vehicular impacts (air and noise) are not anticipated.

70. The project site of the Precision Engineering Centre is located within seismic zone III and the building has been designed following seismic coefficient of Zone III as National Building Code 2005 (amended till date).

C. Impacts during Design and Pre-Construction Phase

71. Impacts arising from the inappropriate design include inadequate facilities at the Precision Engineering Centre which may result into inconvenience to the students and staff. There may be impacts on surrounding land if proper sanitation wastewater collection and treatment is not planned.

72. Anticipated Environmental impacts associated with the Pre-construction phase are: loss of land, properties and livelihood due to acquisition of properties; tree cutting, impacts on natural resources; etc. As the proposed subproject area is owned by the Government of Odisha, there is no land acquisition, impact on properties or involuntary resettlement issues. No tree cutting is anticipated except clearing of the shrubs. During pre-construction stage there will be impact on account of establishment of construction camp if this is established

outside the proposed Precision Engineering Centre site. Site photographs are shown in **Appendix 4**.

73. Based on the environmental screening of the subproject area, there are no significant adverse environmental impacts during the design and Pre-construction phases.

D. Impacts during Construction Phase

74. All construction activities to be undertaken at the site for the Precision Engineering Centre will be approved by the PMU. The construction stage impacts due to the proposed project components are generic to the construction activities. The EMP emphasizes on the construction impacts and necessary mitigation measures to be strictly followed by the contractor and supervised by the Odisha Industrial Infrastructure Development Corporation and PMU. The key potential impacts are covered in the following paragraphs.

75. **Impact due to stockpiles of construction materials:** Improper stockpiling of construction materials in and around the Precision Engineering Centre site could obstruct movement along access roads and surrounding buildings of the area and obstruct drainage in the surroundings of site. Hence, due consideration will be given for proper materials storage at the site. Stockpiles will be covered to protect from dust and erosion. Waste materials will be disposed at identified and approved location. As far as possible all construction materials will be stored on a vacant area within the construction site. Stockpiles will be covered to protect from dust and erosion.

76. **Disposal of construction waste:** The construction waste could lead to untidy conditions at the site and surroundings and may find its way to local drains of the Mancheswar Industrial estate. It shall be mandatory for the contractor (s) to ensure proper disposal of the construction waste at the disposal sites identified and approved by Odisha Industrial Infrastructure Development Corporation and/ or local civic authorities.

77. **Quarry and Borrow pits operations:** All the construction materials will be procured from market as construction works are relatively small level. The construction activities do not require earthworks so operations of borrow areas is not anticipated. The sub project construction activities will also not require direct procurement of stone dust or sand from the quarries. It will be ensured that material suppliers source the construction materials from the approved quarries in compliant with environmental laws of GoO and MoEFCC.

78. **Increase in Noise and Vibration levels:** Noise levels in the immediate proximity of Precision Engineering site is expected to increase somewhat during construction. However, these will be largely imperceptible as civil works will be confined within relatively small area. The duration of construction will also be relatively brief (about a year). During construction phase, some noise will also be generated from the various construction activities like equipment and vehicles engaged in transportation of construction materials. However, transportation of construction materials will be confined to the requirement per day, depending upon extent of construction activity. Further the noise associated with the equipment shall be reduced with proper maintenance of construction equipment. The increase in noise levels is expected to be between 5 - 10 % of ambient noise levels. This increase will be felt up to 500 m only. This noise will be intermittent in nature and will last only till construction phase. This noise will be intermittent in nature and will last only during the construction phase. It is anticipated that noise levels will not exceed the specified limits of noise for the industrial areas. But necessary monitoring of noise levels will be taken up as part of environmental monitoring plan.

79. Minor vibrations on account of construction works are likely, but these vibrations will not be felt outside the plot boundary and is unlikely to cause any damage to the neighboring buildings.

80. **Impacts on biodiversity during construction works for Retrofitting and Refurbishment:** No impacts are expected on the biodiversity during the construction works as the site is in industrial area and there are no endangered or rare species of flora and fauna in the surroundings of the site.

81. **Disturbance to traffic during civil construction works for Retrofitting and Refurbishment:** At the time of construction works, there will be some temporary inconvenience for the movement of public and vehicles due to project construction activities. However, since the scale of civil works is relatively small, the inconvenience caused will be temporary in nature and limited only to the construction phase of about a year maximum.

82. **Impact on cultural properties:** The proposed Precision Engineering Centre sub-project will not have any impacts on any religious structure or any other structure of historical and/or cultural significance on account of construction works

83. **Ground Water:** Ground water will not be extracted and used for construction purposes. The contractors will arrange for water from the Bhubaneswar Municipal Corporation/Public Health Engineering Department. The problem of ground water contamination is also not anticipated during the construction phase since there will be proper disposal of the wastewater.

84. **Ambient Air Quality:** Generation of dust is anticipated during transportation, material handling and construction activities. Some dust and gaseous emissions will also be generated during the construction period from machines such as mixers, and vehicles engaged in transportation of construction materials. Pollutants of primary concern at this stage include respirable ($PM_{2.5}$) and suspended particulate matter (PM_{10}) and gaseous emissions (NO_x , SO_2 , CO , etc.). However, transportation of construction materials will be confined to a few trips per day depending upon extent of construction activity. Therefore, impact at this stage will be temporary and restricted to the close vicinity of the Precision Engineering site.

85. All vehicles and construction equipment operating for the contractor and the Odisha Industrial Infrastructure Development Corporation will obtain and maintain "Pollution under Control" (PUC) certificates. To control dust emissions, vehicles deployed for borrow materials, sand, and aggregate haulage, will be covered with tarpaulins to be prevent spillage. Regular sprinkling of water during loading, unloading, vehicular movement, and raw material transport will prevent spread of dust and other contaminants. Periodic air quality monitoring will be conducted to ensure that emissions to comply with the vehicle emission standards specified by the Government of India and ambient air quality standards specified by the Central Pollution Control Board. The contractor will submit emission monitoring results as a compliance with environmental monitoring plan.

86. **Construction Waste:** The construction waste will be generated due to excavated earth material and waste generated from construction Camp. Excavated earth material can be reused subject to the approval of the Engineer during the construction. Waste generated from the construction camp and demolition will be disposed off as per law to the satisfaction of the Odisha Industrial Infrastructure Development Corporation and PMU. The clean-up and restoration operations will be implemented by the contractor prior to demobilization. The contractor will clear all temporary structures and dispose off all garbage from construction camp site. All construction zones used/affected by the sub-project will be left clean and tidy

at the contractors' expense as per the satisfaction the Odisha Industrial Infrastructure Development Corporation and PMU.

87. The contractor is likely to engage local labor for various construction activities. However, in case of migrant labor must be engaged, the contractor will establish properly designed labor camp with all basic amenities such as potable drinking water supply and sanitation facilities. Dust bins will be placed in adequate numbers. The EMP lays down some measures to address likely adverse impacts associated with the labor camp. Since the Precision Engineering Centre site is within the urban area of Bhubaneswar city, so it is quite likely that contractor will hire a house for the accommodation of construction work force.

88. Besides construction of building for Precision Engineering Centre, there will be minor construction works for the installation of some heavy equipment such as motors, CNC Machines, compressors (in mini-Tool Room) and machines and equipment. The minor construction activities will include creation of foundations on the floors in CNC Tool Room, Lathe and milling machines.

89. **Safety Measures During Construction Phase:** During installation of equipment for Precision Engineering trade, following safety measures will be adopted:

- The foundations for all equipment and machinery mentioned will be constructed as per design specifications and at locations finalized in drawing.
- Necessary clear space for the movement will be kept between the equipment/machinery.
- All the moving equipment (motor, pump, cooling tower) shall be provided guards /enclosures, for this necessary space will be kept.
- Safe Operating procedures will be prepared for each equipment and displayed after installation of equipment.
- Workers during construction of foundations and installation of equipment will be provided proper personal protective equipment (PPE).
- Rubber mats shall be placed around electrical panel boards.
- Necessary spill tray will be provided at water storage tanks.
- Guards/enclosures will be provided around electrical motors.
- Safety measures specified by the manufacturers/suppliers of respective equipment and machinery shall be displayed and followed.
- Safe Operating procedures will be prepared for electric motors, and these shall be displayed
- Oil drips if any shall be wiped with cotton or cloths rags.
- The installation of hydraulics systems, lifts, elevators, motors will be done at the specified locations in the layout.

E. Environmental Impacts during Operation Phase

90. Since only advance skill training programs for the Precision Engineering trade will be undertaken at the Precision Engineering Centre, adverse environmental impacts are not anticipated during operation phase. The Precision Engineering Centre has adequate parking. As evident from the equipment list provided in **Table-2** there will be no air emissions or effluent generation from any of the equipment as all the equipment will be electricity operated. The impacts have been identified related to solid waste generation during practical and demonstration classes of trainees. Operation phase impacts have been discussed in detail in this section.

- **Ambient Air Quality**

91. The minor impacts on ambient air quality will include dust due to transportation, and air emissions (SO₂, NO_x, CO, PM₁₀ and PM_{2.5}) on account of DG set operations in the event of power failure. The DG Sets already installed in neighboring 'Idco Tower 2000' will be used in the event of power failure. No new DG set is planned in the Precision Engineering Centre. Regular environmental monitoring will be taken as per monitoring plan to ascertain any deterioration of ambient air quality. There will be no generation of air emissions from the equipment and machinery as these will be either manually driven or electricity operated.

- **Noise and Vibration Levels**

92. The noise levels will be generated on account of vehicular movement in the complex and operations of equipment and machinery in Demonstration and Practical Classes. During operation of few Machines, the instantaneous noise levels may go up to 60-70 dB(A). Regular noise level monitoring will be taken up as part of EMP for the operation phase.

93. The vibrations are not expected to be generated during operation phase all equipment and machinery will be fitted on well laid foundations.

- **Waste Water Generation**

94. The wastewater generation on account of operations of Precision Engineering laboratory and machinery operations except floor washings is not anticipated. The wastewater generation will be on account of sanitation facilities and floor washing. It has been estimated that there will be 300 persons in daytime and about 25 KLD wastewater will be generated. Septic tanks and soak pits of adequate capacity have been provisioned for disposal of waste water.

- **Waste Generation from Precision Engineering Trade**

95. Minor solid waste generation is foreseen during practical classes. This will be handled and disposed off as per prevailing law. The waste generation from the Precision Engineering Centre and possible disposal has been summarized below in **Table-14**. The laboratory specific waste generation from PEC has been provided in **Table 15** for better clarity and understanding.

Table-14: Summary of Total Waste Generation from Precision Engineering Centre

Sl. No.	Trade	Waste Generated	Planned Disposal /Mitigation Measure
1	Precision Engineering Centre*	<ul style="list-style-type: none"> Machine Coolant from various machinery in laboratories about 5 liters per annum Metal Scrap= 321-358 kg/yr will be generated due to job works completed by students during practical at workshop equipment (Scrap generated from practical classes) Waste Lubricating Oil from machines 19-27 liters /annum 	<ul style="list-style-type: none"> Used machine coolant will be collected by the supplier for recycle and re-use. It will be basically lubricating oil. So it may also be sold to authorized recyclers. Metal scrap will be collected by the supplier to recycle. The waste lubricating oil will be stored in plastic containers and will be sold to authorized recyclers.
2	Conventional Municipal Solid Waste	About 60 kg/day	The waste will be segregated, and disposal will be integrated with Bhubaneswar city waste disposal
3	E-Waste	The e-waste generation will be from the operation and maintenance of computers in various sections.	The OSDA will have agreements with the maintenance partners to take away discarded peripherals, spare parts, discarded old computers for possible reuse and recycle.

*Specific generation from various laboratories of PEC detailed in Table-16.

Source: Odisha Skill Development Authority

Table-15: Waste Generation from Various Equipment of Precision Engineering Trade

Laboratory-Equipment & Machines	Numbers	Waste Generation from Equipment /Machines
1. Inspection Techniques Laboratory		
Vernier Caliper 150 mm with metric/imperial scale - Accuracy 0.02mm	1 Set	There is no generation of any solid and liquid waste from the usage of equipment of Inspection Techniques Laboratory. There will also not be any air emissions also due to usage of equipment
Digital Vernier Caliper 150 mm with metric/imperial scale - Accuracy 0.01mm	1 Set	
Vernier Height Gauge (0 ~ 200 mm)	1 Set	
Vernier Depth Gauge (0 ~ 150 mm)	1 Set	
External Micrometer (0 ~ 25 mm) - Accuracy 0.01mm	1 Set	
Digital External Micrometer (0 ~ 25 mm) - Accuracy 0.001mm	1 Set	
External Micrometer (25 ~ 50 mm) - Accuracy 0.01mm	1 Set	
Digital External Micrometer (25 ~ 50 mm) - Accuracy 0.001mm	1 Set	
Internal Micrometer Caliper Type (5 ~ 25 mm) - Accuracy 0.01mm	1 Set	
Digital Internal Micrometer Caliper Type (5 ~ 25 mm) - Accuracy 0.001mm	1 Set	

Laboratory-Equipment & Machines	Numbers	Waste Generation from Equipment /Machines
2. Turning Section		
Centre lathe with digital readout (X & Z axis)	20	Metal chips about 45-50 kg per annum will be generated. These will be. These will be stored in jerry canes and will be sold to vendors for recycle and re-use. There will be generation of about 2-3 liters per annum waste lubricating oil. This oil will be stored in plastic containers and will be sold to the authorized recyclers.
Pedestal grinder c/w grinding wheel star dresser	1	
3. CNC Turning Section		
CNC Lathe and equipped with basic tooling system and interlocking safety features	10	Metal chips about 45-50 kg per annum will be generated. These will be sold to vendors for recycle and reuse. These will be stored in jerry canes and will be and will be sold to vendors for recycle and re-use. There will be generation of about 2-3 waste lubricating oil per annum. This oil will be stored in plastic containers and will be sold to the authorized recyclers.
Mobile workstation/Notebook c/w CAD/CAM software and processors for CNC Turning – 2 seats license - able to create part geometry and generate NC part program for CNC turning	2	No waste generation during practical classes. There will also not be any air emissions also due to usage of equipment
4. Milling Section		
Vertical milling machine with digital readout (X, Y & Z axis) c/w standard tool kit and equipped with safety features and low voltage lamp	20	There will be generation of 18-20 kg per annum of metal chips due to job works completed by the students during practical classes. These metal chips will be sold to the scrap vendors for recycle and re-use. There will be generation of about 2-3 liters per annum discarded lubricating oil. This oil will be stored in plastic containers and will be sold to the authorized recyclers.
5. CNC Milling Section		
CNC Milling machine with 3-axis simultaneous functions and equipped with automatic tool changer and interlocking safety features	10	There will be generation of 18-20 kg per annum of metal chips due to job works completed by the students during practical classes. These metal chips will be sold to the scrap vendors for recycle and re-use. There will be generation of about 2-3 liters per annum discarded lubricating oil. This oil will be stored in plastic containers and will be sold to the authorized recyclers.
Accessories to suit item 1	1	
Mobile workstation c/w CAD/CAM software and processors for CNC milling – 4 seats license - able to create part geometry and generate NC part program for CNC machining	4	

Laboratory-Equipment & Machines	Numbers	Waste Generation from Equipment /Machines
6. 3D CAD/CAM Application Laboratory		
Workstation computer	21	No waste generation during practical classes. There will also not be any air emissions also due to usage of equipment
CAD software – 21 seats license (For 2D/3D surface, wireframe and solid modelling)	21	
CAM software – 21 seats license (CAM Turn and CAM Mill with post processor)	21	
7. CNC Sheet Metal Fabrication Laboratory		
CNC Laser (CO2) cutting machine with CNC controller, standard tool and equipped with safety features	1	Metal chips about 90-100 kg per annum due to job works completed by the students during practical classes. These metal chips will be sold to the scrap vendors for recycle and re-use. Discarded lubricant around 5 liters per annum. This oil will be stored in plastic containers and will be sold to the authorized recyclers.
CNC Turret Punching machine with CNC controller, standard tool and equipped with safety features	1	
CNC Bending (press Brake) machine with CNC controller, standard tool and equipped with safety features	1	
Air compressor with dryer Working pressure 1000 liter/min maintain at 6 Bar	1	
8. Multi-Axis Machining Laboratory		
5-axis CNC Universal Machining Centre with simultaneous axes movement functions and equipped with basic tooling system and interlocking safety features	4	Metal chips about 90-100 kg per annum will be generated. These will be sold to vendors for recycle and re-use. There will be generation of about 3 liters of coolant and 5 liters of lubricant during annual maintenance. These will be stored in jerry canes and will be taken up by the maintenance vendor for recycle and reuse.
9. CNC Sheet Metal Fabrication CAD/CAM Studio		
Workstation computer	21	No waste generation during practical classes. There will also not be any air emissions also due to usage of equipment
CAD/CAM software – 21 seats license (For 2D/3D sheet-metal working) for Laser, Turret Punch and Press Brake with post processor	1	
10. Multi-Axis CAM Studio		
Workstation computer	21	No waste generation during practical classes. There will also not be any air emissions also due to usage of equipment
11. Grinding Section		
Surface grinder with digital readout (Vertical down feed & Cross feed) and equipped with safety features	15	There will be generation of 15-18 kg per annum of metal chips due to job works completed by the students during practical

Laboratory-Equipment & Machines	Numbers	Waste Generation from Equipment /Machines
Universal cylindrical grinder with digital readout, equipped with safety features	5	classes. These metal chips will be sold to the scrap vendors for recycle and re-use. There will be generation of about 3-5 liters per annum discarded lubricating oil. This oil will be stored in plastic containers and will be sold to the authorized recyclers.

