Addendum to the Initial Environmental Examination

PUBLIC

December 2024

India: Assam Skill University Project

Subproject : Detailed Design and Construction of Assam Skill University Campus and Facilities (Phase II- Buildings)

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Prepared by Skill, Employment and Entrepreneurship Department (SEED) Government of Assam for the Asian Development Bank (ADB). This is an addendum to the initial environmental examination report originally posted in February 2024 available on https://www.adb.org/projects/documents/ind-53277-002-iee-5.

Asian Development Bank

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Addendum Initial Environmental Examination

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India: Assam Skill University Project

Sub-Project: Detailed Design and Construction of Assam Skill University Campus and Facilities (Phase II- Buildings)

Prepared by Assam Skill University Project for the Asian Development Bank

ABBREVIATIONS

ADB	-	Asian Development Bank
ASDM	-	Assam Skill Development Mission
ASI	-	Archaeological Survey of India
ASU	-	Assam Skill University
CPCB	-	Central Pollution Control Board
CSQA	-	Construction Supervision and Quality Assurance
DMP	-	Disaster Management Plan
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
GoA	-	Government of Assam
GoI	-	Government of India
GRC	-	Grievance Redress Committee
GRM	-	Grievance Redress Mechanism
IEE	-	Initial Environmental Examination
IA	-	Implementing Agency
MOEFCC	-	Ministry of Environment, Forest, and Climate Change
PMC	-	Project Management Consultants
PMU	-	Project Management Unit
PSC	-	Project Steering Committee
PUC	-	Pollution Under Control
PWD	-	Public Works Department
REA	-	Rapid Environmental Assessment
SEIAA	-	State Environment Impact Assessment Authority
SEED	-	Skill, Employment and Entrepreneurship Department
SPS	-	Safeguard Policy Statement
STP	-	Sewage Treatment Plant

CURRENCY EQUIVALENTS

(As of 20 October 2024)
Currency unit – Indian rupee (Rs)
Rs1.00 = $0.0119218
$1.00 = Rs 83.89

WEIGHTS AND MEASURES

mg	–	microgram
dB(A)	–	weighted decibel
km	–	kilometer
km^2	–	square kilometer
m	–	meter
m^2	–	square meter

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EXECUTIVE SUMMARY

1. The objective of the Assam Skill University Project (ASUP) is to strengthen industry-aligned and flexible skills education and training system in Assam by developing management and operating systems, business models, faculty development and management systems for Assam Skill University (ASU); developing environmentally sustainable and climate resilient ASU campus and facilities; designing and delivering industry-aligned and flexible skills education and training programs; developing the capacity to manage and support entrepreneurship, applied research and development, and technology transfer; and improving access to professional development and skills education and training resources for technical and vocational education and training and higher education institutions in Assam, the northeastern region, and neighboring countries. The Skill, Employment and Entrepreneurship Department (SEED) of the Government of Assam (GoA) is the executing agency (EA) and Assam Skill University (ASU) is the current implementing agency (IA) of the project, previously headed by Assam Skill Development Mission (ASDM). The IA (ASU) has established a project management unit (PMU) to carry out day-to-day project management activities. To achieve the above-mentioned objective; Assam Skill University has been designed and being developed in an area of 82.737acre (250.281Bigha[1] or say 250 Bigha) land (334828.083 m^2) Government of Assam (GoA) owned plot in Mangaldai in Darrang district.

2. At the time of project concept stage in September 2020, 100 Bigha of land were allotted for the ASU, and the project team completed environmental screening, categorization and consultations in November 2020. Subsequently, in January 2021, the Government of Assam, through the land advisory committee of the Darrang district, recommended an additional 150 Bigha of land for the project. Based on this recommendation, the ASDM carried out an engineering survey and prepared a preliminary design layout covering an area of 210 Bigha (69.5 acres) of land with an aim of making campus more open, grand and beautiful. The IEE report was prepared in March 2021 and was cleared in April 2021 for 210 Bigha area. Subsequently after loan signing, additional area (40 Bigha) was also included, due to which ASU plot boundary limits were changed, and boundary wall length changed. Hence, the IEE report was updated for 250 Bigha plot of ASU in May 2022. After this, there have been minor changes (increase from 18888 m^2 to 24902 m^2) in the built-up areas of some Phase II components of the project. Accordingly, this Addendum IEE is prepared for components to be implemented in Phase II buildings, and to reflect changes in tendered built-up area(18888 m^2) and finalized and approved built-up area(24902 m^2) at the end of detailed engineering for the issuance of good for construction drawings.

3. The site for ASU is near Mangaldai town of Darrang district in Assam. The site is about 73 km from Guwahati.The ASU will be comprised of: (a) school of manufacturing and construction; (b) school of management and finance; (c) school of agriculture and food technology; (d) school of technology; (e)school of sustainability; (f) school of mobility; (g) school of design and creativity; (h) school of tourism, hospitality and wellness; (i) school of healthcare; (j) center for entrepreneurship and innovation; (k) center for school of life skills and languages; (l) center for lifelong learning; and (m) center for faculty and curriculum development. The built-up area of the ASU was around 73530.92 m^2 at the time of loan processing (tendering), but during detailed design the built-up area at the time of approval of drawings for construction is 82,709.03 m^2 for all components. The total cost of the project is estimated to be US$ 140 million. the For the Phase II components, the built-up area was 18888 m^2 as per tender and now the built-up area after detailed design and approval of drawings is 24902 m^2. This Addendum IEE has been prepared to update changes in Phase II area and to reflect environmental implications on account of built-up area changes.

[1] In the State of Assam, 1 Bigha= 0.33057643 acre (1337.80864 m^2)

4. The ASU project site is unencumbered land owned by the government. The project is categorized as 'B' for environment. Accordingly, to comply with the Asian Development Bank (ADB) Safeguard Policy Statement (SPS), 2009, this Addendum initial environmental examination (IEE) report has been prepared to reflect the changes in Phase II components of the ASU project.

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5. Phase I Components covered in ADB cleared Addendum IEE report; For the Phase I components, the built-up area was 61241 m^2 at the time of loan processing/tendering and now the built-up area after detailed design is 67,298 m^2. Accordingly, addendum IEE for Phase I change of area was prepared in January 2024 and approved by the ADB in March 2024. The Phase I components covered in ADB cleared Addendum IEE report were Admin and Multi-purpose hall building (12,629 m^2), academic and laboratories buildings (18592.5m^2), Workshops and Store (3456.8m^2), Faculty Hostel (4802.39 m^2), Guest house (2511 m^2) Hostel 'A' (13,957 m^2) and Hostel 'B' (11,347 m^2) and utility infrastructure components such as sewage treatment plant (STP) (400 KLD capacity for phase I, space available for future expansion), transformer capacity 4000 kVA, DG set for backup power 1500 kVA and overhead water storage tank (400m^3), solar power heating system for 64000 liters per day capacity, roof top solar system for solar power generation 100 kW capacity. The utility infrastructure is included in the built-up area of Phase I (67298 m^2) and 3 rainwater harvesting structures with a combined capacity of 800 m^3.

6. **Phase II Components under the Project**; The Phase II components and comparison with tender stage and post detailed engineering and approved stage is given below:

SL.NO.	PHASE -2 Component	Tender Area (m^2)	Detailed Designed and Approved Area (m^2)
1.	Staff type-2 (650x3=1950) quarters	1,950	3,233
2.	Staff type-3 (475x6=2850) quarters	2,850	5,127
3.	Staff type-4 (650x7=4550)	4,550	6,492
4.	Staff type-5 quarters	290	801
5.	Mess and Canteen	1,200	1,200
6.	Community centre	1,600	1,600
7.	Food court	800	801
8.	Sub Station pump room	319	319
9.	Security Office	264	264
10.	Stadium block	513	513
11	Corridor	1200	1200
12	Garage with Corridor	3102	3102
13	Open Air Theater	250	250
TOTAL AREA		**18888**	**24902**

7. For ease of implementation, ASU campus development has been divided into a few sub-projects. Some of these subprojects will be prepared and supported under the project, while the others will be prepared after the construction is completed. The current Addendum IEE is for Phase II components of ASU campus and facilities (after completion of detailed design). Asbestos products will not be used in the roofing sheets.

8. The detailed design of ASU campus Phase II components and facilities has been finalized after topographic survey, soil testing and geotechnical report and with due consideration to other climatic and location specific factors such as intense rainfall, liquefaction phenomena (weak soil strength) and earthquake zone V coefficient. The construction of ASU campus and facilities (Phase II) will mainly be for staff quarters and other smaller components.

In addition to electrifying these buildings and facilities, drainage, water supply and sewage network systems and sewage treatment plants will be installed as part of utility infrastructure.

9. This addendum IEE report provides details of the ASU project phase II components and associated potential environmental impacts (on account of changes in built up areas of phase II components such as staff type-2, staff type-3, staff type-4 and staff type-5 quarters) during project lifecycle. The addendum IEE report also suggests ways of mitigating and addressing these identified environmental impacts.[2] In the vicinity of ASU site, there are not environmentally and/or ecologically protected areas (national parks, wildlife or bird sanctuaries, tiger reserves, biospheres, forests, wetlands, mangroves, or estuaries etc.) in or near the ASU site. There are no archaeologically protected monuments, structures, or heritage sites within 300 m distance of ASU plot boundary. The ASU site is a plain terrain.

10. Since the ASU Phase II components will involve civil works, consumption of natural resources (water, construction materials), transportation of construction materials, usage of construction equipment and machinery and consumption of power supply, there will be environmental impacts. Like the construction stage impacts, there will be environmental impacts during operation phase as well. Yet environmental impacts during both construction and operation phases are not likely to be significant as these will be limited to ASU site with no tree cutting requirements for campus and facilities construction. The routine and localized impacts associated with construction and operation can be mitigated easily by following the measures laid down in the Environment Management Plan (EMP) included in the addendum IEE report. The addendum IEE confirms the ASU phase II components (detailed design and construction of ASU campus and facilities) as environment category “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 EIA Notification, 2006.

11. ‘With’ and ‘Without’ ASU project scenario has been considered to justify the need of the ASU project. Location and usage of alternative materials have also been analyzed from environmental and sustainability considerations. The sustainability considerations have also been discussed for the project scenario.

12. PMU at ASU is responsible for supervising overall planning and implementation of civil works. The PMU has environmental and social safeguard specialists. To assist PMU in supervision, project management consultant (PMC) firm and construction supervision and quality assurance (CSQA) firm have been appointed. PMU and PMC will ensure that the revised and updated EMP is followed during pre-construction and construction phases. The revised EMP implementation is being monitored by the environment safeguard specialists of PMU and appointed PMC firm.

13. Grievance redress mechanism (GRM) has been established under the project to address grievances of aggrieved parties or persons. The GRM is transparent, easily accessible and time bound for the resolution of grievances. The EA (SEED) had issued an approval order for the establishment of GRM. The GRM is functional. The details of GRM are provided in this addendum IEE report.

[2] Local stakeholders were involved in developing the revised IEE through discussions on-site and public consultation during November 2020, February 2021, March 2022 and March/April 2024.Their views were incorporated into the revised IEE, and the design of the project. The revised IEE has been made available at public locations in the town such as municipal office building, district administration office, and site office of ASU. It is also disclosed to a wider audience via the ADB and ASDM websites.

I. INTRODUCTION

A. Background

1. **Location.** The location of ASU is near Mangaldai in Darrang district of Assam. The latitude and longitude of the ASU site are given below, and coordinates of newly added area are also given. Further, a detailed map showing coordinates marked on boundary of the plot is given in the next section of the report.

Sl. No.	Name of Facility	Latitude	Longitude
1	Assam Skill University	26°25'21.36"N	92° 0'53.93"E
2	Assam Skill University Newly added area (150 Bigha)	26°42'0.69"N	92° 0'12.99"E

2. The nearest rail head to Mangaldai is Tangla at about 35 km and Rangia Junction is 48 km away from the ASU site. The project site is well connected to important destinations such as Guwahati, New Jalpaiguri, Rangia and Nalbari. The distances of important destinations from ASU are given below:

Sl. No.	Name of Facility	Altitude (m)	District	Distance from ASU site		
1.	ASU	51.24	Darrang	Guwahati Airport Guwahati City Tezpur Nalbari IIT Guwahati Udalguri Alipurduar Cooch Behar Mangaldai Barpeta Morigaon	: : : : : : : : : : :	70 Km 72 Km 107 Km 68 Km 52 Km 43 Km 303 Km 323 Km 5 Km 123 Km 141 Km

3. The Assam Skill University site is being built up on vacant land under the ownership of Assam Skill University (ASU), the Government of Assam. The Darrang district geographically lies between the latitude 20° 9´N to 26.96° N and longitude 91° 45´ E to 92° 22´ E.