Source: Equipment suppliers and information from laboratories in operation at Industrial Training Institutes and Industries.

96. Toilet blocks have been included in both the floors in the building design of 'Precision Engineering Centre'. No impact is anticipated on the ground water quality and surface water quality during the operation phase as there will be proper disposal of wastewater. For this toilet blocks with septic tank and soak pits have been proposed.

97. Given the relatively small size of the Precision Engineering Centre, there will not be any significant vehicular traffic increase on account of its functioning. Around 300 students and staff will be coming to the Precision Engineering Centre. The students will mainly be travelling through using public transport.

98. **Safety Measures During Operation Phase:** The design of 'Precision Engineering Centre' includes structural and seismic safety measures required by India's latest building codes (in seismic zone III). The other safety features are explained below:

- The building will be equipped with fire-fighting systems with portable fire extinguishers and smoke detectors.
- During natural calamities, the operations will be stopped. The trainees and staff will be safely evicted as per Disaster Management plan of Odisha.
- Necessary first aid facilities will be provided at the Precision Engineering Centre building.
- Fire Fighting facilities have been planned as per National Building Code 2005

99. For operation phase, safe operating procedures will be developed as part of operation manuals by the suppliers and vendors of equipment and machinery of each trade. These safe operating procedures will be displayed at each equipment and machinery and these will be followed by the students and faculty. General SOPs for operation of CNC machines in Precision Engineering is given below:

Specific Safety Precautions in Operating CNC Machines

- The operator/student should have received appropriate instructions and demonstrations on how to safely program, set up and operate a computer numerically controlled (CNC) machine tool. Since CNC equipment follows only programmed instructions, these safety instructions must be adhered to when operating any such machine in the Manufacturing Systems lab.
 - Obtain instructor's permission.
 - Do not alter or modify any machinery, tooling or accessory unless you contact an instructor and obtain permission.
 - Review all CNC set up and operating procedures provided.
 - Review all CNC programming instructions provided.
 - Prepare and review your program carefully.
 - Edit your program for safety, format, correctness, and clarity.
 - It is highly recommended that all programs be verified before the actual trial on the machine. Verification can be by a dry run on the machine, or through a graphic display of the tool path on the controller's screen. Do not operate any machine tool unless you are thoroughly familiar with it.
 - Wear safety shoes.
 - Secure long hair or loose clothing that could become caught or tangled in the moving parts of machine. Long hair possess an extreme safety hazard around machine tools, and, therefore, must be netted for safety.
 - Wear your safety glasses.
 - Determine the tools needed and get them ready. Tool length should not protrude too much from the holder. Use only properly sharpened tools. Use caution when changing tools – no interference with fixture or work.

- Clamp all work securely before starting machine. Only approved materials can be machined. Abrasive dust-generating materials will wear machine components.
- Do not use compressed air to blow chips from parts, machine surfaces, cabinets, controls, or floor around machine.
- Avoid bumping any NC machine or controls. Work must not be held by hand while machining. Clamp it properly and securely in the vise. Avoid using machine in wet, damp or poorly lighted work areas.
- Perform all setup work with spindle stopped. Always stop the spindle completely before changing or adjusting the work piece, fixture or tool. Wrenches, tools, and other parts should be kept off the machine and all its moving units. Do not use machine elements as a workbench.
- Do not remove any guards or shields from any piece of equipment.
- It is very unsafe to use gloves while operating rotating machinery.
- Press the green Power on button so you can load your program to the machine controller.
- Press the Power Up button to home the machine spindle.
- When installed the chip guard doors must be kept always locked during machining.
- With one hand very close to Emergency Stop button, press the Cycle Start button for machining to begin. Stop the machine immediately if you notice any irregularity! In all emergency situations, always push EMERGENCY STOP button.
- Keep hands clear! Machine operates automatically and may move unexpectedly.
- Never place any part of your body near moving parts of this machine. Do not machine flammable or toxic materials.
- Never place your hand on the tool in the spindle and press ATC, FWD, ATC REV, NEXT TOOL, or cause a tool change cycle. The tool changes will move in and crush you hand!
- Allow the machine to complete the machining cycle and return to its home position, before reaching in to unclamp and remove your part. Shut off machine when not in use.
- Never modify machine.
- Do not disable hold-to-run switch.
- Never open electrical compartment doors. Only qualified service personnel should open them.
- Always unplug machine from electrical power before servicing.
- The table, vise, work piece, ways and chip pan must be kept clean after machining.
- Use a brush (table brush or paint brush) to clear chips from machine tools; do not use your hands, or a rag.
- All dust and debris generated in machining should be vacuumed off daily. Never use fingers to remove chips. Use a brush instead.
- Load and unload work pieces with spindle stopped. Never place hands near a revolving spindle.
- Always ensure the spindle direction is correct. Check machine speed setting before starting machine to assure spindle is not started at an unsafe speed.
- No horseplay of any kind is allowed in the CNC lab.
- Any oil spill, coolant, or other fluid spill must be removed from the floor immediately. Use paper towels, wiping cloth, or a mop.
- Rags must be kept clear of the rotating parts of machinery. If for any reason a rag gets caught in a machine, switch off the machine and stand clear of it until it comes to a complete stop.
- All soiled rags must be stored in the covered metal containers provided.
- Remove burrs/sharp edges from parts immediately after they are machined to avoid cuts on your hands.

- If any equipment is found to be in need of repair, report it to the instructor immediately. Do not attempt to use the equipment or repair it.
- Students must clean the machines and area used during lab periods. Equipment must be returned at the close of the lab period. Students must sign out for any instrument, tool, or material they check out.
- Do not leave a machine unsafe for the next operator. Turn the power off when leaving a machine for an extended period.
- Do not attempt to lift heavy work. Use help, hoist, or shop lift.
- It is the responsibility of the operator to remove all chips, oil and residue from their machine, including the chip pan at the end of a shift, or when he/she is through using the machine. (No machine shall be left dirty for the next operator). Chips around a machine will be swept up and kept to a minimum by the operator. When cleaning a machine, use only a brush, rag, or towel. Use Of High-Pressure Air For Chip Removal Or Machine Cleaning Is Prohibited. Don't alter OSHA approved air nozzles. Practice good housekeeping.
- Do not dispose of oily paper towels in chip pans or rubbish receptacles. Use only the steel oil rag receptacles.
- Any unsafe or hazardous conditions should be reported to supervisor immediately.
- Smoking, eating food, drinking beverages, running or acting in a manner that might produce unsafe conditions should be prohibited in all laboratory and classroom areas. Environmental Monitoring Plan

100. **Socio-economic Impacts:** The Precision Engineering Centre will have positive socio-economic impacts since it will provide skilled youth better quality and higher starting salary jobs. It will be beneficial to industry also as this Centre will be a source of trained manpower to them.

101. **Flora and Fauna:** Since the Precision Engineering Centre will be constructed in an industrial area so no adverse impact on fauna and flora is anticipated due to its operations. Further, to enhance the natural look of the building and premises, plantation of shrubs and landscaping will be taken up along the pathways and vacant space. No tree cutting or vegetation removal is required. There is no existence of any wildlife park, bird sanctuary, national park or any other area notified by the GoO or MoEFCC for ecological importance within an aerial distance of 15 km from the site of Precision Engineering Centre

102. **Emergency Plan for Accident and Natural Hazards:** For operation phase onsite emergency plan will be prepared by the head/ Principal of the Precision Engineering Centre. For natural calamities, including COVID-19 Pandemic, the Disaster Management Plan prepared by SDTED/GoO will be followed.

F. Description of Planned Mitigation Measures

103. Screening of environmental impacts is based on the magnitude and duration of the impact. **Table-16** provides the potential environmental impacts and the mitigation measures including the institutional responsibilities for implementing the same. All sub-project activities including construction and operation will take place within available government land at the Mancheswar Industrial Area in Bhubaneswar.

Table-16: Summary of Environmental Impacts and Planned Mitigation Measures

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
1	Location Impacts				
1.1	Lack of sufficient planning to assure long term sustainability of the Precision Engineering Centre building and ensure protection specially from earthquake and other natural disasters	Permanent	Major	<p>The design of Precision Engineering Centre has been completed considering earthquake coefficient of zone III.</p> <p>Building located on a plain land and sustainability principles such as rainwater harvesting, solid waste segregation, etc. have been incorporated in project design.</p> <p>No location impacts as the site is a vacant land owned by the GoO</p>	OSDA PMU
2	Design and Pre-construction Impacts				
2.1	Permissions and NOCs and Environmental Clearance Modification	Permanent	Major	No clearance or permission required for the Precision Engineering Centre	OSDA through Odisha Industrial Infrastructure Development Corporation
2.2	Layout of components to avoid impact on the aesthetics of the Precision Engineering Centre building and surroundings	Permanent	Major	All the subproject components are planned within a vacant site in industrial area hence no adverse impacts on aesthetics of site. Hence, no mitigation measures are warranted.	Not Applicable
2.3	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved surface.	Permanent	Moderate	Design of proposed Precision Engineering Centre will enable efficient drainage at the site and maintain natural drainage patterns	OSDA through Odisha Industrial Infrastructure Development Corporation
2.4	Integration of energy efficiency and energy conservation programs in design of WSC building	Permanent	Moderate	<p>Following measures have been included in the design to enhance energy efficiency:</p> <ul style="list-style-type: none"> • Usage of recyclable materials like wood substitutes. • Installation of BEE certified equipment 	OSDA through Odisha Industrial Infrastructure Development Corporation

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<ul style="list-style-type: none"> Usage of energy efficient lighting fixtures (LED). 	
2.5	Impacts on Flora and Fauna	Permanent	Minor	No tree cutting or shrubs removal required as the site is vacant. Plantation along boundary and open space will be taken at the end of construction phase. No impact on flora and fauna anticipated as site is in industrial area.	OSDA through Odisha Industrial Infrastructure Development Corporation
3	Construction Impacts				
3.1	Construction Camps - Location, Selection, Design and Layouts	Temporary	Moderate	Construction camp at the Precision Engineering Centre site will be located within the site. Contractor may hire house also for accommodation of workers. Adequate sanitation facilities shall be provided at camp site, if planned and no wastewater will be discharged outside.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.2	Impacts on flora and fauna	Temporary	Moderate	No impacts on flora and fauna are anticipated as the site is on a vacant land within Industrial area.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.3	Land acquired for Temporary Usage, clearance activities	Temporary	Moderate	The commencement of site clearance activities for temporary acquired areas, if any will be undertaken with due permission from the Environment Specialist of the PMU to minimize environmental impacts. All areas used for temporary construction operations will be subject to complete restoration to their former conditions with appropriate rehabilitation procedures.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.4	Basic amenities at camp and construction site	Temporary	Major	Sufficient supply of potable water will be provided and maintained at the construction site and construction camp. There shall be well ventilated house accommodation, arrangement for food, etc. at camp. If the drinking water is obtained from an intermittent public water supply, then storage tanks will be provided.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.5	Waste disposal	Permanent	Major	The construction on waste will be utilized to the	Contractor and Odisha

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				extent possible. For disposal of non-usable waste location of disposal site for construction waste will be finalized by the Environmental Specialist of the PMU OSDA and Odisha Industrial Infrastructure Development Corporation. He/ She will confirm that disposal of the material will not impact the surrounding areas, water body or any flora.	Industrial Infrastructure Development Corporation
3.6	Stockpiling of construction materials	Temporary	Moderate	Stockpiling of construction materials does not impact obstruct the drainage and Stockpiles will be covered to protect from dust and erosion.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.7	Soil and Water Pollution due to fuel and lubricants, construction waste, and wastewater discharge	Temporary	Moderate	1-The vehicle cleaning and storage of fuel should be avoided at Precision Engineering Centre site as far as possible. In case of unavoidable circumstances, fuel storage and vehicle cleaning area at the site will be stationed such that water discharge does not drain into the local drain. Water pollution parameters will be monitored as per monitoring plan. 2-At the camp site sanitation facilities with septic tank will be provided so that there is no discharge of any wastewater either to drain or open area.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.8	Siltation of water bodies due to spillage of construction wastes	Temporary	Moderate	No disposal of construction wastes will be carried out into any natural streams or local drains. Extraneous construction wastes will be transported to the pre-identified disposal sites for safe disposal.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.9	Generation of dust	Temporary	Moderate	The contractor will take every precaution to reduce the levels of dust during construction and material handling. Environmental monitoring will be taken up as per monitoring plan.	-Contractor and Odisha Industrial Infrastructure Development Corporation
3.10	Emission from Construction Vehicles, Equipment and	Temporary	Moderate	Vehicles, equipment and machinery used for construction will conform to the relevant	Contractor and Odisha Industrial Infrastructure

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
	Machinery			Standards (vehicular emission standards of Government of India and CPCB specified standards for equipment and machinery) and will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements.	Development Corporation
3.11	Noise and Vibrations	Temporary	Moderate	Noise limits for construction equipment used in this project will not exceed 75 dB (A). Monitoring in respect of noise levels will be taken up as per monitoring plan. All noise generating equipment and machinery will be properly maintained. As far as possible construction activities will be scheduled in daytime only. To mitigate vibration related impacts the equipment generating low vibrations will be used	Contractor and Odisha Industrial Infrastructure Development Corporation
3.12	Material Handling at Site	Temporary	Moderate	Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, will be provided with welder's protective eye-shields. Workers engaged in stone/floor breaking activities will be provided with protective goggles and clothing. The use of any chemical will be strictly in accordance with the manufacturer's instructions. A register of all chemicals delivered to the site will be kept and maintained up to date by the Contractor.	Contractor and Odisha Industrial Infrastructure Development Corporation
3.13	Occupational Health and Safety	Temporary	Moderate	Adequate safety measures for workers during handling of materials at the site for Precision Engineering Centre will be taken up. The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from fire, accidental injury, etc. First aid treatment will be made available for all injuries likely to be	Contractor and Odisha Industrial Infrastructure Development Corporation

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				sustained during the course of work. The Contractor will conform to all anti-malaria instructions given to him by the PMU and Odisha Industrial Infrastructure Development Corporation.	
3.14	Safety Measures during installation of equipment and machinery	Temporary	Moderate	<p>The given safety measures will be followed during the civil works for installation of equipment and machinery.</p> <ul style="list-style-type: none"> • The foundations for all equipment and machinery mentioned will be constructed as per design specifications and at locations finalized in drawing. • Necessary clear space for the movement will be kept between the equipment/machinery. • All the moving equipment (motor, pump, cooling tower) shall be provided guards /enclosures, for this necessary space will be kept. • Safe Operating procedures will be prepared for each equipment and displayed after installation of equipment. • Workers during construction of foundations and installation of equipment will be provided proper personal protective equipment (PPE). • Rubber mats shall be placed around electrical panel boards. • Necessary spill tray will be provided at water storage tanks. • Guards/enclosures will be provided around electrical motors • Safety measures specified by the manufacturers/suppliers of respective equipment and machinery shall be displayed and followed. • Safe Operating procedures will be prepared 	Contractor, suppliers of equipment and machinery of Precision Engineering Trade and Odisha Industrial Infrastructure Development Corporation

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<p>for electric motors, and these shall be displayed</p> <ul style="list-style-type: none"> Oil drips if any shall be wiped with cotton or cloths rags. The installation of hydraulics systems, lifts, elevators, motors will be done at the specified locations in the layout 	
3.15	Clearing of Construction of Camp and Restoration	Temporary	Major	<p>1-Contractor at the sub-project site will prepare site restoration plans for approval by the PMU and Odisha Industrial Infrastructure Development Corporation. These camp site restoration plans are to be implemented by the contractor prior to demobilization.</p> <p>2-On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the PMU and Odisha Industrial Infrastructure Development Corporation</p>	Contractor and Odisha Industrial Infrastructure Development Corporation
3.16	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities including COVID-19 Pandemic	Temporary	Major in case of natural calamity and minor in case of accidents or mishaps at construction site	<p>1-The onsite emergency plan will be prepared by the contractor in consultation with Odisha Industrial Infrastructure Development Corporation and PMU.</p> <p>2-For natural calamities, disaster management plan prepared by the Odisha Industrial Infrastructure Development Corporation under the provisions of Disaster Management Act 2005 will be followed.</p> <p>4- The COVID-19 Protection measures will be followed as per guidelines of GOI and GoO.</p>	Contractor
3.17	Employment and Socio-economic	Short Term	Minor and beneficial	The manpower envisaged for civil works at the Precision Engineering Centre site is about 80-100. As far as possible preference will be given	Contractor and Supplier of Equipment

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				to local vendors and workers During installation of machinery and equipment , approx. 8-10 skilled personnel will be mobilized by the Equipment Supplier	
4	Operation and Maintenance Impacts				
4.1	Environmental Conditions (Ambient Air Quality, Water Quality and Noise Levels)	Temporary	Moderate	Air, water, and noise levels will be monitored periodically as per the Environmental Monitoring Plan prepared.	OSDA
4.2	Waste generation Operation of Equipment and Machinery in Precision Engineering Trade in the Precision Engineering Centre	Permanent	Moderate	The total estimated waste generation is as follows: (i) Metallic waste: The metallic waste generated (about 360 kg per annum). during job works of students in practical classes will be sold to the vendors for possible re-use/recycle. (ii) Lubricating Oil: Lubricating oil will be generated from PEC laboratories (about 27 liters per annum) during the practical and demonstration classes. The lubricating oil will be stored in tightly capped plastic containers/bottles and will be sold to authorized recyclers and records will be maintained. (iii) Coolant: Coolant generation due to annual maintenance of machines will be 5 liters approximately. This will be sold to authorized recyclers and records will be maintained.	OSDA
4.3	Solid Waste Disposal	Permanent	Major	The municipal waste (about 60 kg/day) will be segregated and will be integrated with BMC waste disposal system	OSDA
4.4	E- Waste	Permanent	Insignificant	The e-waste generation will be from the operation and maintenance of computers in various sections. The OSDA will have agreements with the maintenance partners to take away discarded peripherals, spare parts, discarded old	OSDA

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				computers for possible reuse and recycle.	
4.5	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection	Temporary	Severe	The OSDA through a maintenance partner will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to the local disposal sites.	OSDA/ Precision Engineering Administration
4.6	Wastewater Treatment and Utilization	Permanent	Severe	The wastewater generated at Precision Engineering Centre to the extent of 27 KLD will be disposed in septic tanks/ soak pits in the Precision Engineering Centre.	OSDA through STP operator
4.7	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities including COVID-19 Pandemic	Temporary	Major in case of natural calamity and minor in case of accidents or mishaps at construction site	The head of Precision Engineering Centre with the assistance of team working under him will prepare on site emergency plan for possible minor accidents and mishaps during operation phase. For natural calamities, the disaster management plan prepared by SDTED will be followed. For COVID-19 Pandemic Guidelines and protection measures announced by GOI and GoO will be followed.	
4.8	Fire and Toxic Hazards	Long Term	Severe	1-Fire plan approval will be obtained from Chief Fire Officer before occupying the buildings; 2-Occupancy certificate from municipal corporation/development authority shall be obtained before occupying building. 3- Firefighting system will be in place as per NBC-2005 4- Fire Fighting facilities shall be regularly maintained and regular fire drills will be carried out.	OSDA
4.9	Safety Measures during operation phase	Long Term	Severe	The safe operating procedures (SOPs) during installation and commissioning of equipment and machinery shall be followed during practical classes by the faculty and students. The SOPs will be periodically updated based on experience and situations faced during the operation phase.	OSDA

VI. ANALYSIS OF ALTERNATIVES

104. Odisha accounts for 3.47% of the country's population; it is positioned to be one of the biggest contributors of the skilled workforce in the country. However, the core problem faced by the state is the low employability of the young workforce due to low level of skills, weak training capacity in terms of quality and numbers, fragmented skills ecosystem and poor industry linkages. Further, the current training capacity and quality is inadequate to meet the 12th five year plan target of training one million people. In Odisha, the Industrial Training Institutes (ITI)/ Industrial Training Centers (ITC) combined has an estimated capacity of around 75,000 seats per year, far below to address the skill potential in the state. Hence, the proposed program is the necessity of today for Odisha. The Precision Engineering Centre will offer courses on higher level skills and will help Odisha youth in getting higher salary start and employment in industry of repute.

105. The Precision Engineering Centre is being established and developed on a vacant plot in Mancheswar Industrial Estate area of Bhubaneswar, so impact on flora and fauna will be minimal. Also, as it is Industrial area with already existing facilities like PHED supply for freshwater allocation, electricity and efficient road connectivity, so the consumption of natural resources has already been minimized. Also being in an already built up urban area, no impacts on flora and fauna are seen in this component also.

106. Further, the impacts during the construction and operation phases will be minimized through the implementation of Environment Management and Monitoring Plan.

VII. INSTITUTIONAL ARRANGEMENT & RESPONSIBILITIES

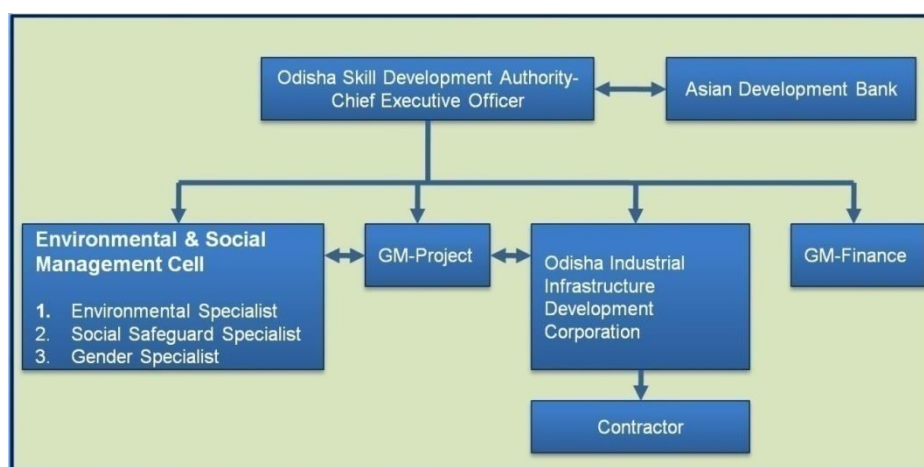
107. The executing agency for the project will be the Government of Odisha (GoO) acting through the Skill Development and Technical Education Department (SDTED). A Project Management Unit (PMU) will be established in SDDTE. The project will be implemented through the PMU and IA (OSDA).

108. The OSDA will be responsible for (a) establishing and operating the Precision Engineering Centre (b) managing project funds including but not limited to payments, accounting, auditing, etc.; (c) contracting civil works, Consultants, service providers, and Equipment Supply related contracts; and (d) coordinating with PMU for smooth implementation of the project. The PMU and OSDA will be supported by a team of project management consultant (PMC) who would be engaged by OSDA. There will be an Environment and Social Management Cell (ESMC) within OSDA. This ESMC will comprise of one environmental safeguard specialist, one social safeguard specialist and one Gender Specialist. Additionally, OSDA will also hire services of external agency (ies)/expert(s) as per requirement to meet the objectives of EMP.

109. Similarly, the civil works contractor at Precision Engineering Centre will also have one designated and qualified HSE officer having experience of 5 years. He/she will be responsible for implementing the proposed EMP. In case of non-availability of designated HSE officer, a suitable penal action will be taken against the contractor on recommendation of ESMC. The works and installation of equipment will be supervised by the OSDA through PMU.

110. The role of PMC in OSDP is of critical importance in not only providing technical and knowledge services through a dedicated cadre of professionals in different domains of the project but also assist the core team of OSDA in strengthening the eco-system of skills development in the state of Odisha and develop a pioneering example of support and capacity building services in skills development. The project implementation arrangements with respect to safeguards implementation has been shown in **Figure-5**. The environmental safeguard specialist, in PMU shall be responsible for environmental safeguards related issues at the Precision Engineering Centre site.

Figure-5: Project Implementation Arrangements for Environmental Safeguards



VIII. ENVIRONMENT MANAGEMENT PLAN (EMP)

A. General

111. The Environmental Management Plan (EMP) is the key to ensure the minimum degradation in environmental quality and better socio-economic conditions within the local area and/or region due to the construction and operation of the proposed facility. The EMP with monitoring plan focuses on direct impacts, which are identified as having the potential to cause significant impacts on the environment aspects and identifies:

- Specific control measures that will be taken to prevent, reduce or manage the environmental and social impacts; and
- Where it is not possible to specify these at this stage, the level of environmental and social performance that will be expected.

112. It will be ensured that environmentally critical actions are undertaken as per the various relevant regulatory requirements. There will be an ESMC at PMU, overseeing all environment, safety and social responses to ensure that implementation of mitigation measures and monitoring program including findings from monitoring results.

113. The extent of monitoring activities, including their scope and periodicity, will be commensurate with the project's risks and impacts. The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per the monitoring plan prepared as part of the EMP. Implementation of the EMP during construction will be done by the contractor and supervised by environmental specialist of PMU.

114. The budget for environmental monitoring will be included as part of civil works. This plan will require environmental monitoring mechanisms to be used to indicate the effectiveness of the EMP in mitigating negative impacts.

115. The EA has the overall responsibility of fulfilling environmental requirements of the GoO and monitoring the implementation of the EMP for Precision Engineering site.

116. During the design and pre-construction stage, monitoring will be the responsibility of OSDA supported by the EA. This is mainly in the form of review and verification of designs and incorporation of mitigation measures into design and contract documents. Mitigation measures to be taken during the construction stage will be mostly implemented by the main contractor.

117. The EMP for the Precision Engineering Centre for the project lifecycle (pre-construction, construction, and operation phases) has been given in **Tables-17 to 19**.

B. Responsibility for updating IEE during Pre-Construction and Construction

118. **Responsibility for monitoring.** During construction, the Environmental Specialist of the ESMC cell at OSDA PMU and the designated representatives' engineer of the Odisha Industrial Infrastructure Development Corporation at Precision Engineering site will monitor the contractor's performance. During the operation phase, monitoring will be the responsibility of the PMU. The Environmental specialist will prepare semi-annual reports.

119. **Responsibility for Reporting:** OSDA will submit semi-annual reports on the implementation of the EMP to ADB. It will permit ADB to field environmental review missions to examine in detail, the environmental aspects of the project. Any major lapses in adhering

to the EARF and updated IEE and / or EMP should be reported to ADB immediately. The safeguard specialist of PMU will finalize environmental monitoring report. For any non-compliance observed, corrective actions will be taken in a time bound manner. The cost for mitigating noncompliance will be borne by the contractor as per contract provisions. In case of mitigation costs not coming in scope of contract, these will be met out of contingencies built in EMP cost and in overall project cost.

Table-17: Pre-Construction Phase Environmental Management Plan for Precision Engineering Centre at Bhubaneswar

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Lack of sufficient planning to assure long term sustainability of the PEC and ensure protection specially from earthquake and other natural disasters	The design of Precision Engineering Centre building has been completed considering earthquake coefficient of zone III. Building located on a plain land and sustainability principles such as rainwater harvesting, solid waste segregation, etc. have been incorporated in project design.	Verification of design parameters	Odisha Industrial Infrastructure Development Corporation	PMU	Review after completion of DPR	Part of Odisha Industrial Infrastructure Development Corporation and PMC Professional Fee
2	Layout of components to avoid impact on the aesthetics of the Precision Engineering Centre building and surroundings.	The project components siting will avoid impacts on the aesthetics of the site and surroundings.	Precision Engineering Centre building's exteriors	Odisha Industrial Infrastructure Development Corporation	PMU	Review after completion of detailed design	Part of Odisha Industrial Infrastructure Development Corporation and PMC Professional Fee
3	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved	The design has taken care of storm water drainage. The storm water will be diverted to rainwater recharging pits.	Arrangement for proper diversion of storm water runoff to rain water recharge pits and Specifications of rain water harvesting structures	Odisha Industrial Infrastructure Development Corporation	PMU	After mobilization of contractor at the site and during establishment of construction camp at site	Incidental to construction cost

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	surface.						
4	Integration of energy efficiency and energy conservation programs in design of Precision Engineering Centre building	Following measures have been included in the design to enhance energy efficiency: <ul style="list-style-type: none"> • Usage of recyclable materials like wood substitutes. • Installation of BEE certified equipment • Usage of energy efficient lighting fixtures (LED) 	Electrical fixtures, details of water heating system	Odisha Industrial Infrastructure Development Corporation	PMU	During finalization of detailed design	Part of project cost
5	Permissions and NOCs	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. Acknowledge in writing and provide report on compliance all obtained consents, permits, NOCs, etc..	Consents, permits, and NOCs Records and communications	Odisha Industrial Infrastructure Development Corporation	PMU	check consent for establishment of construction camp, approval from civic authorities	Project cost
6	Establishment of baseline environmental conditions prior to start of civil works	<ul style="list-style-type: none"> • Conduct documentation of location of components, areas for construction zone (Camp, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates • Carry out pre-construction phase environmental monitoring in respect of 	Records and Photographs	Contractor	Odisha Industrial Infrastructure Development Corporation	Once prior to start of construction works	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		ambient air quality, water quality and noise levels as per monitoring plan. This monitoring is to establish baseline environmental monitoring.					
7	Construction Camps - Location, Selection, Design and Layout	<p>1-Construction camp at the Precision Engineering Centre site will be located within the vacant plot/site. The potential sites will be selected for labor camp and these shall be visited by the environmental expert of safeguards cell and one having least impacts on environment will be approved. Alternatively, the Contractor may hire house also for accommodation of workers. Adequate sanitation facilities shall be provided at camp site, if planned and no wastewater will be discharged outside.</p> <p>2-Locations for storage of construction materials shall be identified at a vacant spot in the site or at any building close to the site.</p> <p>3-Sanitation facilities at construction camp shall be adequately planned</p>	Construction Camp site, and locations of material storage areas, sanitation facilities	Contractor	Odisha Industrial Infrastructure Development Corporation, PMU environmental specialist	At the time of construction camp establishment and finalization of storage areas	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
8	Sources of construction materials	<p>Use quarry sites and sources licensed by the GoO. In case materials are sourced from market, ensure these are from licensed sources compliant with environmental regulations of India.</p> <p>Verify suitability of all material sources and obtain approvals from PMU</p> <p>Submit to Odisha Industrial Infrastructure Development Corporation and PMU on a monthly basis documentation of sources of materials.</p>	Permits issued to quarries and sources of materials	Contractor PMC and Odisha Industrial Infrastructure Development Corporation to verify sources (including permits)	PMU- Environmental Specialist, Odisha Industrial Infrastructure Development Corporation and PMU	On ongoing basis till physical completion of works	Contractor and Odisha Industrial Infrastructure Development Corporation as part of contract fee
9	Occupational health and safety	<p>Comply with IFC EHS Guidelines on Occupational Health and Safety.</p> <p>Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to contractor on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the</p>	Health and safety (H&S) plan, Insurance coverage to workers	Contractor	PMU- Environmental Specialist, and Odisha Industrial Infrastructure Development Corporation	During Pre-construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		project. Include in H&S plan measures such as: (i) type of probable hazards (ii) corresponding personal protective equipment for each identified hazard; (iii) H&S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents. Provide medical insurance coverage for workers.					
10	Stakeholder consultations	Continue information dissemination, stakeholder consultations, and involvement/participation of stakeholders during project implementation.	-Disclosure records - Consultations	PMU- Environmental Specialist and Odisha Industrial Infrastructure Development Corporation and Contractor	Odisha Industrial Infrastructure Development Corporation and PMU	<ul style="list-style-type: none"> • During updating of IEE Report (virtual due to COVID outbreak and lockdown) • During preparation of site- and activity-specific plans as per EMP • Prior to start of construction • During construction 	PMU and Contractor

Table-18: Construction Phase Environmental Management Plan for Precision Engineering Centre, Bhubaneswar

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Basic amenities, well ventilated accommodation, Sanitation and drinking water facilities at construction Camp of Precision Engineering Centre	<p>1-The contractor shall provide sanitation facilities at the Precision Engineering Centre construction camp site. These facilities will include dust bins in adequate numbers for solid waste collection, drinking water facilities, and separate toilets for male and females. In case camp is established in nearby house, then the contractor will ensure that adequate facilities exist in the house. These toilets facilities shall be maintained. In case camp is established in open land, then septic tanks/soak pits shall be provided at the toilets. The dust bins shall be regularly emptied and waste from camp site shall be disposed off at designated locations. Drinking water quality shall be monitored as per monitoring plan.</p> <p>2- Accommodation facilities will be well ventilated.</p> <p>3- Sufficient supply of potable water to be provided and maintained. If the drinking water is obtained from an intermittent public water supply then storage tanks will be provided. For this contractor will submit plans how availability of drinking water shall be assured.</p>	Construction camp sanitation and drinking water facilities	Contractor	PMU Environmental Specialist, and Odisha Industrial Infrastructure Development Corporation and PMU	Regularly during construction phase	Contractor
2	Land acquired for Temporary Usage, clearance	The commencement of site clearance activities for temporary acquired areas, if any will be undertaken with due permission from the Environment	Pre-construction records of site and vegetation in area of	Contractor	PMU- Environmental Specialist, and Odisha	Duration of site preparation of temporary	PMU and Odisha Industrial Infrastructure