4. **Present Status of ASU Site:** The ASU site is a plain terrain. The site ownership is with Assam Skill University. There are no permanent or temporary structures on the site. There are a few trees at the site. The photographs of the ASU site are shown below. At the site construction works are in progress and photographs of site are given below:

View of access road connecting site with NH

View of site showing plain terrain

View of site showing no presence of trees or shrubs

View of Additional Area included in ASU plot

Current construction status of site

Construction status of the site

B. Compliance with India's Environmental Regulatory Framework

5. India's environmental rules and regulations, as relevant for the construction of ASU, are shown in **Table 1**. The Environmental Impact Assessment (EIA) Notification, 2006 issued by the Ministry of Environment, Forests and Climate Change (MOEFCC, GOI) specifies the requirements for mandatory environmental clearances. All projects and activities are broadly categorized into two categories—category 'A' and category 'B', based on the spatial extent of potential impacts on the environment, human health, and natural and man-made resources3. However, MOEFCC's Notification- S.O. 3252, dated 22/12/2014, exempts all educational and training institutes from obtaining prior environmental clearance. Hence, the phase II components will not require any prior environmental clearance according to the environmental rules and regulations of India. Further, as shown in **Table 1**, most other rules pertaining to India's regulatory framework such as Ancient Monuments and Archaeological Sites and Remains Act, 1958; the Wildlife (Protection) Act, 1972, amended in 2003 and 2006; and the Forest (Conservation) Act, 1980, will also not apply to construction of ASU-Phase II components. Permission (Consent to Establish (CTE) and Consent to Operate (CTO)) is required from the State Pollution Control Board, GoA for the construction phase of the ASU. Moreover, according to ADB's SPS 2009, all ADB funded activities/projects are required to comply with the borrower country's environmental regulations. Relevant permissions and clearances have been obtained before the start of the construction activities. The CTE for ASU has been obtained.

6. During the construction and operation phases of the project, compliance with National Ambient Air Quality Standards (NAAQS) for air quality, ambient noise standards for noise levels, General Standards for Discharge of Treated Effluents for wastewater discharge and Drinking Water Standards specified by Bureau of Indian Standards (BIS) will be ensured. The above standards have been specified under various acts and rules promulgated by the GoI. During the pre-construction phase (completed) all regulations of air quality, water quality and noise levels were complied with. These are being complied with in the current ongoing construction phase.

Table-1: Environmental Regulatory Compliance

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
Detailed design and construction of ASU campus and facilities (Phase II components)	The EIA notification, 2006 (and its subsequent amendments till date) provides for categorization of projects into category 'A' and 'B', based on extent of impacts.	The ASU project is not covered in the ambit of the EIA notification (amended till date), either as a Category 'A' or Category' B' project. As per the MOEFCC Notification S.O. 3252 dated 22/12/2014, educational and training institutions are exempted from prior

[3] All 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, Forest 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 fulfill the General Conditions 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 5 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.

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
		environmental clearance **(Annexure-1).** As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the state or the GOI, are not triggered. The guidelines of sustainable environmental management will be followed (in the design, construction, and operation phases) as per the MoEFCC SO 3252 dated 22 December 2014. **Not Applicable**
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities including conservation, construction and reuse in and around the protected monuments.	The ASU site is not close to any monument which is protected by the Archaeological Survey of India (ASI). Hence, no clearance is needed from ASI. **Not Applicable**
	Water (Prevention and control of pollution) Act, 1974 and Air (prevention and control of pollution) Act, 1981	Consent to Establishment (CTE) and Consent to Operation (CTO) from the State Pollution Control Board will be required during construction for installation of diesel generator set, hot mix plant, and concrete batching plant. The contractor has obtained the CTE and CTO for the concrete batching plant and DG Set. The CTE was required for the project and accordingly ASU has obtained the CTE for the project. For the operation phase, a CTO will also be required. It will be obtained on completion of construction works and before start of operations of ASU. **Applicable**
	The Wildlife (Protection) Act, 1972, amended in 2003 and 2006, provides for protection and management of Protected Areas.	No wildlife protected areas within 15 km aerial distance from the ASU site. Nearest Wildlife sanctuary is about 35 km from ASU site. **Not Applicable**
	Forest (Conservation) Act, 1980	This act provides guidelines for conservation of forests and diversion of forest land for non-forest use. It describes the penalties for contravention of the provisions of the Act. If forest land has to be acquired, clearance is required from the Forest Department. No forest land is acquired by the ASU. Hence, this is not applicable. **Not Applicable**

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	Solid Waste Management Rules, 2016	These rules have been notified by the MoEFCC for collection, transportation and disposal of municipal waste. In the case of ASU, these rules will be applicable both during construction and operation. **Applicable**
	Hazardous Wastes (Management, Handling and Trans-boundary Movements) Rules 2016	These rules are for safe handling, storage, transportation and disposal of hazardous waste. The hazardous waste mainly discarded fuel and lubricants on account of vehicle, equipment and machinery maintenance during construction and waste from laboratory and machinery (in workshops) will be generated during operation phase. Hence, these rules will be applicable. **Applicable**
	Battery Waste Management Rules 2020	These rules have been promulgated for safe recycling of lead acid batteries. These will be applicable both during construction and operation phases. **Applicable**
	Noise Pollution (Regulation and Control) Act, 1990	This act prescribes ambient noise levels for various land uses. This act will be applicable both during construction and operation phases of ASU project. **Applicable**
	E- Waste (Management) Rules, 2016	These rules have been formulated to channelize the E-waste to authorized dismantlers for possible re-use and recycle of waste. These will be applicable during the operation phase of ASU project. **Applicable**
	Permission to withdraw Ground Water	The ASU project plans to use ground water during operation phase. To withdraw ground water, permission will be required from the Central Ground Water Authority. The Contractors have obtained ground water abstraction NOC from CGWA. **Applicable**
	Bio-Medical Waste Management Rules 2016	The ASU project will have a medical center to provide first aid and referral to district hospital. There may be generation of bio-medical waste. This waste needs to be handled, stored and disposed of as per provisions stipulated in Bio-Medical Waste Management Rules, 2016. **Applicable**