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	activities	Specialist of the PMU to minimize environmental impacts. Photographic records of original conditions of site will be maintained. All areas used for temporary construction operations will be subject to complete restoration to their former conditions with appropriate rehabilitation procedures.	construction		Industrial Infrastructure Development Corporation	acquired areas	Development Corporation
3	Waste disposal	The pre-identified disposal location shall be part of Comprehensive Waste Disposal Plan. Solid Waste Management Plan to be prepared by the Contractor in consultation with local civic authorities. The construction waste will be utilized to the extent possible. For disposal of non-usable waste location of disposal site for construction waste will be finalized by the Environmental Specialist of the PMU OSDA and Odisha Industrial Infrastructure Development Corporation. Contractor shall ensure that waste shall not be disposed off in the surroundings of site and along the access path Environment Specialist will confirm that disposal of the material will not impact the water body. It will also be ensured that no flora is damaged.	Waste Disposal sites, waste management plan	Contractor	PMU-Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
4	Stockpiling of construction materials	Stockpiling of construction materials should not impact or obstruct the drainage and Stockpiles will be covered to protect from dust and erosion.	Stockpiling sites at Precision Engineering Centre Building	Contractor	PMU-Environmental Specialist and Odisha Industrial Infrastructure Development	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
					Corporation		
5	Arrangement for Construction Water	<p>(i) The Contractor shall provide a list of locations and type of sources from where water for construction shall be acquired.</p> <p>(ii) To avoid disruption/ disturbance to other water users, the Contractor shall arrange water from Bhubaneswar Municipal Corporation /Public Health Engineering Department and consult Odisha Industrial Infrastructure Development Corporation before finalizing the source.</p>	Water availability at identified water source locations	Contractor	PMU- Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
6	Soil and Water Pollution due to fuel and lubricants, construction waste, and wastewater discharge	<p>1-The vehicle cleaning and storage of fuel should be avoided at the site as far as possible. In case of unavoidable circumstances, fuel storage and vehicle cleaning area at site will be stationed such that water discharge does not drain into the local drain. Water pollution parameters will be monitored as per monitoring plan.</p> <p>2- Waste water from vehicle parking, fuel storage areas, workshops, wash down and refueling areas shall be treated in an oil interceptor before discharging it on land or into surface water bodies or into other treatment system.</p> <p>3-At the camp site sanitation facilities with septic tank will be provided so that there is no discharge of any waste water either to drain or open area.</p>	Precision Engineering Centre site	Contractor	PMU- Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
7	Siltation of water bodies due to spillage of construction wastes	No disposal of construction wastes will be carried out into any natural streams or local drains. Extraneous construction wastes will be transported to the pre-identified disposal sites for safe disposal.	Water bodies especially natural streams Precision Engineering Centre site	Contractor	PMU-Environmental Specialist, and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
8	Generation of dust	The contractor will take every precaution to reduce the levels of dust at construction site. The dust generation will also be avoided during material handling. All filling works to be protected/ covered in a manner to minimize dust generation. Environmental monitoring (ambient air quality) will be taken up as per monitoring plan.	Precision Engineering Centre site, air quality monitoring results	Contractor	PMU-Environmental Specialist, and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
9	Emission from Construction Vehicles, Equipment and Machinery	Vehicles, equipment and machinery used for construction will conform to the relevant Standards (vehicular emission standards of Government of India and CPCB specified standards for equipment and machinery) and will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements.	PUC certificates of vehicles and machinery	Contractor	PMU-Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
10	Noise and Vibrations	Noise limits for construction equipment used in this project will not exceed 75 dB (A). Monitoring in respect of noise levels will be taken up as per monitoring plan. All noise generating equipment and machinery will be properly maintained. As far as possible construction activities will	Certificates of vehicles conforming noise standards, noise monitoring results	Contractor	PMU-Environmental Specialist and Odisha Industrial Infrastructure Development	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		be scheduled in daytime only. To minimize impacts related to vibrations small and low vibration generating equipment will be used.			Corporation		
11	Impacts on flora and fauna	1- It will be ensured that there is no damage to shrubs, plantation and landscaping works 2- No impact foreseen on fauna as Precision Engineering Centre site is in an industrial area	Environmental monitoring reports, Trees and shrubs planted at Precision Engineering Centre site	Contractor	PMU- Environmental Specialist, and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
12	Material Handling at Precision Engineering Centre site	1-Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles. 2-Workers, who are engaged in welding works, will be provided with welder's protective eye-shields. 3-The use of any chemical will be strictly in accordance with the manufacturer's instructions. 4- A register of all chemicals delivered to the site will be kept and maintained up to date by the Contractor.	Data/ Records on available personal protective equipment	Contractor	PMU- Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase	Contractor
13	Occupational Safety and Health	Adequate safety measures for workers during handling of materials at the Precision Engineering site will be taken up. The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from fire, accidental injury,	Records of availability of personal protective equipment, availability of first aid kits	Contractor	PMU- Environmental Specialist, and Odisha Industrial Infrastructure Development	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		etc. First aid treatment will be made available for all injuries likely to be sustained during the course of work. The Contractor will conform to all anti-malaria instructions given to him by the PMU and Odisha Industrial Infrastructure Development Corporation			Corporation		
14	Safety measures during installation of equipment and machinery	<p>Following safety measures will be followed during the installation of equipment in laboratories</p> <ul style="list-style-type: none"> • The foundations for all equipment and machinery mentioned will be constructed as per design specifications and at locations finalized in drawing. • Necessary clear space for the movement will be kept between the equipment/machinery. • All the moving equipment (motor, pump, cooling tower) shall be provided guards /enclosures, for this necessary space will be kept. • Safe Operating procedures will be prepared for each equipment and displayed after installation of equipment. • Workers during construction of foundations and installation of equipment will be provided proper personal protective equipment (PPE). • Rubber mats shall be placed around electrical panel boards. • Necessary drip/spillage containing dyke /trays provisions will be kept around 	Safe operating procedures, daily supervision and adherence to the approved layout of floors	Contractor for civil works and suppliers of equipment	PMU- Environment al Specialist and Odisha Industrial Infrastructure Development Corporation	Regularly during construction phase of civil works and during installation of equipment and machinery	Contractor and suppliers of equipment and machinery

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>diesel storage tank planned at the floor.</p> <ul style="list-style-type: none"> Necessary spill tray will be provided at water storage tanks. Guards/enclosures will be provided around electrical motors Safety measures specified by the manufacturers/suppliers of Travellators and lifts shall be displayed and followed. Safe Operating procedures will be prepared for lifts, escalators, travellators and electric motors and these shall be displayed Oil drips if any shall be wiped with cotton or cloths rags The installation of hydraulics systems, lifts, elevators, motors will be done at the specified locations in the layout 					
15	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities	The onsite emergency plan will be prepared by the contractor in consultation with PMU For natural calamities, disaster management plan prepared by the Odisha Industrial Infrastructure Development Corporation under the provisions of Disaster Management Act 2005 will be followed.	Onsite emergency plan document and Disaster Management Plan document of Odisha Industrial Infrastructure Development Corporation	Contractor	PMU-Environmental Specialist and Odisha Industrial Infrastructure Development Corporation	Mock Drill every quarter	Contractor
16	Clearing of Construction of Camp and Restoration	Contractor at the Precision Engineering Centre site will prepare site restoration plan for approval by the PMU and Odisha Industrial Infrastructure Development Corporation. These camp site restoration	Restoration plan, and records of pre-construction of temporary sites	Contractor	PMU-Environmental Specialist, and Odisha Industrial	End of construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation Precision Engineering Centre	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		plans are to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the PMU and Odisha Industrial Infrastructure Development Corporation			Infrastructure Development Corporation		
17	Employment and Socio-economic	The manpower envisaged for civil works is about 80-100. As far as possible preference will be given to local vendors and workers	List of vendors and workers	Contractor	PMU OSDP and Odisha Industrial Infrastructure Development Corporation	Entire duration of construction phase	Contractor

Table-19: Operation Phase Environmental Management Plan for Precision Engineering Centre Bhubaneswar

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Environmental Conditions (Ambient Air Quality, Water Quality and Noise Levels)	Air, water, and noise levels will be monitored periodically as per the Environmental Monitoring Plan prepared. The environmental monitoring will be taken through a NABL accredited laboratory	Monitoring results and relevant standards	OSDA through Pollution Monitoring Agency	PMU	As per monitoring Plan	OSDA
2	Waste Generation	The metallic waste (non-	Metallic waste	OSDA through	PMU	On Daily basis	OSDA

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	at Precision Engineering	hazardous in nature) generated during practical and demo classes will be collected and sold to the recyclers /vendors	collection bins and storage, records of sale to vendors	PEC Head			
		Lubricating oil generated during usage of machines and practical job works will be stored in tightly capped plastic containers/bottles and will be sold to authorized recyclers and records will be maintained.	Bottles/cans storage of discarded lubricant bottles., records of sale of lubricating oil to authorized recyclers	OSDA through PEC Head	PMU	On Regular basis	OSDA
		Used machine Coolants from grinding, milling, and turning sections will be sold to authorized recyclers and records will be maintained.	Bottles/cans storage of discarded lubricant bottles., records of sale of lubricating oil to authorized recyclers				
4	Municipal Solid Waste	The municipal waste (about 60 kg/day) will be segregated and will be integrated with BMC waste disposal system	Segregation of construction waste	OSDA through PEC Head	PMU	Regularly	OSDA
5	E- Waste	The e-waste generation will be from the operation and maintenance of computers in various sections. The OSDA will have agreements with the maintenance partners to take away discarded peripherals,	Storage facilities of e-waste and records of sale/lifting by the vendors	PEC Head	PMU	Regularly	OSDA

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		spare parts, discarded old computers for possible reuse and recycle.					
6	Unhygienic condition due to poor maintenance of sanitation facilities and irregular solid waste collection	The OSDA through a maintenance partner will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to the local disposal sites.	Maintenance schedule of Precision Engineering Centre building and facilities created	OSDA through PEC Head /operating partner	PMU	Every Quarter	OSDA
7	Waste Water Disposal	The waste water generated at Precision Engineering Centre to the extent of 27 KLD will disposed in septic tanks/ soak pits of adequate capacity	Visible check	OSDA through PEC Head /operating partner	PMU	Regularly	OSDA
8	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities	The head of WSC-Precision Engineering with the assistance of team working under him will prepare on site emergency plan for possible minor accidents and mishaps during operation phase. For natural calamities, the disaster management plan prepared by SDTED will be followed.	Onsite Emergency plan document and Disaster Management Plan document	Head Precision Engineering	OSDA	Mock Drills every quarter	Precision Engineering Centre operation cost
9	Fire and Toxic Hazards	1-Fire plan approval will be obtained from Chief Fire Officer before occupying the buildings; 2-Occupancy certificate from municipal corporation/development	Fire plan approval, occupancy certificate, maintenance schedule of firefighting	Head - Precision Engineering	OSDA	Regularly	Precision Engineering-g Centre operation cost

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		authority shall be obtained before occupying building. 3- Firefighting system will be in place as per NBC-2005 4- Fire Fighting facilities shall be regularly maintained and regular fire drills will be carried out.	system, records of fire drills				
10	Safety Measures during operation phase	The safe operating procedures (SOPs) during installation and commissioning of equipment and machinery shall be followed during practical classes by the faculty and students. The SOPs will be periodically updated based on experience and situations faced during the operation phase. Generic SOPs for Operation of CNC machines, during classes is given.	Updated safe operating procedures	Head - Precision Engineering	PMU	On Daily basis	OSDA
11	COVID-19 Management at Laboratories and Workshops	Safe Operating procedures announced by the State and Central Governments for education institutes will be followed.	COVID-19 SOPs	Head - Precision Engineering Administration	PMU	On Daily basis	Precision Engineering-Centre operation cost

120. Environmental monitoring (covers EMP implementation and compliance with all of the Government of Odisha's rules with respect to the environment, and handling of solid and liquid waste) at Precision Engineering Centre site will be undertaken by the contractor during pre-construction and construction Phases, and will be supervised by Odisha Industrial Infrastructure Development Corporation and PMU. Environmental monitoring during operation phase will be undertaken by the PMU and monitored by OSDA. The Environmental Safeguards Specialists of the PMU will ensure that EMP and environmental monitoring plan are implemented.

121. To ensure the effective implementation of mitigation measures and EMP during construction and operation phase of Precision Engineering Centre, it is essential that an effective Environmental Monitoring Plan be followed as given in **Table 20**. In this monitoring plan, proposed monitoring of all relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards and responsible agencies are also presented.

Table-20: Environmental Monitoring Plan for Precision Engineering Centre for Pre-construction, Construction and Operation Phases

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored	Locations	Frequency	Responsibility	Cost (INR/US\$)
1	Air Quality	During pre-construction phase*	CO, NO _x , PM ₁₀ , PM _{2.5} , and SO ₂	Precision Engineering Centre Site	Once in the pre-construction phase (Before commencement of works) to establish baseline	Contractor, Odisha Industrial Infrastructure Development Corporation, and PMU through approved Monitoring Agency	INR100,000/ US \$ 1380
		During* Construction Phase			Once in a season (except monsoon season) during construction phase (12 months construction phase)		
		Operation Phase*			Once in a season except monsoon season for first 2 years of operation phase		
2	Water quality	During pre-construction phase	Drinking water quality parameters specified in IS:10500	Precision Engineering Centre Site	Once in pre-construction phase (Before commencement of works) to establish baseline	Contractor, Odisha Industrial Infrastructure Development Corporation, and PMU through approved Monitoring Agency	INR100,000/ US \$1380
		During Construction Phase			Once in a season (except monsoon season) during construction phase (12 months)		
		Operation Phase			Once in a season except monsoon season for first 2 years of operation phase		
3	Noise Levels	During pre-construction phase	Leq (Day), Leq (Night), Lmin and Lmax	Precision Engineering Centre Site	Once in pre-Construction phase (Before commencement of works) to establish baseline	Contractor, PWD, PMU, and DOLE through approved Monitoring Agency	INR 30,000/ US \$ 414
		During Construction Phase			Once in a season (except monsoon season) during construction phase (12 months)		
		Operation Phase			Once in season except monsoon season for first 2 years of operation phase		

* During Pre- construction and construction phase environmental monitoring will be taken up by the contractor through approved monitoring laboratory.
Note: 1-For first year of operation phase also (under defect liability period) contractor will organize monitoring and for remaining one year PMU will organize monitoring through approved monitoring agency.
(1 US \$= 73.25 INR as on 15 June 2021)

C. Capacity Building

122. In addition to the primary objective of skills enhancement of OSDP, this project will also raise awareness about environmental conservation amongst trainees, implementing agencies, and local communities. The project will have the opportunity to build capacity in environment protection for the above-mentioned stakeholders.

123. The Environmental Specialists at PMU will provide the basic training required for environmental awareness. Specific modules customized for the available skill set will be devised after assessing the capabilities of the members of the Training Program and the requirements of the project. The training would cover basic principles of environmental assessment and management; mitigation plans and programs, implementation techniques, monitoring methods and tools. In case on site training programs are not possible due to outbreak of COVID pandemic, virtual training programs shall be organized. The proposed training program along with the frequency of sessions is presented in **Table 21** below.

Table-21: Training Modules for Environmental Management

Program	Description	Participants	Duration	Training Conducting Agency
A. Pre-Construction Phase				
Sensitization Workshop on Environment	Introduction to Environment: environmental assessment and social due diligence requirements in the project, Regulatory Clearances, and permission requirements in the project, and EMP Implementation, Introduction of ADB SPS 2009, and ADB Guidelines on Environmental considerations in planning, design and implementing projects	OSDA officials, PMU staff, Odisha Industrial Infrastructure Development Corporation officials associated with the project and contractor(s) staff associated with the project	½ Working Day	Environmental Specialist of the PMU
Session 1	Environmental impacts due to Precision Engineering Centre construction and operation phases, pollution generation activities during pre-construction and construction phases Environmental Management, Environmental Mitigation Provisions in the Contract, Implementation Arrangements, Methodology of Assessment Good engineering practices to be integrated into contract documents	OSDA officials, PMU staff, Odisha Industrial Infrastructure Development Corporation officials associated with the project and contractor(s) staff associated with the project	½ Working Day	Safeguards Specialist of the PMU
B. Construction Phase				
Session 2	Roles and Responsibilities- Roles and Responsibilities of Implementing Agencies officials, associated contractor and consultants towards protection of environment. Implementation. Arrangements for EMP and Environmental Monitoring during	OSDA officials, PMU staff, Odisha Industrial Infrastructure Development Corporation officials	½ Working Day	Safeguards Specialist of the PMU

Program	Description	Participants	Duration	Training Conducting Agency
	construction phase	associated with the project and contractor staff associated with the project		
Session 3	Monitoring and Reporting System	All OSDA Staff	¼ Working Day	Safeguards Specialist of PMU

D. Environmental Budget

124. Most of the mitigation measures require the contractor(s) to adopt good site practices, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. Only those items not covered under budgets for construction are included in the updated IEE budget. The summary budget for the environmental management costs for the Precision Engineering Centre is presented in **Table 22**.

Table-22: Environmental Management and Monitoring costs (INR)

Monitoring Component	Rate	Amount (INR)	Source of Fund
Pre-Construction and Construction Phase			
Air Quality - one location at Precision Engineering Centre construction site, thrice a year (one sample pre-construction and 3 samples during construction phase; total 4 samples)	10,000	40,000	Contractor
Water Quality- One drinking water sample from Precision Engineering Centre site thrice a year (one sample pre-construction and 3 samples during construction phase; total 4 samples)	10,000	40,000	Contractor
Noise Quality-One location at PEC Construction site, thrice a year (one sample pre-construction and 3 samples during construction phase; total 4 samples)	3000	12,000	Contractor
Training for Capacity Building of stakeholders	Lump sum		OSDA (as provisioned in the training cost in the Original IEE)
Total Pre-construction and Construction Phase Monitoring Cost (A)		92,000	
O & M Phase			
Air Quality – at Precision Engineering Centre, thrice a year for initial 2 years (3 samples per annum, total 6 samples)	10,000	60,000	Contractor (for first year)/PMU
Water Quality -one drinking water sample from Precision Engineering Centre, thrice a year for initial 2	10,000	60,000	Contractor (for first year)/PMU

Monitoring Component	Rate	Amount (INR)	Source of Fund
years (3 samples per annum, total 6 samples)			
Noise Quality- one location at Precision Engineering Centre building, thrice a year, for initial 2 years (3 samples per annum, total 6 samples)	3000	18,000	Contractor/ PMU
Total O&M Phase Monitoring Cost (B)		138,000.00	Contractor (during first year-defect liability period) and PMU (second year of operation)
Total Cost (A+B)		230,000.00	
Contingencies @ 5 %		241,500.00	
Total Budgeted Cost		241,500.00 (Approx. 250,000)	

E. Environmental Monitoring and Reporting

125. The PMU ESMC will monitor and measure the progress of EMP implementation during construction and operation phases. Odisha Industrial Infrastructure Development Corporation site engineer and contractor's designated HSE officer will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome. Odisha Industrial Infrastructure Development Corporation will submit regularly information pertaining to EMP implementation to PMU at OSDA. Based on site visits and information submitted by the contractor and Odisha Industrial Infrastructure Development Corporation, PMU Environmental safeguard specialist will prepare semi-annual monitoring reports. The PMU will submit semi-annual monitoring reports to ADB. Monitoring reports will be posted in a location accessible to the public.

126. ADB will review project performance against the EA's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the Project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued.

IX. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

127. The ADB SPS 2009 requires the project proponent to undertake consultation with concerned stakeholders and facilitate their informed participation in the project/programme. The primary objective of the consultation process is to understand stakeholder's concerns, apprehensions, and overall opinion and solicit recommendations to improve project design.

A. Stakeholder analysis

128. The stakeholders can be broadly classified into three different groups:
- i. Government players: Central and State Government departments and agencies directly or indirectly involved in the project. These include:
 - a) Skill Development and Technical Education Department (SDTED), Government of Odisha
 - b) Directorate of Technical Education & Training
 - c) Odisha Skill Development Society
 - d) National Council for Vocational Training
 - e) Government ITIs
 - f) Government Polytechnic and Engineering colleges
 - g) Regulatory agencies such as MoEFCC, OSPCCB, CRZMA, NBWL, Labor commissioner, DFO and Wild Life officer, Water Resource Department, Civic Authorities, etc
 - ii. Private Players: These are the private agencies involved directly or indirectly in the project. These include:
 - a) Sector Skill Councils
 - b) Industry
 - c) Private Polytechnics and Engineering colleges
 - iii. Others: These cannot be categorized as either the government or the private player. These include:
 - a) NGOs
 - b) Contractors
 - c) Consultants
 - d) Local residents
 - e) Existing students and faculty of ITIs
 - f) Trainees

129. The detailed Stakeholder analysis depicting the involvement, influence and the key roles and responsibilities of the stakeholder for the project is given in the **Table 23**:

Table-23: Stakeholder analysis

SL. No.	Stakeholder	Influence	Involvement	Roles
Government				
1.	SDTED	High	High	<ul style="list-style-type: none"> • Executing agency • Policy level support for the project • Funds sanction for project activities • Overall project monitoring and guidance • Project support – linkages with different departments
2.	DTET	High	High	<ul style="list-style-type: none"> • Implementation support to OSD

SL. No.	Stakeholder	Influence	Involvement	Roles
3.	OSDA	High	High	<ul style="list-style-type: none"> • Function as project management unit /implementing agency of OSDP • Establishment of the Precision Engineering Centre and associated facilities • Establishing Management Contract with capable private partner(s) under the Public-Private Partnership (PPP) model • Monitor the functioning Precision Engineering Centre • Monitor ToT programs • Facilitate MoUs with international training providers and Sector Skill Councils (SSCs) • Setup quality standards for training and support strategy formulation • Development of linkages with various stakeholders in the skill sector including the industry, various assessment, and certification agencies. • Management of award of grants / scholarships budgeted under the program
4.	National Council for Vocational Training (NCVT)	High	Low	<ul style="list-style-type: none"> • Affiliation and Accreditation • Assessment and certification of the trainees
5.	Regulatory agencies such as OSPCB, CRZMA, Labor Commissioner, Civic Authorities, Water Resource Department	High	High	<ul style="list-style-type: none"> • Granting permission/licenses/approvals for construction and operation phase.
6.	Industry	High	Low	<ul style="list-style-type: none"> • Providing opportunities for recruiting successful candidates • Support to course curriculum realignment as per the demand • Providing apprenticeship and internships to candidates
7.	SSCs	High	Low	<ul style="list-style-type: none"> • Assessment and certification of the trainees through Assessment Agencies

B. Stakeholder Consultations:

130. The summary of specific consultations for the establishment of PEC is given in **Table-24**. The photographs and attendance sheet of consultations for PEC are given in **Appendix 7**.

Table-24: Summary of Consultations with Stakeholders for Establishment of Precision Engineering Centre

Date of meeting	Person consulted/Stakeholders	Key points discussed
16 June 2021	All stakeholders (OSDA PMU Officials, ITI faculty, Odisha Industrial Infrastructure Development Corporation officials, Industrial Area Workers, Locals) No. of Participants -10 Males -10 Female 0	<ul style="list-style-type: none"> • All the participants welcomed the establishment of Precision Engineering Centre at Mancheswar. • One participant working in local industry suggested that in the Precision Engineering Centre, courses pertaining to metal industries particularly related to steel plants should be taken up so that employment is in major industries. The OSDA officials replied that suggestion has been noted and will be considered at the time of finalization of courses. • The General Manager Projects OSDA requested the participants to provide suggestions for environment protection during construction and operations of PEC. One participant from Odisha Industrial Infrastructure Development Corporation replied that effective drainage, wastewater collection and treatment and solid waste management should be taken care during construction and operation phases. The General Manager project replied that for waste water collection and disposal septic tank of adequate size planned, The drainage of proposed PEC building complex planned based on rainfall and local topography. During construction, it will be implemented. The municipal solid waste during operation phase will be integrated with the Bhubaneswar City waste disposal system. Any waste generated from operation of PEC machinery from labs will be treated as per law and characteristics of waste. For construction phase to take care of overall environmental management, EMP prepared will be implemented and monitored. • One local participant suggested that tree plantation should be taken up and a proper access road to PEC should be constructed to facilitate movement. The OSDA officials replied that access roads to PEC will be strengthened in consultation with Odisha Industrial Infrastructure Development Corporation as PEC site is in an Industrial area. • One participant enquired about the implementation schedule of PEC sub-project. The General Manager Projects OSDA replied that design is in progress and project bidding is expected to be completed by December end and construction will be started early 2021 so target is to finish construction by December 2022. • One participant suggested that awareness about PEC courses availability should be taken up among the students at ITIs, polytechnic institutes, Engineering Colleges and industrial Centers of State so that enrolment is fast and PEC is popular. The OSDA officials replied that suggestion has been noted and publicity of PEC will be planned at relevant educational institutes and industrial centers. • One participant suggested that PEC should have Persons with Disability (PWD) friendly access and movement. The OSDA officials replied that building design in PWD friendly and will provide hindrance free access and movement to PWDs.

Date of meeting	Person consulted/Stakeholders	Key points discussed

C. Future Consultations and Information Disclosure

131. To ensure continued public and stakeholder participation in the subproject life cycle, periodic consultations and focus group discussion should be continued. A grievance redressal committee has been formed at WSC and also at OSDA PMU Level to register grievances of the people regarding technical, social and environmental issues. Same Committee will be responsible for grievance redressal related to the Precision Engineering Centre also. Further, to ensure an effective disclosure of this Precision Engineering Centre subproject of OSDP to the stakeholders and the communities in the vicinity of site, a project awareness campaign will be carried out and consultations will be taken up in future also. These consultations and awareness programs will be documented in semi-annual environmental monitoring reports to be submitted to ADB.

Information Disclosure

132. Electronic version of this Addendum to the original IEE will be placed in the official websites of the OSDA and the website of ADB after approval of the documents by the GoO and ADB. On demand, any person seeking information can obtain a hard copy of the complete Addendum to the original IEE document by paying cost of photocopy from the office of the PMU and site office of Precision Engineering Centre, on a written request.

133. The PMU will issue notification on the disclosure mechanism on a notice board at Precision Engineering Centre subproject site ahead of the initiation of civil works for Precision Engineering Centre establishment. This notification will provide brief project details.

X. GRIEVANCE REDRESSAL MECHANISM

134. ADB's SPS 2009 requires the executing agency/implementing agency to establish a mechanism in order to receive and facilitate resolution of people's concerns, complaints and grievances about the project's environmental performance. The mechanism shall use an understandable and transparent process that addresses the affected people's concerns and complaints promptly.

135. The affected person(s)/aggrieved party can give their grievance verbally or in written to the local site office of Precision Engineering Centre. Grievances of affected person will first be brought to the attention of the construction manager, who can resolve the issue at the site level. If the matter is not solved within 7 days period by the site in charge/project manager of contractor, it will be brought to the Grievance Redress Committee constituted at subproject (Precision Engineering Centre) site level. This GRC shall discuss the issue in its monthly meeting and resolve the issues within one month of time after receiving the grievance. If the matter is not resolved by GRC at site level within stipulated time, it shall be referred to GRC at OSDA corporate office level by the Deputy Director Administration of OSDA, who will be member of GRC at Precision Engineering Centre site level.

136. GRC at OSDA corporate office shall discuss the issue and try to resolve it and inform the site in charge/construction manager. If the matter is not resolved by the GRC at corporate level within one month of time, it will be referred to the project steering committee at Government of Odisha level. This committee will resolve the complaint within one month time and will inform OSDA CEO who in turn will inform site in charge or complainant.

137. It may be mentioned that the aggrieved person/party can bring the matter to the Court of Law any time after filing the complaint either at site level or PMU level. The PIU and sub-project site office shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date these were affected and final outcome. For this a complaint register will be maintained at Precision Engineering Centre site office. The cost for functioning of Grievance Redress Mechanism will be accounted for in project cost as part of project cost. .

138. Further, person(s) / aggrieved party who are, or may be, adversely affected by the sub-project may submit complaints to ADB's Accountability Mechanism. The accountability mechanism provides an independent forum and process whereby people can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected person(s) / aggrieved party should first make a good faith effort to solve their problems by working with the ADB South Asia operations department including the India Resident Mission.

A. Composition and functions of GRC

139. Subproject Site Level- Grievance Redress Committee (GRC- Site Level) – This committee will comprise of Construction Manager of Contractor, Deputy Director Administration OSDA, Odisha Industrial Infrastructure Development Corporation site In charge and Health, Safety and Environment Officer of contractor. The GRC at site level will be headed by the Deputy Director Administration, OSDA. It will meet at least once a month. The agenda of the meeting will be circulated to all the members and the affected persons/aggrieved party along with venue, date and time at least a week prior to the meeting. The matters shall remain with GRC at site level for one month. If the grievance is

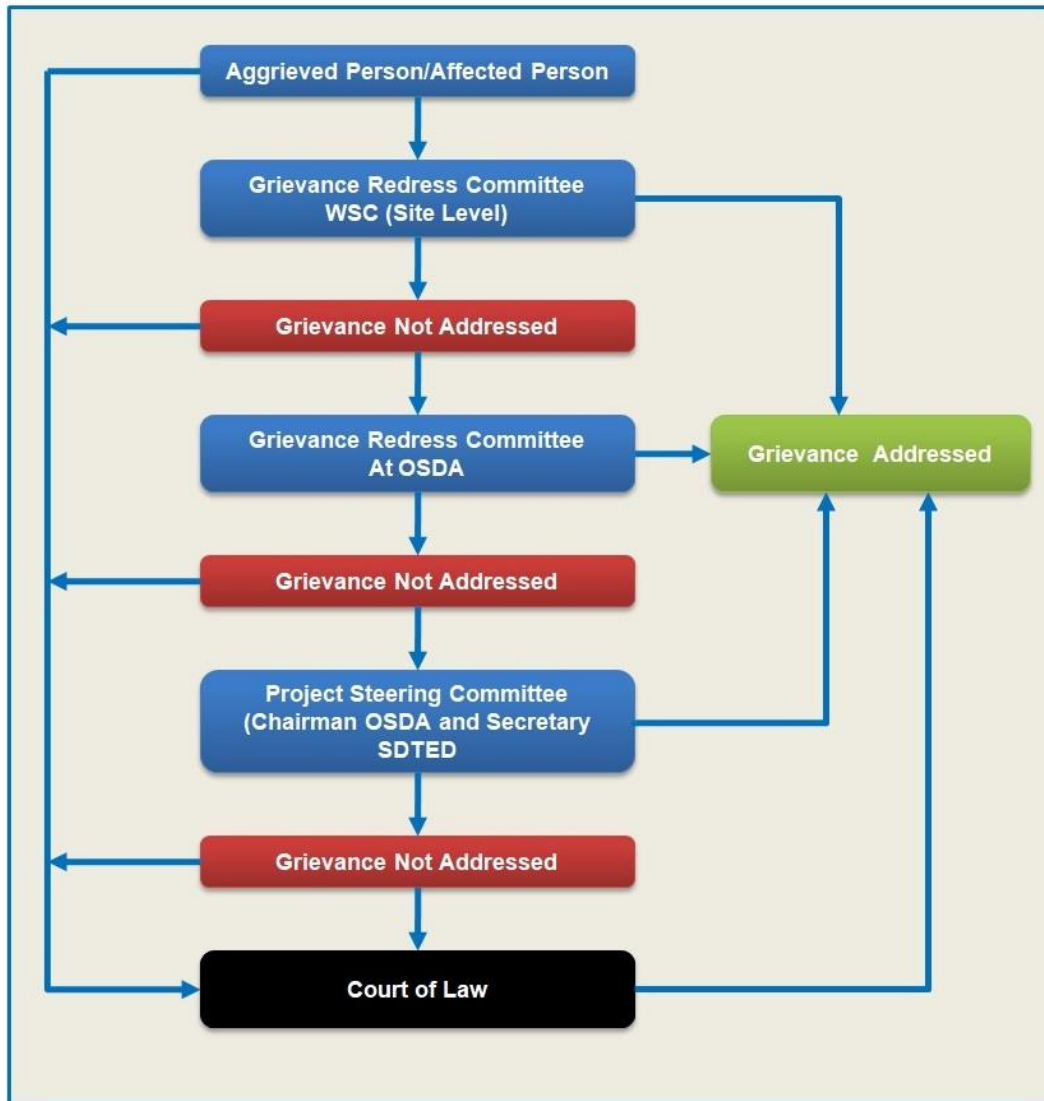
not resolved within this time period, then it will be referred to GRC at OSDA corporate office level.

140. **GRC at OSDA Corporate Office-** There shall be one GRC in OSDA Corporate office. The matters not resolved by the GRC at subproject site office within one month shall come under GRC at Corporate Office. GRC at Corporate office will include the Chief Executive Officer OSDA, safeguard specialists (Environmental and Social), General Manager Project and General Manager Finance. The Committee shall be headed by the OSDA CEO. This committee shall look into the matters, which are referred to and not resolved by GRC at subproject site level and will resolve the complaint within one month period. If the matter is not resolved by the GRC at Corporate Office level within one month of time, then the aggrieved person or party can bring the matter to Project Steering Committee, which is in-charge of the overall OSDP project. In case grievance is not readdressed by the Steering Committee within one month, then complainant can reach to the court of law.

141. **Approach to GRC-** Affected person or aggrieved party can approach the GRC for redress of his/their grievances through any of the following modes:

- Web based: A separate corner will be developed at the OSDA website so that public and affected person can register their complaints in the online column.
- Telecom based: A telephone number will be displayed at the web site of OSDA and at the Precision Engineering Centre site so that general public can register their complaint through telephone and mobile phone to the site office and Corporate Office. One complaint register will also be maintained at Precision Engineering Centre site office. The grievance redress mechanism for the OSDP for safeguards related issues has been shown below in **Figure-6**:

Figure-6: Grievance Redress Mechanism (OSDP Project)



Note:

SDTED: Skill Development and Technical Education Department, Government of Odisha
OSDA: Odisha Skill Development Authority

B. Processing of Complaint

142. Different problems will be addressed in different manners depending on the type of grievance; however the generic approach to resolution of all grievances will include the following steps:
- The complaint received will be reviewed and screened for the factual details and will be considered for resolution at the Precision Engineering Centre site office level. The grievance will be assessed to determine if the issues rose in the complaint fall within the mandate of the grievance mechanism and the complainants have standing.