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	Construction and Demolition Waste Management Rules 2016	The rules have been formulated for safe storage, transportation, and disposal of construction and demolition waste. There will be generation of construction waste during the construction phase. Hence these rules will be applicable during the construction phase. **Applicable**
	Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act, 1996	The rules have been formulated and notified under this Act in 1998 for the regulation of employment and safe working conditions for the construction workers. The workers will be employed by the contractor (s) for the construction and these rules will be applicable during construction phase for proper occupational, health and safety measures at site. **Applicable**

C. International Agreements and Commitments of Government of India

7. The Republic of India is party to various international agreements/conventions/treaties for conservation of environment at global level. The construction, development and operations of ASU will not trigger most of the convention/agreements including Ramsar Convention on Wetlands, 1971, Convention on World Cultural and Natural Heritage, 1972, Vienna Convention on Protection of Ozone Layer, 1985, and Montreal Protocol on Substances Depleting the Ozone layer, 1987 and Convention on Biological Diversity (CBD), 1992 because ASU site is not close to any notified wetlands or cultural and natural heritage sites, no production of ozone depleting substances from the project and no biodiversity rich areas are close to the project site.Only convention(s) pertaining to climate change will be triggered. This is explained below:

1. United Nations Framework Convention on Climate Change (UNFCCC), 1994

8. As per the convention the reduction/limitation requirements of Green House Gases (GHG) apply only to developed countries. The only reporting obligation for developing countries relates to the preparation of GHG inventory (GHG sources and sinks, potential vulnerability to climate change, adaptation measures and other steps being taken to address climate change). India acceded to the Kyoto Protocol in 2002 and voluntarily agreed to reduce the GHG emissions in 2018.

9. The ASU project activities will not have direct GHG emissions, but on account of slight increase in traffic both during construction and operation phases, there will be increased CO_2 and NOx emissions through vehicular emissions.

10. The project aims to adopt environment friendly construction materials, energy conservation measures (energy efficient fixtures, usage of solar energy for water heating and campus-lighting), minimization of natural resource consumption and through landscaping and tree plantation.

D. Asian Development Bank's Environmental Safeguard Policy Principles

11. Since the ASU project is being funded by the ADB, it has to comply with ADB's SPS,

2009, in addition to the India's environmental laws and regulations applicable at the national, state and local levels. The environmental safeguard policy principles embodied in SPS, 2009 aim to avoid adverse impacts on the environment and on affected people or communities; minimize, mitigate and/or compensate for adverse project impacts, if unavoidable; help borrowers to strengthen their safeguard systems and to develop their capacity in managing the environmental and social risks. The SPS, 2009 categorizes all projects into 3 environmental categories (A, B or C) based on their potential impacts4. Similarly, ADB's rapid environmental assessment (REA) checklist was used to assess the potential impacts of the construction and development of ASU campus phase II components **(Annexure-2)**. As explained in **Annexure-2**, this subproject has been categorized as 'B'. Accordingly, this addendum IEE has been prepared to address the potential impacts in line with the requirements for category 'B' projects. The addendum IEE is to capture impacts due to change in built up area after detailed design. Stakeholder consultations at ASU site are an integral part of the addendum IEE. An updated EMP outlining the specific environmental measures to be adhered to during implementation of the subproject is included in this addendum IEE document. This updated EMP will be shared with the contractor and will be implemented.

E. Review and Approval Procedure

12. For Category 'B' projects, the draft IEE report is prepared by EA and submitted to ADB for clearance. The IEE report is reviewed by the relevant ADB department and comments are provided. Then EA modifies the report by incorporating the comments and the final IEE document is submitted for clearance. At the time of loan processing, the finalized IEE report was disclosed on ADB and ASDM websites. After clearance from ADB, this addendum IEE report will also be disclosed on ADB's website in accordance with ADB's SPS 2009 and Access to Information Policy, 2018. The EA will also disclose this addendum to IEE report on their website and translation of executive summary in local language (Assamese) understandable to the communities and stakeholders at ASU site office, ASU office at Guwahati and Deputy Commissioner's office at Mangaldai..

F. Report Structure

13. This addendum report contains nine sections including: (i) Introduction; (ii) description of phase II components; (iii) description of the existing environment around the ASU project; (iv) environmental impacts and mitigation measures; (v) analysis of alternatives; (vi) EMP; (vii) public consultation and information disclosure; (viii) findings and recommendations; and (ix) conclusions.

[4] As per SPS 2009, projects are assigned to one of the following four categories: (i) **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. (ii) **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category a project. 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 B Project. An initial environmental examination is required. (iii) **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 (iv) **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary (FI) (paras. 65-67).

II. DESCRIPTION OF THE PROJECT COMPONENTS

A. Components of the ASU- Project

14. The location of the ASU site has been shown in **Figures 1 and 2. Table. 2** summarizes the need for the project and brief description of ASU components Phase I and Phase II. The Table-3 details comparative statement of built up area of phase II components estimated at the time of tendering and at the end of detailed engineering phase.Figure-2 shows the current ASU plot of 250 Bigha showing coordinates marked on plot boundary.