- If the complainant requires intervention then it will be considered for resolution otherwise it will be rejected and the same will be communicated to the concerned Complainant.
- The grievance will be evaluated to clarify the issues and concerns raised in the complaint, to gather information on how others see the situation, and to identify whether and how the issues might be resolved.
- All options for solving problems will be explored, with or without the assistance of independent and third parties:
 - Internal decision-making processes, whereby issues are handled by OSDA officials, using stated standards and criteria, to develop and propose a company response to the grievance and to allow for an appeals process.
 - Joint problem solving, in which OSDA officials and the complainant engage in direct dialogue.
 - Third-party decision making to offer a solution when a voluntary agreement is not possible.
- Grievance tracking, monitoring, and reporting to the community will be undertaken as soon as a mutual consent is arrived at.

C. Communication of Mechanism to Stakeholders

143. Formal information of Grievance Redressal Committee or GRM will be communicated to the respective stakeholders and nominated members of the committee. This communication can be made through official notification of OSDA CEO and also through the display board at Precision Engineering Centre site Office. At the display board name of site In charge, phone number, email address etc. will be clearly mentioned.

D. Meeting of Grievance Redressal Committee

144. The site committee will meet at least once every fortnight in the first 6 months of implementation, and thereafter once, every month. At every Grievance Redressal Committee meeting the issues raised in the last meeting and report on action taken, will be summarized. Issues that cannot be resolved at the GRC would be referred / directed to next designated levels. The Corporate Committee will convene their meetings as and when required.

E. Closing of Grievance

145. The complaints lodged in the GRC Register will be resolved amicably by the above mechanism and closed by informing to the complainant directly with closing signatures on the GRC Register or by sending registered post to the complainant, in case he is not approachable. The resolution shall be informed to the local civic body office.

F. Information disclosure

146. The reviewed and approved Addendum to the IEE report for Precision Engineering Centre will be disclosed on ADB site.

147. The Addendum to the IEE report will also be translated in local language and disclosed at OSDA web site, local municipal office, and Precision Engineering Centre site.

148. The IA will also submit biannual EMR to ADB on the progress of implementation of the EMP. The ADB will review, approve, and disclose the EMR on ADB web site.

XI. FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

149. The proposed OSDP will support the GoO in increasing the employment and productivity of its working age population by strengthening the capacity to supply high quality, market-responsive skills training in line with the growth priorities and strategies of the state. The establishment of Precision Engineering Centre will enhance opportunities for the youth in the field of Precision Engineering, which is one of the most potential engineering trade. The state of art laboratories and equipment will further strengthen the quality of training. Based on the site visits and environmental investigations carried out during the preparation of Addendum to the IEE report, the establishment of Precision Engineering Centre equipped with laboratories and equipment, it has been concluded that category of OSDP remains to be “B”. This Addendum to the Initial Environment Examination report including environmental management plan has been prepared based on latest details of Precision Engineering Centre components.

150. The Addendum to the initial environmental examination process described in the earlier sections of this report assessed the environmental impacts of additional component of Precision Engineering Centre, proposed under the OSDP. The potential negative impacts were identified related to design, location, construction and operations. The negative impacts due to the design and location are assessed to be minimal. The potential adverse environmental impacts of the proposed Precision Engineering Centre are mainly related to the construction period which can be minimized by the proposed mitigating measures and environmentally sound engineering and construction practices. The impacts ascertained during the Operation stage were mainly due to the waste generation during the functioning of laboratories during the Practical and demo classes for the students. However, due to the well-defined SOPs for the functioning of Equipment and Machinery, and very less quantity of waste generation which would be standard and due to efficient and minimal operational and maintenance activities, there are no major negative impacts of operation either.

151. The mitigation measures have been developed to reduce all negative impacts to acceptable levels. As stated above, most impacts are due to construction works involved in the establishment of Precision Engineering Centre. The main impacts identified are: generation of dust and noise from construction activities; impacts due to disposal of construction waste; disturbance and inconvenience to local people and public safety during construction works. These impacts are mostly temporary in nature and can be effectively avoided or mitigated by observing appropriate mitigation measures. It is recommended to ensure preparation of a construction site management plan incorporating the suggested mitigation measures for ensuring site specific safeguard measures. An environmental monitoring plan has been developed to assess the environmental performance of subproject implementation. The mitigation measures proposed in the management plan will be incorporated in project design and implemented as part of the Precision Engineering Centre development.

152. This Addendum to the initial environmental examination has been prepared to identify and assess negative impacts due to the component of Precision Engineering Centre. All components proposed under OSDP including the Precision Engineering Centre establishment involve straightforward construction works and equipment installation and simple operation. Not many environmental issues were noticed during this addendum preparation. In most cases, environmental issues identified are typical for the type of construction components, and a range of proven mitigation strategies exist to address them. This Addendum to the initial environmental examination has assessed all potential environmental impacts associated with the additional component of Precision Engineering Centre establishment and equipment installation in the laboratories along with the Operation phase impacts of functioning of few machinery/ equipment's. There are no impacts, which are significant or complex or which needs an in depth study to assess the impact or to

develop the mitigation measures. The environmental impacts identified are manageable, and the EA will implement the mitigation measures as stated in the updated IEE. The OSDP therefore does not warrant environmental impact assessment (EIA).

APPENDIX-1: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

- (i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:	INDIA / Odisha Skill Development Project (OSDP)
Sector Division:	SAHS

Screening Questions	Yes	No	Remarks
A. Project Sitting ■ Is the Project area Adjacent to or within any of the following environmentally sensitive areas?			OSDP will set-up a Precision Engineering Centre at Mancheswar Industrial Estate area of Bhubaneswar city. In this building skill development courses for Precision Engineering trade will be carried out. None of the sub project components are located within core, buffer and eco-sensitive zones of protected areas and within 100 meters from the boundary of protected archaeological monuments. If any subproject is taken up in future, it will not be located in the mentioned distances of environmentally sensitive areas and archaeological monuments.
■ Cultural heritage site		√	
■ Legally protected Area (core zone or buffer zone)		√	
■ Wetland		√	
■ Mangrove		√	
■ Estuarine		√	
■ Special area for protecting biodiversity		√	
B. Potential Environmental Impacts Will the Project cause...			

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> Impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources? 		√	The Precision Engineering Centre will be established on a vacant plot located within the municipal limits of Bhubaneswar city in an Industrial area so it will not cause any impairment of historical /cultural areas or disfiguration of landscape and damage to physical resources.
<ul style="list-style-type: none"> Disturbance to precious ecology (e.g. sensitive or protected areas)? 		√	The component of Precision Engineering Centre will not cause any disturbance to precious ecology.
<ul style="list-style-type: none"> Alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site? 		√	Since all civil works related construction activities will be taken up on a vacant plot in industrial area of Bhubaneswar city, alteration of surface water hydrology, increased sediment in streams and soil erosion is not envisaged.
<ul style="list-style-type: none"> Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction? 		√	Preferably local labour will be hired. Camp if required to be located within the vacant site for Precision Engineering Centre, will have adequate sanitation facilities. So, no issue of any surface water getting affected.
<ul style="list-style-type: none"> Increased air pollution due to project construction and operation? 	√		The construction activities for Precision Engineering Centre are expected to generate dust on account of excavation and movement of construction material; and minor emissions of gaseous pollutants such as SO ₂ , and NO _x due to construction machinery. These will be mitigated through appropriate dust suppression methods and pollution control equipment fitted to machinery.
<ul style="list-style-type: none"> Noise and vibration due to project construction or operation? 	√		The construction activities and the operation of construction machinery are expected to generate noise. No piling work or heavy equipment is envisaged to be used that could cause vibrations. However, adequate mitigation arrangements will be made to control noise levels within regulatory norms. During operation phase of the Precision Engineering Centre, noise and vibration issues will not be there as equipment and machinery will be on properly constructed foundations and inside building (Workshops/laboratories)

Odisha Skill Development Project (OSDP)
Initial Environment Examination Report (Addendum)

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> ▪ Involuntary resettlement of people? (Physical displacement and/or economic displacement) 		√	Precision Engineering Centre is being developed in the GoO owned land which is encumbrance free, so there is no question of involuntary resettlement.
<ul style="list-style-type: none"> ▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups? 		√	The activities of Precision Engineering Centre, during construction and operation will be confined within the vacant plot which is owned by the GoO. The activities of Precision Engineering Centre, during operation will be confined within the new constructed building. so, no question of impacts on poor, children, Indigenous Peoples and Vulnerable groups
<ul style="list-style-type: none"> ▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STD's and HIV/AIDS) from workers to local populations? 	√		Adequate arrangements will be made for proper disposal of sanitary waste. Awareness camps and medical check-up of labour will be carried out to control possible transmission of communicable diseases.
<ul style="list-style-type: none"> ▪ Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents? 	√		Suitable arrangements will be made to avoid creation of temporary breeding habitats of vectors.
<ul style="list-style-type: none"> ▪ Social conflicts if workers from other regions or countries are hired? 		√	During Construction of Precision Engineering Centre, preference will be given to local construction labour. In case workers from other regions are hired, requisite awareness programs will be held for such workers to avoid social conflicts.
<ul style="list-style-type: none"> ▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? 	√		No population influx is envisaged during construction. During operation, about 200-250 students will be trained per annum. For these students, adequate hostel facilities are being planned. Adequate arrangements for water supply and sanitation systems at will be made.
<ul style="list-style-type: none"> ▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation? 	√		Adequate provisions will be included in the relevant contract and operation procedure related documents to address occupational health and safety hazards during project construction and operation.

Odisha Skill Development Project (OSDP)
Initial Environment Examination Report (Addendum)

Screening Questions	Yes	No	Remarks
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	√		Residential areas and roads exist near proposed site for Precision Engineering Centre. Adequate provisions will be included in the relevant contract and operation procedure related documents to address these community health and safety aspects.
▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	√		Residential areas and roads exist around the proposed site for Precision Engineering Centre. Adequate provisions will be included in the relevant contract and operation procedure related documents to address these aspects.
▪ Generation of solid waste and/or hazardous waste?	√		The solid and hazardous waste, generated during construction and operation will be managed as per the regulatory requirements.
▪ Use of chemicals?	√		Very limited use of chemicals is envisaged. Suitable mitigation arrangements will be made as per the regulatory requirements.
▪ Generation of wastewater during construction or operation?	√		Suitable arrangements will be made to manage the wastewater generated during construction activities and operation of these facilities.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: India /Odisha Skill Development Project
Sector: Social
Subsector: Skills
Division/Department: SAHS

	Screening Questions	Score	Remarks ¹²
Location and Design of project	Is sitting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	The proposed OSDP component (Precision Engineering Centre is in Industrial area of Bhubaneswar. The location is not prone to floods, storms or landslides.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?	0	Not Applicable
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	Weather conditions at proposed Precision Engineering Centre in Bhubaneswar do not demand usage of any specific construction material to counter act weather phenomenon.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	No, weather conditions at Precision Engineering Centre in Bhubaneswar which require specific scheduling for maintenance.
Performance of project outputs	Would weather/climate conditions and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Not Applicable

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

¹² If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the sitting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Responses when added that provide a score of 0 will be considered low_risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): Low Risk

Other Comments: None

Prepared by:

APPENDIX-2: MOEFCC NOTIFICATION ON EXEMPTION OF ENVIRONMENTAL CLEARANCE FOR EDUCATIONAL INSTITUTIONS

[भाग II-खण्ड 3(ii)]

भारत का राजपत्र : असाधारण

3

MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 22nd December, 2014

S.O. 3252(E).—Whereas, a draft notification further to amend the notification number S.O 1555(E), dated the 14th September, 2006 (hereinafter referred to as the principal notification), was published, as required under sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) vide number S.O. 2319, (E) dated the 11th September, 2014 (hereinafter referred to as the said notification), inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

And whereas, copies of the said notification were made available to the public on 11th September, 2014;

And whereas, no objections or suggestions have been received in response to the said notification within the specified period of sixty days;

Now, therefore, in exercise of the powers conferred by Sub-section (1) and clause (v) of Sub-section (2) of Section 3 of the said Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:—

In the principal notification, in the Schedule, under Column (1), for item 8 relating to Building/Construction Projects/Area Development Projects and Townships and sub-items 8 (a) and 8 (b) and the entries relating thereto, specified there under, the following item, sub-items and entries shall be substituted, namely:—

(1)	(2)	(3)	(4)	(5)
"8"				Building or Construction projects or Area Development projects and Townships
8 (a)	Building and Construction projects		>20000 sq.mtrs and < 1,50,000 sq. mtrs. of built up area	The term "built up area" for the purpose of this notification the built up or covered area on all floors put together, including its basement and other service areas, which are proposed in the building or construction projects. Note 1. — The projects or activities shall not include industrial shed, school, college, hostel for educational institution, but such buildings shall ensure sustainable environmental management, solid and liquid waste management, rain water harvesting and may use recycled materials such as fly ash bricks. Note 2. — "General Conditions" shall not apply.
8	Townships and Area Development Projects		Covering an area of > 50 ha and or built up area > 1,50,000 sq. mtrs	A project of Township and Area Development Projects covered under this item shall require an Environment Assessment report and be appraised as Category 'B1' Project. Note. — "General Conditions" shall not apply.

[F. No. 19-2/2013-IA-III]

MANOJ KUMAR SINGH, Jt. Secy.

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* Notification Number S.O. 1533(E), dated the 14th September, 2006 and was subsequently amended as follows:—

1. S.O. 1737 (E), dated the 11th October, 2007;
2. S.O. 3067 (E), dated the 1st December, 2009;
3. S.O. 695 (E), dated the 4th April, 2011;
4. S.O. 2896 (E), dated the 13th December, 2012;
5. S.O. 674(E), dated the 13th March, 2013;
6. S.O. 2559 (E), dated the 22nd August, 2013 ;
7. S. O. 2731 (E), dated the 9th September, 2013;
8. S. O. 562(E), dated the 26th February 2014; and
9. S. O. 1599(E), dated the 25th June, 2014.

F. No. 19-2/2013-IA-III
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Aliganj, Jor Bagh Raod
New Delhi-110 003

Dated: 09th June, 2015

OFFICE MEMORANDUM

Sub: Clarification regarding Gazette Notification No. S.O. 3252 (E) dated 22.12.2014 on applicability of Environment Clearance-reg.

Vide Gazette Notification No. S.O. 3252 (E) dated 22.12.2014, the Ministry of Environment, Forest and Climate Change has exempted the School, College and Hostel for educational institution from obtaining prior Environment Clearance under the provisions of the EIA Notification, 2006 subject to Sustainable Environmental Management.

The Ministry is in receipt of representation from various educational institutions regarding issuing clarification on status of universities, and other educational institutions. The matter has been further examined in the Ministry and it is clarified that the Notification No. S.O. 3252 (E) dated 22.12.2014 provides exemption to buildings of educational institutions including universities from obtaining prior Environment Clearance under the provisions of the EIA Notification, 2006 subject to sustainable environmental Management. In case of medical universities/institutes the component of Hospitals will continue to require prior Environment Clearance.

The Guidelines to be followed for building projects to ensure sustainable environmental management in pursuance of Notification No. S.O.3252 (E) of 22nd December 2014 under EIA Notification 2006 are at Annexure-I.

This issues with the approval of the Competent Authority.

Manoj
9.6.15
(Manoj Kumar Singh)
Joint Secretary

Copy to:-

1. All the officers of IA Division
2. The Chairperson/Member Secretaries of all the SEIAAs/SEACs.
3. The Chairman of all the Expert Appraisal Committees
4. The Chairman, CPCB
5. The Chairpersons/Member Secretaries of all SPCBs/UTPCCs.
6. IT Consultant, MoEFCC for uploading into the website.

Copy for information:

1. PS to MOS (Independent Charge).
2. PPS to Secretary (EF&CC).
3. All Divisional Head.
4. Website, MoEF&CC
5. Guard File.

ANNEXURE-I

**GUIDELINES TO BE FOLLOWED FOR BUILDING AND CONSTRUCTION PROJECTS
TO ENSURE SUSTAINABLE ENVIRONMENTAL MANAGEMENT
IN PURSUANCE OF NOTIFICATION No. S.O. 3252 (E) OF 22nd DECEMBER, 2014
UNDER ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION, 2006**

[INDUSTRIAL SHED AND EDUCATIONAL INSTITUTIONS]

The Notification dated 22nd December, 2014 has taken out the industrial shed*, school, college, hostel for educational institution from the requirement of prior Environment Clearance (EC) under EIA Notification, 2006 and stipulated that such buildings shall ensure sustainable environmental management, solid and liquid waste management, rain water harvesting and may use recycled materials such as fly ash bricks. These Guidelines will be applicable to all buildings and constructions which come under the ambit of Notification No. S.O. (E) 3252 of 22nd. December 2014. To ensure sustainable environment management these guidelines as suited will be applicable on the projects under Item 8 (a) of EIA Notification in addition to the conditions stipulated in the EC.