Figure-1: Location of ASU site

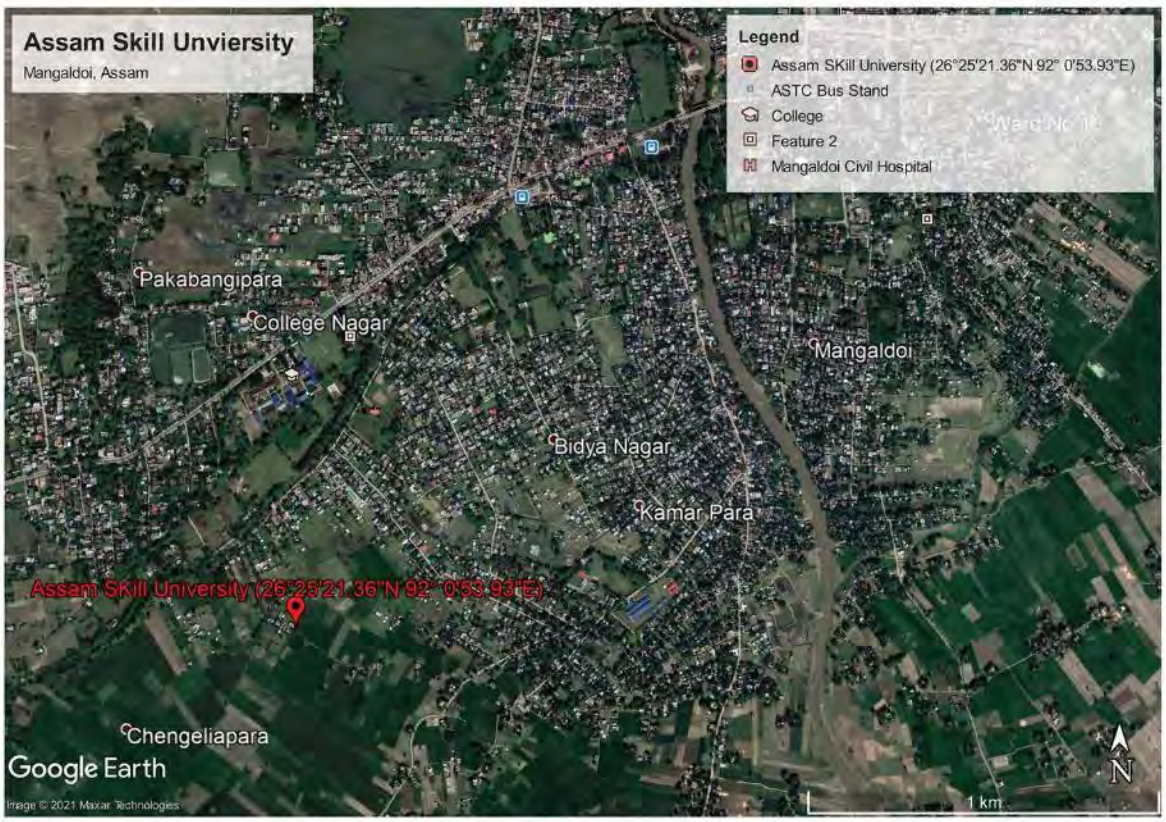
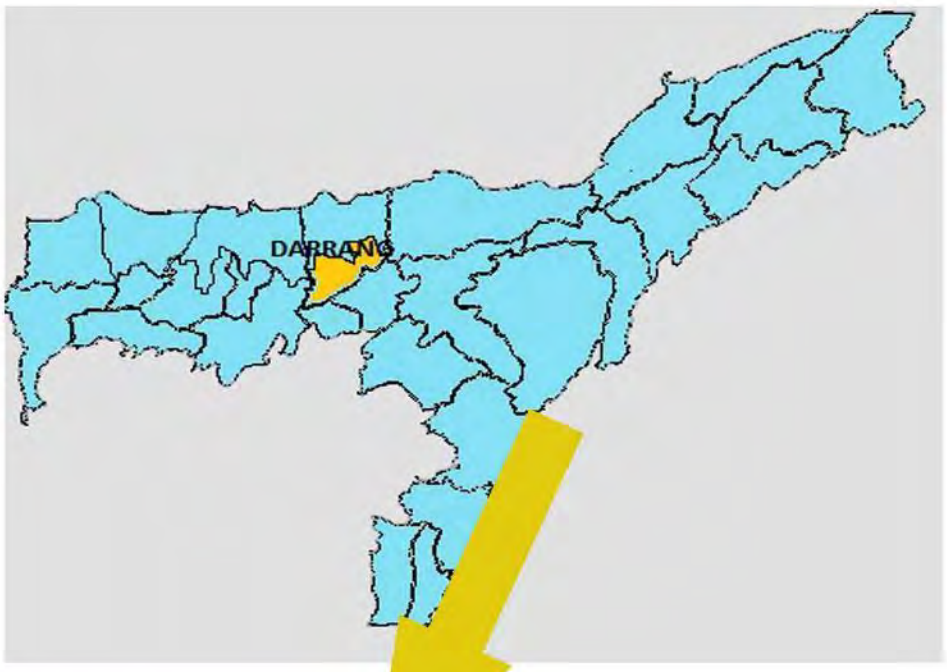
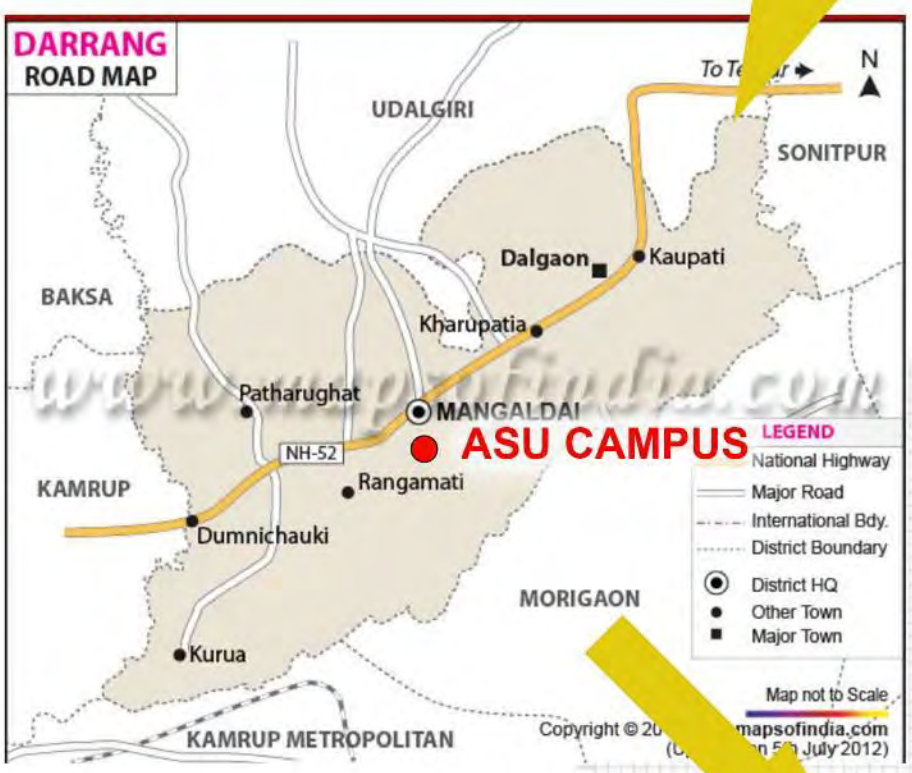


Figure-2: Location of ASU Site





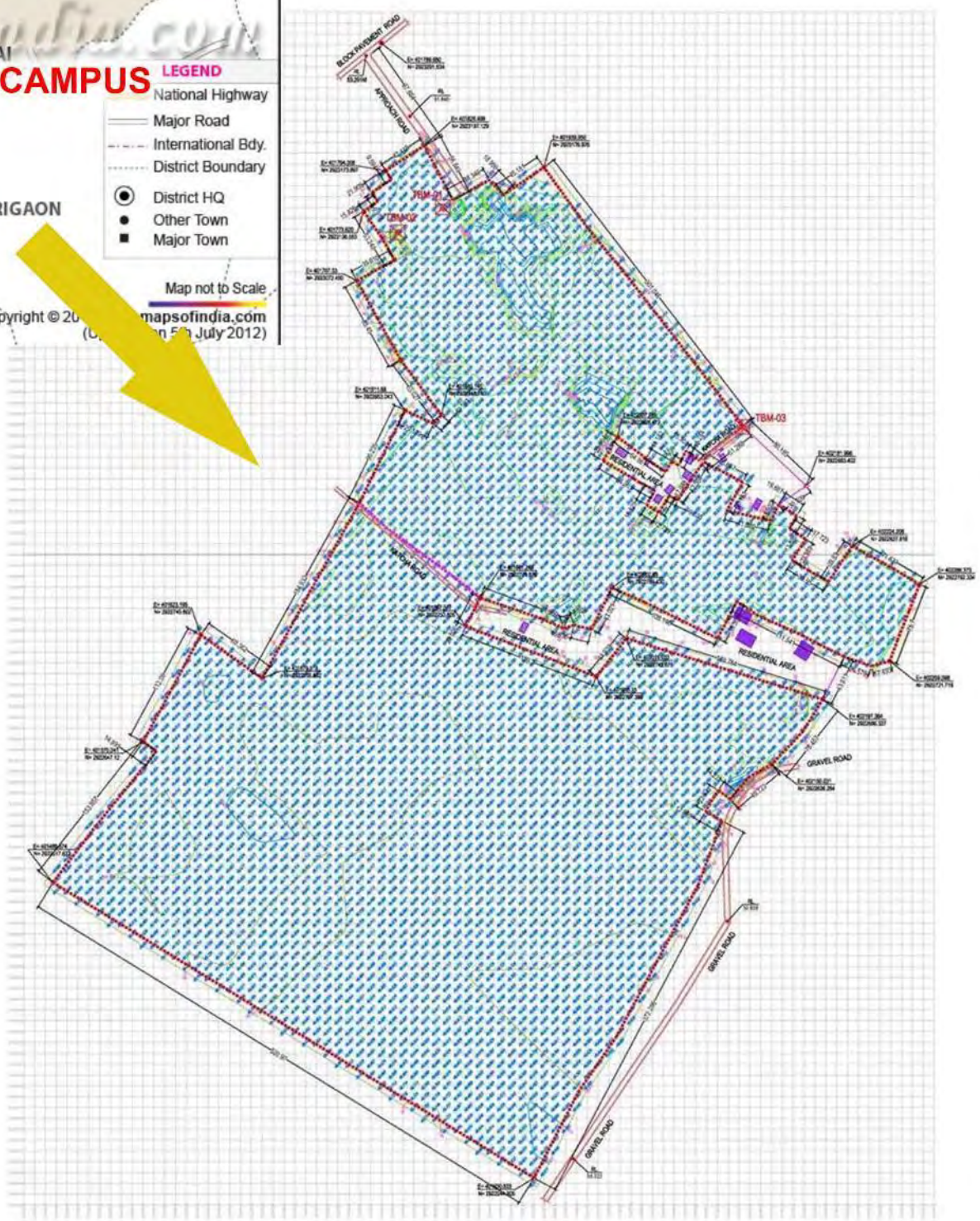


Table-2: Description of the ASU Campus Components and Phase II Components

Description	Need of the Sub-project	Proposed Components	Details of Finalized Phase II components
Detailed design and construction of ASU campus and facilities	Despite its abundant natural resources and higher proportion of young population (under 40 years of age) than the rest of India, Assam is yet to unleash its growth potential. Being landlocked, largely rural, and with underdeveloped infrastructure, Assam's economy is dominated by low value added, natural resource-based products and is poorly integrated with regional and global value chains. Its manufacturing sectors are undiversified and small in terms of output and capital investment. Limited availability of skilled workforce has been identified as one of the constraints to infrastructure and industrial development. Fewer prospects for socioeconomic development have propelled out-migration for jobs and education, leading to shortages of higher-level skills in Assam. Technical and vocational education and training and higher education is undersupplied, and the existing systems face many challenges, including low quality and lack of industry relevance of programs leading to poor employability of graduates from industrial training institutes, polytechnics, engineering colleges, and academic colleges and universities. To address these challenges, the project will assist the Government of Assam in establishing a skill university.	1- The main ASU components include academic and administration buildings (18,841 m^2), laboratories (13,008m^2), workshops (2,761m^2), staff quarters (9640m^2), hostels (3,500 m^2), community Centre (1600m^2), hostel block and mess canteen (5300 m^2), multipurpose hall (2,100 m^2), corridor with RCC roof (1,200m^2), garage and corridor with MS roof (3,102 m^2), Stadium block (513m^2), Food court (800 m^2) and other miscellaneous components (900 m^2). 2**-** Utility infrastructure included STP (400 KLD L and space available for future expansion), transformer capacity 4000 kVA, DG set for backup power 1500 kVA and water storage tanks (400m^3), solar power heating system for 64,000 liters per day and roof top solar system for power generation 100 kW. 3-To enhance aesthetics within the campus, plantation of shrubs and trees, landscaping in open areas (217830.74m^2), and development of existing small ponds (seasonal-having water availability during June to October) as water bodies shall also form part of the subproject. The source of water to these ponds is monsoon rains. 4- Three rainwater harvesting structures with a combined capacity of 800 m^3 will be provided. Locations will be finalized during detailed design. These rainwater harvesting structures will be the existing seasonal	1-The built-up area of various phase II components after detailed design is: Staff Quarter type 2 (3233 m^2), Staff Quarter type 3 (5127 m^2), Staff Quarter type 4 (6492 m^2), Staff Quarter type 5 (801m^2). Mess and Canteen (1200 m^2), Community centre (1600 m^2), Food court (801 m^2), Sub station pump room (319 m^2), Security office (264 m^2), Stadium Block (513 m^2), Corridor (1200 m^2), Garage with corridor (3102 m^2), Open air theatre (250 m^2). The total plinth area for Phase II components is 24902 m^2 against the estimated area of 18,888 m^2 based on preliminary drawings at the time of bidding process. 2- The capacities of utility infrastructure are the same as planned and part of Phase I components. 3-The number of rainwater harvesting structures and green area for plantation remains unchanged and part of Phase I components.