Land, Air, Noise, Water, Energy, Biological, Socio-economic, and Solid & other Waste Management are the main environment facets to be considered in relation to pre, during & post building construction, therefore, it is necessary to ascertain the baseline data of these environmental facets.

The project proponent should file the information about description of project as per points described below prior to start of the project. Information pertaining to compliance on other points be filed at six monthly interval to the respective State Pollution Control Board and the Regional Office of the Ministry of Environment, Forests and Climate Change.

The compliance of the following will be ensured by the respective State Pollution Control Board before giving 'Consent-to-Operate' to industries and by the Local Urban Bodies and the Development Authorities while giving the 'Occupancy Certificate' to the buildings and constructions. These Certificates should be submitted by the above authorities to the Regional Office of MoEFCC. Ministry of Environment, Forest and Climate Change can assess/evaluate/monitor the compliance of conditions enumerated in the Guidelines through verification by Regional Offices or deputed organisations / person.

S. No.	Environmental Parameters	Implementation and monitoring parameters to be included in local by-laws.
a.	Pre-requisites	Brief description of the project 01.Name of the Project, Survey number, Village, Taluka, District, State to be mentioned with Google Earth Image and GPS Co-ordinates of the plot to be submitted. 02.Location & distance from nearby landmark places / services to be mentioned. 03.Total Built-up area (FSI and Non- FSI) should be mentioned with detailed calculations certified by local planning and sanctioning authority. 04.Form 1, Form 1A and Consolidated statement as per Environment Notification dated September 14, 2006 to be submitted to local planning and sanctioning authority, Regional Office, MoEFCC and SPCB
b.	Environment Impacts on Project Land	05.The building layout, set-back/side margin, podium, basement ventilation etc. is prepared based on local building bye-laws and is approved by local competent authorities. The Project Proponent shall obtain all necessary clearance/ permission from all relevant agencies including Town Planning Authority before commencing the work. 06.Provisional fire NOC to be obtained from local CFO (Chief Fire Officer) 07. "Consent-to-Establish and Consent-to-Operate" shall be obtained as required from State Pollution Control Board as provided in the Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974 08.The project proponent shall put in place a credible enforcement mechanism for compliance of energy conservation measures with its allottees, as projected, in perpetuity. This would be monitored by the designated Energy Conservation/ efficiency Authority in the State. 09.Soil and ground water samples will be tested to ascertain that there is no

		threat to ground water quality by leaching of heavy metals and other toxic contaminants.
		10. Top fertile soil to be preserved and to be later used in landscape.
		11. The excavation/demolition debris must be disposed off in designated landfill areas or to be used within site for levelling purpose. Under no circumstance, the debris will be disposed in river bed/lakes etc.
		12. Undertaking to be given by project proponent that occupancy will be given only after drainage and water connections are in place.
		13. Dust/smoke prevention measures such as wheel washing, water sprinkler, screening, barricading and debris chute must be installed.
		14. This should comply with the provisions of eco-sensitive zone regulations, coastal zone regulations, heritage areas (identified in the master plan or issued separately as specific guidelines), water body zones (in such zones, no construction is permitted in the water-spread and buffer belt of 30 m minimum around the FTL [full tank level]), various hazard prone area regulations, and others if the site falls under any such area.
		15. The site planning should take into account heat island effect, size and density of the built-up areas cause heat island effect, wherein higher air temperatures are created in the dense urban areas as against the low-rise surrounding built-up areas. The solar access in the morphology of clusters can be understood in terms of utilization of direct (and not reflected or diffused) solar radiation, mainly for day lighting and heat gain. This defines the minimal distances between the buildings and the relations between built-up volume and open spaces.
		16. The proportion of open spaces and built-up edges should be designed such that it ensures winter solar access and summer ventilation.
c.	Water	17. Proponent shall obtain permission for ground water withdrawal from State Ground Water Authority.
		18. Storm water control and its re-use as per CGWB and BIS standards for various applications.
		19. The natural flow of existing storm water channel should not be altered or diverted.
		20. Keeping in view the use of large quantities of water in curing, measures for reducing water demand during construction should be followed. Curing water should be sprayed on concrete structures; free flow of water should not be allowed for curing. After liberal curing on the first day, all concrete structures should be painted with curing chemical to save water. Concrete structures should be covered with thick cloth/gunny bags and then water should be sprayed on them. This would avoid water rebound and will ensure sustained and complete curing. Ponds should be made using cement and sand mortar to avoid water flowing away from the flat surface while curing.
		21. The developer should ensure groundwater and municipal water meet the water quality norms as prescribed in the Indian Standards for various applications (Indian Standards for drinking [IS 10500-1991], irrigation applications [IS 11624-1986]).
		22. The use of potable water during construction should be minimized.
		23. Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.
		24. Source of water to be identified.
		25. Water treatment measures such as filtration, softeners, RO etc should be implemented.
		26. Low flow fixtures and sensors to be used to promote water conservation.
		27. Water meters to be installed to monitor consumption of water.
		28. Water balance table/chart should be prepared.
d.	Waste Water Treatment	29. Sewage treatment plant of capacity capable of treating 100% waste water to be installed on site.
		30. Tertiary treatment such as dual media filter, activated carbon filter and ozonization/ chlorination to be provided so that the treated water

		characteristics are as per Central Pollution Control Board (CPCB) norms.
		31. If STP and pump room are installed in basement, adequate ventilation as per NBC air changes norms should be provided.
		32. Treated waste water to be recycled for flushing and gardening.
e.	Drainage Pattern	<p>33. Excess treated water disposal plan to be submitted.</p> <p>34. Total paved area of the site under parking, roads, paths or any other use should not exceed 25% of the site area or net imperviousness of the site not to exceed the imperviousness factor as prescribed by the NBC 2005 (BIS 2005b), whichever is more stringent.</p> <p>35. The final disposal point for excess treated water discharge will be municipal sewer for areas where sewerage network is present.</p> <p>36. In areas where sewerage network is absent, the excess treated water can be used for agriculture or can be disposed off as per CPCB rules.</p> <p>37. Storm water disposal plan to be submitted.</p> <p>38. The final disposal point for storm water will be municipal storm drain for areas where storm water network is present.</p> <p>39. In areas where storm water network is absent, the storm water surface runoff can be disposed off in nearby natural water streams/ nallas.</p>
f.	Ground Water	<p>40. Hydro-geological survey for ground water analysis shall be submitted.</p> <p>41. Aquifer capacity and Ground water yield shall be determined.</p> <p>42. Rain water harvesting plan shall be submitted indicating the number of recharge pits and bores and total rain water to be harvested.</p> <p>43. Rain water to be harvested and as a safety precaution, rainwater on-line filters be provided as per NBC norms.</p>
g.	Solid Waste Management	<p>A) During construction phase:</p> <p>44. Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority. The Rules on the Solid Waste Management including Construction Waste issued by the MoEFCC as amended will be applicable.</p> <p>45. Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water.</p> <p>46. Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approvals of the State Pollution Control Board.</p> <p>47. Miscellaneous site debris such as broken tiles etc shall be used on site for leveling /backfilling purpose.</p> <p>48. Packaged STP /mobile toilets shall be provided for labour camp.</p> <p>49. Polymer bags used for cement and gypsum shall be handed over to authorized recyclers.</p> <p>50. Cardboard boxes and other packaging material will be handed over to authorized recyclers.</p> <p>B) Post construction phase:</p> <p>51. Organic waste compostor (OWC) or Vermiculture pits shall be installed on site for biodegradable waste treatment (capacity calculated at 0.3kg/tenement/day) The manure generated shall be used for landscaping.</p> <p>52. The non-biodegradable waste or e-waste shall be handed over to authorized recyclers.</p> <p>53. STP sludge shall be removed using filter press or centrifuge mechanism. The dried sludge cakes shall be used as manure in landscaping.</p> <p>54. Minimize waste generation, streamline waste segregation, storage, and</p>

h. Air Quality and Noise Levels.	<p>disposal; and promote resource recovery from waste.</p> <p>55. Resource recovery from waste: Employ resource recovery systems for biodegradable waste as per the Solid Waste Management and Handling Rules, 2000 of the MoEFCC. Make arrangements for recycling of waste through local dealers.</p> <p>56. Use of covering sheets should be done for trucks to prevent dust dispersion from the trucks and washing of tyres when trucks with soil / debris coming on road.</p> <p>57. Hazardous Waste Management: Products, such as paints, cleaners, oils, batteries, and pesticides that contain potentially hazardous ingredients require special care when being disposed. Improper disposal of household hazardous wastes can include pouring them down the drain, on the ground, into storm sewers, or in some cases putting them out with the trash.</p> <p>The hazardous wastes from construction and demolition activities are centering oil, formwork oil, tar and tar products (bitumen, felt, waterproofing compounds, etc.), wood dust from treated wood, lead containing products, chemical admixtures, sealants, adhesive solvents, Explosives and related products and equipment used in excavation, acrylics, and silica, etc.</p> <p>A) During construction phase:</p> <p>58. The diesel required for operating DG sets shall be stored in underground tanks and clearance from Chief Controller of Explosives shall be taken, as applicable.</p> <p>59. Ambient noise levels should conform to residential standards both during day and night as per Noise Pollution (Control and Regulation) Rules, 2000. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/ SPCB.</p> <p>60. Burning of waste to be banned.</p> <p>61. The construction site DG to be maintained regularly so that the smoke emission and noise levels are as per permissible norms.</p> <p>62. Regular P.U.C check for all construction machinery coming on site be done.</p> <p>63. Noise cancellation and insulation devices such as mufflers, barricades etc to be used to avoid noise propagation to adjoining areas.</p> <p>B) Post construction phase:</p> <p>64. DG to be regularly maintained so that the smoke emission and noise levels are as per permissible norms. It shall be at least 6 meters away from the boundary.</p> <p>65. Air quality monitoring to be done quarterly.</p> <p>66. STP and water pumps, air blowers etc should be installed with noise cancellation devices or suitable acoustical enclosures to be given so that the noise levels as per NBC norms are maintained.</p> <p>C) During Construction & Operation</p> <p>67. The provisions of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder be complied for control of noise pollution during construction and operation.</p> <p>68. Setting up the barriers: National Building Code 2005 suggests that design solutions such as barrier blocks should be used to reduce external LA10 noise levels to at least 60-70 dB (A) at any point 1.0 m from any inward looking façade. Green belts and landscaping could act as an effective means to control noise pollution. In case of railway tracks, a minimum distance of 50m to 70m may be provided between the buildings and the tracks.</p> <p>69. Appropriate processes and material be used to encourage reduction in carbon foot print.</p> <p>70. Use of glass be reduced by up-to 40% to reduce the electricity consumption and load on air-conditioning. If necessary, use high quality double glass with special reflective coating in windows.</p> <p>71. Solar water heater to be provided adequately.</p>
i. Energy	

72. Common area lighting should be Solar / LED.

73. Install energy meters to monitor overall consumption, and timer-switch for all common area lighting, and other consumption of measurable energy.

74. Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27th August, 2003 and 3rd November, 2009.

75. Wherever possible recycled materials having low embodied energy be used.

76. Use of light coloured, reflective roofs having an SRI (solar reflectance index) of 50% or more should be promoted. The dark coloured, traditional roofing finishes have SRI varying from 5% to 20%.

77. Optimize use of energy systems in buildings that should maintain a specified indoor environment conducive to the functional requirements of the building by following mandatory compliance measures (for all applicable buildings) as recommended in the Energy Conservation Building Code (ECBC) 2007 of the Bureau of Energy Efficiency, Government of India. The energy systems include air conditioning systems, indoor lighting systems, water heaters, air heaters, and air circulation devices.

78. Use the concept of passive solar design of buildings using architectural design approaches that minimize energy consumption in buildings by integrating conventional energy-efficient devices, such as mechanical and electrical pumps, fans, lighting fixtures, and other equipment, with the passive design elements, such as building orientation, landscaping, efficient building envelope, appropriate fenestration, increased day lighting design, and thermal mass.

79. The building should be oriented optimally based on Sun-path and engineering analysis to curtail excessive solar radiations.

80. Lighting systems should comply with the ECBC 2007 and applicable to interior spaces of buildings, exterior building features, including facades, illuminated roofs, architectural features, entrances, exits, loading docks, and illuminated canopies, exterior building grounds etc. except emergency lighting and lighting in dwelling units.

81. All the point light sources installed in the building for general lighting shall be LEDs or LEDs or equivalent. All the linear light sources installed in the building for general lighting shall be T-5 or at least 4 Star BEE rated TFLs or equivalent. The installed interior lighting power shall not exceed the LPD (Lighting Power Density) value as recommended by ECBC 2007.

82. Automatic Lighting shutoff control be installed: Interior lighting/Exterior Lighting systems shall be equipped with an automatic control device in accordance with ECBC 2007. Occupancy sensors that shall turn the lighting off within 30 minutes of occupant leaving the space. It should also have option for manual turning on lights when the space is occupied. ECBC requires controls in day lit areas that are capable of reducing the light output from luminaries by at least half and Controlling of exterior lighting with photo-controls where lighting can be turned off after a fixed interval.

83. The tapping of renewable sources of energy for lighting, heating, cooling and ventilation needs, deserve special attention. For captive solar power generation, a minimum of 15 percent of sanctioned load is the requirement.

84. Solar photovoltaic (SPV) systems are direct energy conversion systems that convert solar radiation into electric energy. SPV systems should be installed to reduced use of conventional sources of energy. Roof tops of buildings as well as other exposed areas such as of parking shades should be utilized for installation of SPV systems.

85. Hot water requirement in buildings should be met through use of various types of solar water heating systems, viz. flat plate collector; single glazed double glazed; evacuated tube collectors; and Water heating with solar concentrators.

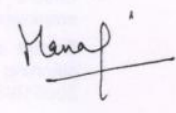
86. The Project Proponent should ensure regular energy audit.

- i. To validate the predicted energy consumption, thermal comfort, and visual comfort criteria by an energy auditor approved by the BEE, Government of India.

		<p>ii. To ascertain continued safety in the operation of the electrical and mechanical systems of the building through proper maintenance by the owner or the occupants.</p> <p>87. This will be ensured in the contract document by providing for the commissioning of all electrical and mechanical systems by the respective supplier or builder. Moreover, the respective facility management group assigned by the owner or the occupants themselves, will carry out the maintenance facilities.</p> <p>88. Energy conservation measures like installation of CFLs/LEDs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Used CFLs and TFLs should be properly collected and disposed off /sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible.</p>
j.	Traffic Movement System	89. Width of driveways, parking provision, ramp width and slope to be kept as per local bye laws.
k.	Provisions for Differently able	<p>90. The Project Proponent should provide at least the minimum level of accessibility for persons with disabilities.</p> <ul style="list-style-type: none"> • Ensure accessibility and usability of the facilities in the building by employees, visitors and clients with disabilities. • Ensure access to facilities and services by adopting appropriate site planning to eliminate barriers as per the recommended standards (NBC 2005 [BIS 2005f]). • Layout and designing of interior and exterior facilities as per principles of universal design such as prescribed by the National Building Code of India, building management policies and procedures, provision of auxiliary aids & appliances, and staff training in disability awareness.
l.	Green Belt/Green Cover	<p>91. Provide minimum 1 tree for every 80 sq.mt of plot area.</p> <p>92. Wherever trees are cut or transplanted, compensatory plantation in the ratio of 1:3 to be done in the premise.</p> <p>93. Native species of trees to be planted.</p> <p>94. Vegetation to provide as shading and promote evaporative cooling. In hot and dry climates, evaporative cooling through appropriately sized wet surfaces or fountains have a desirable effect. It should be planned for maximum benefit.</p> <p>95. The project should have detail proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale.</p>
m.	Disaster/Risk Assessment Plan	<p>96. Fire tender movement plan to be submitted.</p> <p>97. Firefighting system to be provided as per the fire NOC.</p> <p>98. Turning radius to be kept as per Fire NoC or as prescribed in the local by-laws.</p> <p>99. Public address system to be installed as per the Fire Safety norms.</p> <p>100. Place of assembly to be indicated.</p>
n.	Socio Economic Impact and CSR	<p>101. Biodegradable and non-biodegradable waste bins to be provided for every household to promote waste segregation at source.</p> <p>102. Importance of environment and various environment drives to be initiated.</p> <p>103. Importance of maintenance of environment infrastructure to be showcased by issuing pamphlets etc.</p> <p>104. Provision for health care, medical kit, crèche, First-Aid room shall be given during construction phase for the construction workers.</p> <p>105. Adequate shelter for resting hours, crèche, clean and potable drinking water to be provided to construction workers.</p> <p>106. All local labour welfare laws must be complied.</p> <p>107. Concerns of the communities being affected by the Project are to be responded on priority, and all possible CSR is to be rendered to make the responses effectively beneficial..</p>

o. Environment Management Plan (EMP)	<p>108. Detailed environment management plan comprising of estimated capital cost and O&M cost for the following environment infrastructure should be submitted:</p> <ul style="list-style-type: none">a. Sewage Treatment Plantb. Landscapingc. Rain Water Harvestingd. Power backup for environment infrastructure.e. Environment Monitoringf. Solid Waste Managementg. Solar and Energy Conservation <p>109. Environment Monitoring Cell with defined functions and responsibility shall be set up and its details be submitted.</p>
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END NOTE:
Industrial Shed*: The word 'industrial shed' implies building (whether RCC or otherwise) which is being used for housing plant and machinery of industrial units and shall include godowns and buildings connected with production related and other associated activities of the unit in the same premise.