Description	Need of the Sub-project	Proposed Components	Details of Finalized Phase II components
		ponds at site. Roof top rainwater will be diverted to these ponds. The ponds will be excavated during the development for increase in volume as well as to provide sides slope stability.	

Source: ASU Technical Team

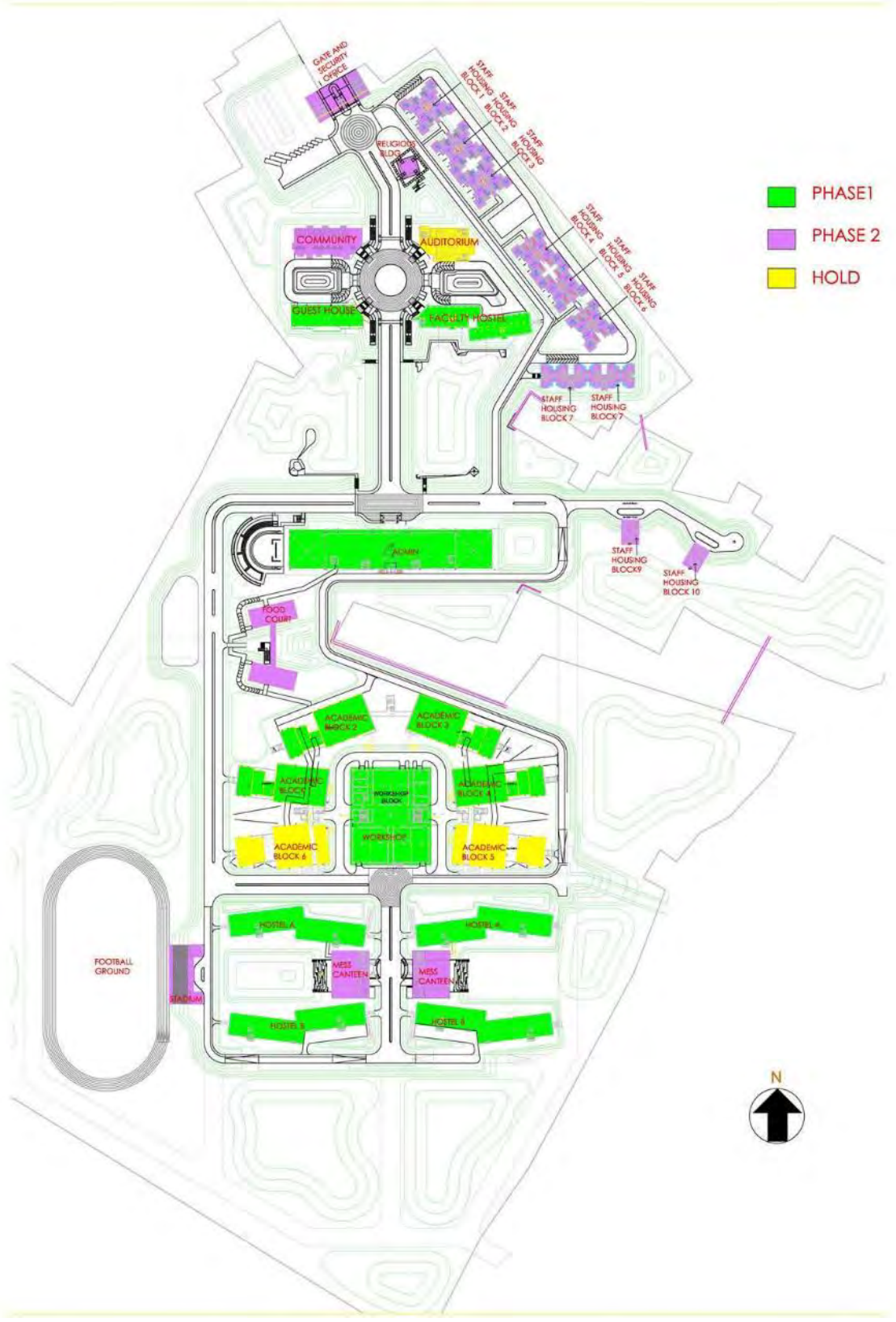
Table-3: Comparative Statement of Phase II Built Up Areas

SL.NO.	PHASE -2 Component	Tender Area (m^2)	Detailed Designed and Approved Area (m^2)
1.	Staff type-2 (650x3=1950) quarters	1,950	3,233
2.	Staff type-3 (475x6=2850) quarters	2,850	5,127
3.	Staff type-4 (650x7=4550)	4,550	6,492
4.	Staff type-5 quarters	290	801
5.	Mess and Canteen	1,200	1,200
6.	Community centre	1,600	1,600
7.	Food court	800	801
8.	Sub Station pump room	319	319
9.	Security Office	264	264
10.	Stadium block	513	513
11	Corridor	1200	1200
12	Garage with Corridor	3102	3102
13	Open Air Theater	250	250
TOTAL AREA		**18888**	**24902**

Source: ASU Technical Team

15. The layout plan of ASU showing Phase I and Phase II components is shown below in **Figure-3.** The detailed engineering has been completed and all environmental implications after detailed design have been assessed and included in the current addendum IEE report. This is the final (Addendum) IEE report for Phase II components for submission to ADB and further disclosure.

Figure-3: Layout Plan of ASU Showing Phase I and Phase II components



B. Executing and Implementing Agencies

16. The Skill, Employment and Entrepreneurship Department (SEED) of GoA is the EA. The IA has been transitioned from Assam Skill Development Mission (ASDM) to Assam Skill University (ASU) vide letter no Ecf No. SEED/183109/167 dated 26-06-2024. The IA had established a project management unit (PMU) for the overall project implementation. The PMU is being supported by the Project Management Consultancy (PMC) firm and Construction supervision and quality assurance (CSQA) firm. The PMC and CSQA firm teams are multi-disciplinary teams, including one environment specialist (intermittent input) in PMC team. The PMC environmental specialist has adequate experience and knowledge of environmental rules and regulations of the State and GoI and other environmental management aspects. The PMC consulting firm has been appointed and mobilized. In addition to PMC, CSQA firm has also been hired for construction supervision and quality check. The civil work contractor engaged for the construction also has one environment, health and safety officer in their team till closure of the contract. The ASU is responsible for supervising overall planning and implementation of civil works with the assistance of CSQA firm and PMC team. ASU ensures that the ASUP and all activities financed under the ADB comply with environmental rules and regulations of GoI and GoA and ADB SPS 2009. Regulatory permissions and clearances have been obtained and will be ensured throughout the implementation of the project.