Page 7 of 7

APPENDIX-3: CIRCULAR SHOWING EXEMPTION OF EDUCATIONAL INSTITUTES
FROM CONSENT



Tel : 0674-2564033
EPABX : 2561909/2562847
E-mail: paribesh1@ospcboard.org
Website: www.ospcboard.org

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST & ENVIRONMENT, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII
Bhubaneswar – 751 012, INDIA

No. 16226 / IND-I-CON-(Misc)1505

Dt 16-12-17

By Speed Post

ORDER

WHEREAS, as per the guideline of CPCB revised classification of industries in the category of Red, Orange, Green and White was prepared and notified by the Board vide order No.15889, dtd. 31.10.2016. The order and the list of industrial units classified under Red (81 nos.), Orange (91 nos.), Green (73 nos.) and white (42 nos.) is also available in Board's website www.ospcboard.org;

AND WHEREAS, further several industrial units /projects which came to the notice of SPC Board later on for categorization were placed before the Board and revised classification of additional industrial units/ projects under Red, Orange, Green and White category was approved in 114th Board meeting held on 07.03.2017 Office order vide letter No. 6488, dtd. 08.05.2017 .

AND WHEREAS, further, some additional units were identified by the Board, which need to be classified/exempted under Red/Orange/Green/White categories. The mater was placed before the internal committee for evaluation and as per the recommendation of the committee following units have been placed under Red/ Orange / Green categories/exempted and was approved in 115th Board Meeting held on 13.11.2017 as per the following list.

Sl.No.	Category
Red	
1.	Building and construction project $\geq 20,000$ Sq. meter to $\leq 1,50,000$ Sq. meter of built up area having Wastewater discharge >100 KLD. <i>NB: The project activities shall not include Industrial shed, University, Colleges, Hostel for educational institutions. Further, it is clarified that the residential building upto 1,50,000 Sq. meter does not require Consent to Establish and Operate from the SPCB as per MoEF & CC amended EIA Notification No. S.O. 3999(E), dtd. 09.12.2016. Accordingly Item No. Red -7 of Office order No. 15889, dtd. 31.10.2016 is modified.</i>
2.	Calcined Petroleum Coke
3.	Pyrolysis Process
4.	Aluminium ingot from Aluminium Dross

//2//

Orange Category	
1	Building and construction project $\geq 20,000$ Sq. meter to $\leq 1,50,000$ Sq. meter of built up area having Wastewater discharge up to 100 KLD. NB: <i>The project activities shall not include Industrial shed, University, Colleges, Hostel for educational institutions. Further, it is clarified that the residential building upto 1,50,000 Sq. meter does not require Consent to Establish and Operate from the SPCB as per MoEF& CC amended EIA Notification No. S.O. 3999(E), dtd. 09.12.2016. Accordingly Item No. Orange -6 of Office order No. 15889, dtd. 31.10.2016 is modified.</i>
Green Category	
1	Mineral slurry pipeline
2.	Mineral conveyor with closed conveying system.
3.	Concrete Sleeper/Hume pipes with or without steam curing (without using coal)
Exclusion of Project from Obtaining Consent of the Board:	
1.	Aquaculture projects : Aquaculture projects are excluded from consent administration, since the regulation of this type of projects are already covered under provision of Coastal Aquaculture Authority Act, 2005 and the Rules framed thereunder and also does not find place in the CPCB list for ROGW, dt. 07.03.2016.


This order shall come into force w.e.f. the date of its issue.

By order of the Board

 15/12/17
Member Secretary

Memo No. 16227 /dtd. 16-12-17

Copy forwarded to the Chairman, Central Pollution Control Board, Paribesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi -110 032 for kind formation with reference to the direction issued by CPCB.

 15/12/17
Member Secretary
P.T.O

//3//

Memo No. 16228 /dtd. 16-12-17

Copy forwarded to Principal Secretary, Forest and Environment Dept., Govt. of Odisha for kind information and necessary action.


15/12/17
Member Secretary

Memo No. 16229 /dtd. 16-12-17

Copy forwarded to Principal Secretary, Industries Department/ MSME Dept. / Steel & Mines Dept. / Energy Dept./ Housing and Urban Dept. / Health & Family Welfare Dept./ Agriculture Dept./ Works Dept./ Water Resources Dept./ F & ARD / Excise Dept./ Commerce & Transport / Textile & Handlooms/ CMD, IPICOL/ CMD, IIDCO/ Special Secretary P&C Dept./ Director, Factories and Boilers, Govt. of Odisha for information and necessary action.


15/12/17
Member Secretary

Memo No. 16230 /dtd. 16-12-17

Copy forwarded to EE-cum-System Administrator for information. She is requested to upload this order in the website of the Board.


15/12/17
Sr. Env. Engineer, L-1 (C)

APPENDIX-4: SITE PHOTOGRAPHS



**View of Precision Engineering Centre Site
in the Mancheswar Industrial Area**

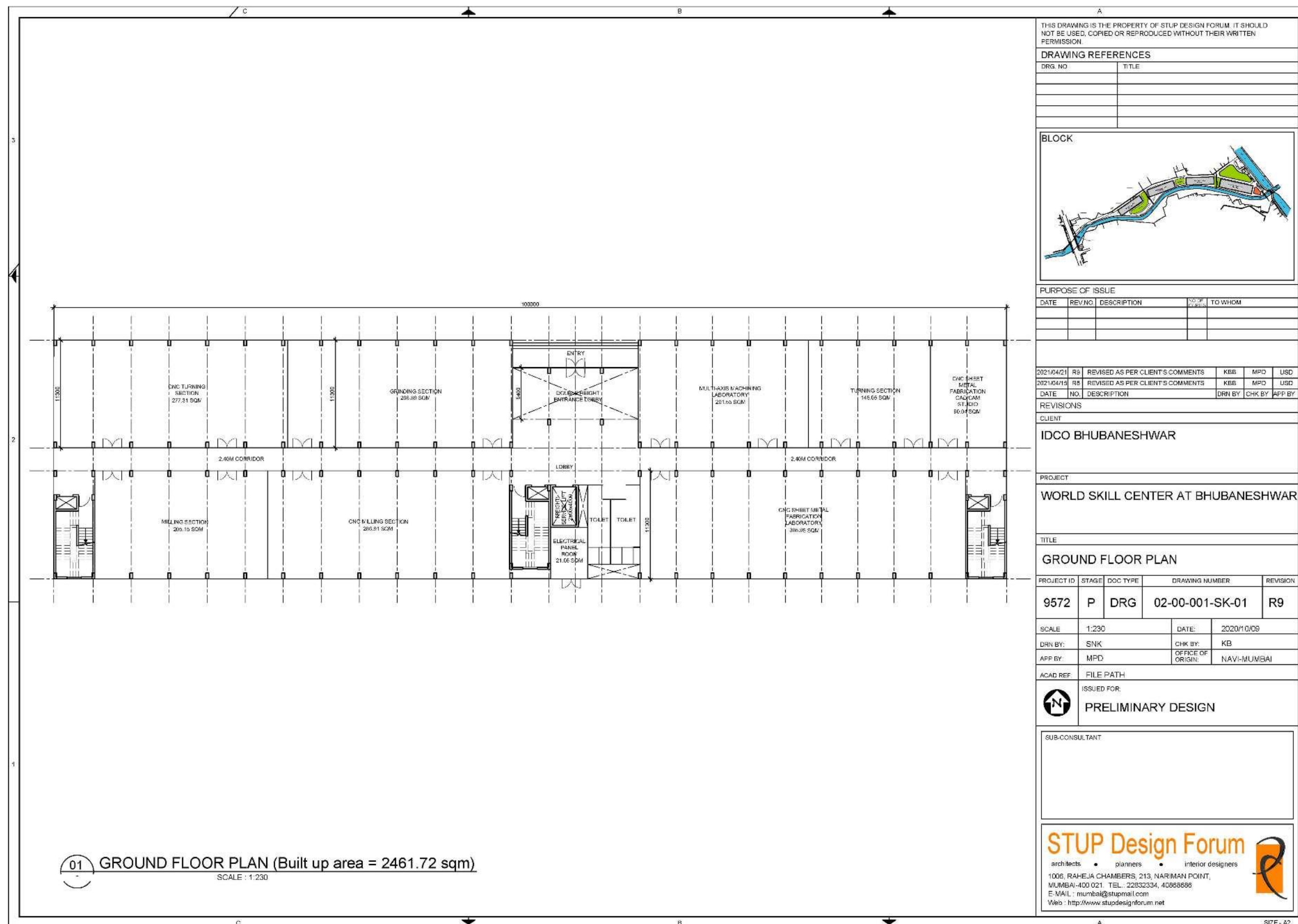


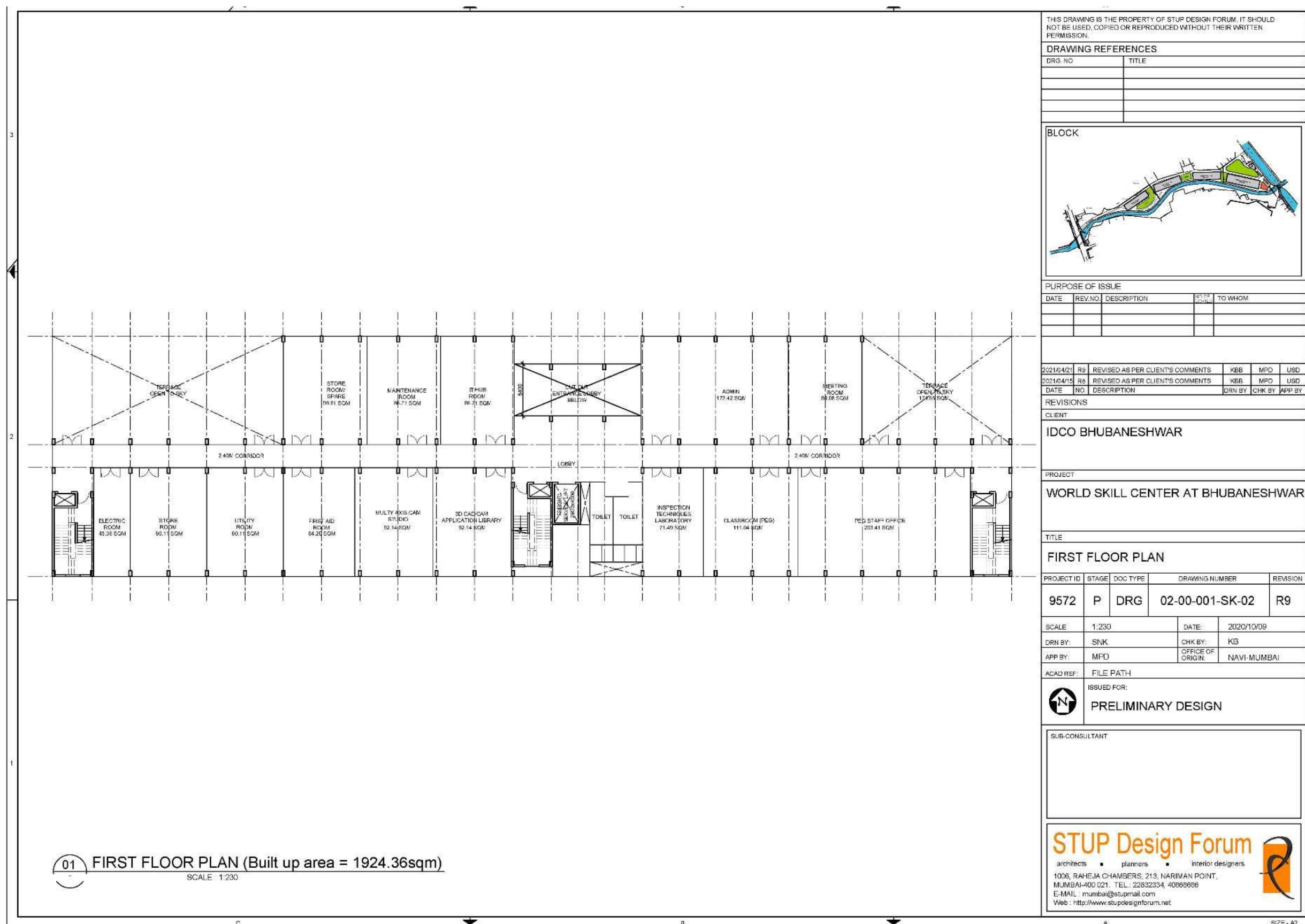
**View of Precision Engineering Site
showing no presence of trees**



Another View of Precision Engineering Centre Site

[illegible]





APPENDIX-6: LAND RECORDS OF PRECISION ENGINEERING CENTRE SITE

Sri Kushadhar Mahanta
Chief General Manager (MSME)

idco
Your partner in growth
ISO 9001 & 14001 Certified

ODISHA
NEW OPPORTUNITIES

NO: HO/ID/A-9231/01-20/

18021

Date: 25-11-2020

By Registered/Speed Post

To

The Director, Employment-cum-CEO,
Odisha Skill Development Authority (OSDA),
At: Niyojan Bhawan, Sriya Talkies Square,
Kharavela Nagar, Bhubaneswar.
Email: osdabbsr.od@gov.in / dirosems@gmail.com

Sub:

Revised demand for deposit(s) of cost of land and other dues for land measuring
Ac.4.588, IE Mancheswar, Bhubaneswar.

Ref:

This office letter No.15973 dt. 24.11.2020.

Sir,

In inviting reference to the subject cited above, I am directed to intimate that your proposal for allotment of land measuring Ac.4.588 at Industrial Estate Mancheswar has been approved by the management of IDCO pending approval of the scheduled HLLAC to be held on 01.012.2020 and on payment of the following deposit(s).

Sl. No.	Description of charges	Amount	GST @18%	Total amount (In Rs.)
1	Cost of land @ 1.5 times of prevailing land cost	10,32,30,000.00	0.00	10,32,30,000.00
2	Annual Rent @1.75% of land cost for 2020-21	12,04,350.00	2,16,783.00	14,21,133.00
3	Annual IMC @ Rs.14,775/- per acre for 2020-21	54,230.00	9,761.00	63,991.00
4.	Processing fees	5,500.00	990.00	6,490.00
Total:		10,44,94,080.00	2,27,534.00	10,47,21,614.00

It is made clear that IDCO is not liable to pay any interest in the amount of money, so deposited. After receipt of the above deposit(s), final order shall be issued as per norms of IDCO.

You are therefore requested to deposit the above amount within 15(fifteen) days from the date of issue of this letter positively by using our **online payment gateways**, failing which interest @12% and penal interest @2% shall be charged.

In case you fail to pay the cost of land, it will be construed that you are no more interested for the land and also not interested in any further progress of your proposal.

Further, it is to intimate that, the demand letter issued vide L. No.15973 dt. 24.11.2020 is hereby withdrawn & cancelled.

Yours faithfully,

Chief General Manager (MSME)

Contd....P/2

Odisha Industrial Infrastructure Development Corporation

(A Government of Odisha Undertaking)

IDCO, IDCO Towers, Janpath, Bhubaneswar - 751022, Odisha, INDIA

+91- 0674 - 2542248, 2540820 | Fax:2542956 / 2540749

E-mail: cgmsme@idco.in

Website: www.idco.in

APPENDIX-7 CONSULTATION PHOTOGRAPHS AND ATTENDANCE SHEET

A. Consultation Photographs:



View of Stakeholder Discussion at Precision Engineering site



Another View of Stakeholder Discussion at Precision Engineering Site







B. Consultation Attendance Sheet:

Loan-3539IND: Odisha Skill Development Project
Stakeholder Consultations

Date: 16.06.2021

Location: PRECISION ENGINEERING
BUILDING

Planned Facility:

S. No.	Name	Designation	Phone Number	Signature
1	Sanjay Padhi	GM-P	993736311	
2	En. R.K. Daxh	DM, BCDI IDCO	7008609014	
3	Debasish Nayak	Junior Engineer IDCO	9439924661	
4	Prakash ch. Sowan	DSM BCBCPL	8895179723	
5	Nageeth Kham	Project manager BCBCPL	9438139313	
6	Nikhilaya mohanty	Elect. Engineer BCBCPL	9337746986	
7	Lingaraj Nayak	Site Incharge BCBCPL	9438543215	Lingaraj Nayak
8	Bipin Sahoo	Electrician BCBCPL	8847894863	Bipin Sahoo
9	Prahlad Naik	Supervisor BCBCPL	8658240303	Pradip Naik
10	Soumya Lakshmi	Supervisor BCBCPL	8847842824	Soumya
11				
12				
13				
14				