C. Implementation Schedule

17. The implementation period for the proposed ASU campus is 36 months. The detailed good for construction drawings have been issued by the contractor for the ASU campus phase I components. These drawings have also been approved and vetted by IIT Guwahati. The bidding process for the detailed design and construction of ASU campus and facilities has been completed and construction works have been awarded and contractor has been mobilized. Earthwork has been initiated since October 2022 and construction works are in progress. The civil works are planned to be completed by October 2025. The Phase II components drawings have also been approved.

III. DESCRIPTION OF THE EXISTING ENVIRONMENT FOR ASU CAMPUS SITE

18. This section presents a brief description of the existing environment around the ASU site, including its physical resources, ecological resources, socio-economic development, and social and cultural resources. 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 ASU campus construction and development are presented. Secondary information was collected from relevant government agencies like the State Forest Department, State Environment Department and State Pollution Control Board, and Meteorological Department.

A. Environmental Profile

Air and Noise Quality

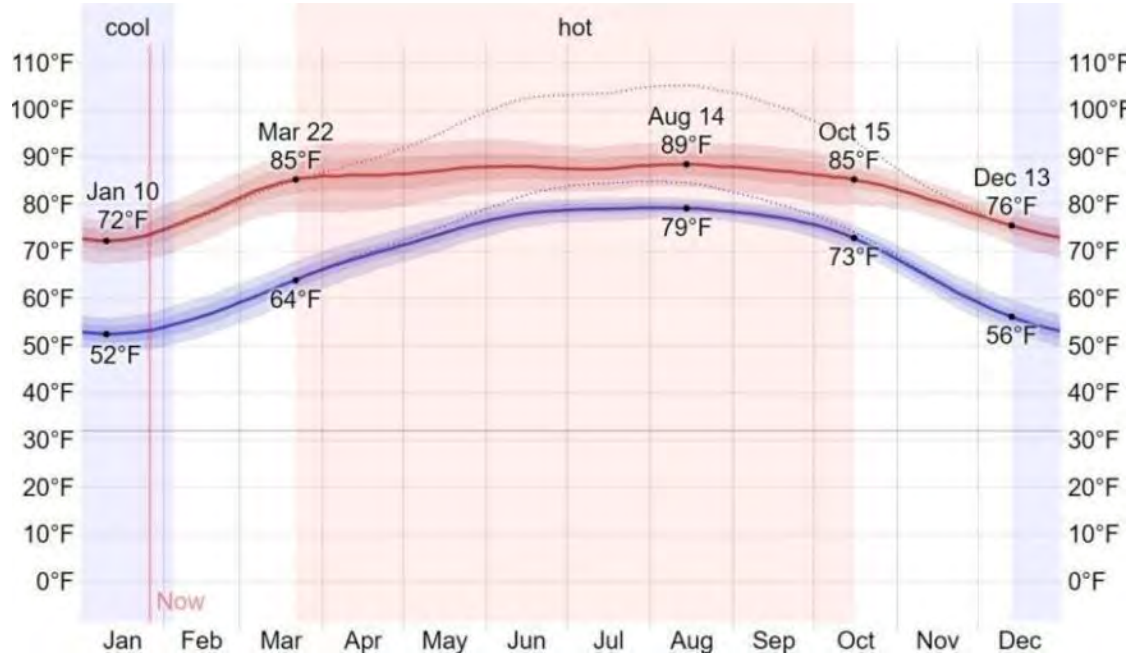
19. No air pollution sources have been seen in the surroundings of the project site as the site is in an open area near Mangaldai town. There are no environmentally sensitive receptors (residential houses, schools, hospitals, etc.) within the perimeter of delineated ASU site. The minimum distance of residential houses from the site boundary is about 50 m. The minimum distance of construction activity from the residential houses will be about 55 m. There is no baseline ambient air quality available for Mangaldai town and ASU site. Baseline ambient air quality monitoring has been completed by the contractor in the pre- construction phase and results are found well within the limits. The measured levels of SO_2, NO_2, PM_{10} and $PM_{2.5}$ were 5-7 ug/m^3,14-16 ug/m^3,32-64 ug/m^3 and 20 ug/m^3respectively. These values are well within the stipulated limits of national ambient air quality standards. The recent environmental monitoring conducted by the contractor in April 2024 **(Annexure-7)**, as part of EMP implementation, indicated PM10, PM2.5, SO_2, NO_x, and CO values as 50 ug/m^3, 25 ug/m^3, <5 ug/m^3, 11 ug/m^3 and <1.15 mg/m^3 respectively. These values are also well within the stipulated limits of ambient air quality standards.

20. Noise level data was not available for the ASU site. To have site specific ambient noise level monitoring has been conducted by the contractor prior to start of construction works with the aim of establishing baseline conditions. The hourly 'Leq' values in 'Day' time ranged from 47.1-56.1 dB(A) whereas 'Night' values were in the range of 41.5-44.8 dB(A). The environmental monitoring was conducted by the Assam State Pollution Control Board. The noise levels recorded during the April 2024 environmental monitoring were Leq day 59.6 dB(A) and Leq night 47.3 dB(A) at the administration block building under construction in the ASU campus. The measured values exceed the ambient air quality limits of residential Area. The exceedance of limits is because of extensive construction activities.The monitoring reports provided in **Annexure-7.**

21. **Climate.** Three seasons are witnessed in Mangaldai. From February to March the weather is dry. In the month of March north-east winds carry sand and dust. In April and May occasional local rains along with storms are a common feature. The minimum and maximum temperature varies from 11^0 to 32^0C during this period. From June to October, there is prevalence of south-west monsoon with heavy rainfall. Temperature varies from 22 to 32^0C in this season. Average annual rainfall is 1,637.3 mm in the region with about 87 rainy days. About 90 % of rain occurs between April and September and July and August being the rainiest months.

22. **Temperature.** The temperature exhibits seasonal variation with minimum during the winter and higher during the summer. June, July and August are the hottest months while January and December are the coldest months. The maximum temperature rises to about 32°C (89 ^{0}F) in August and the minimum temperature falls to about 11°C (52 ^{0}F) in winter months. The **Figure-4** below shows month wise Temperature data at Mangaldai.

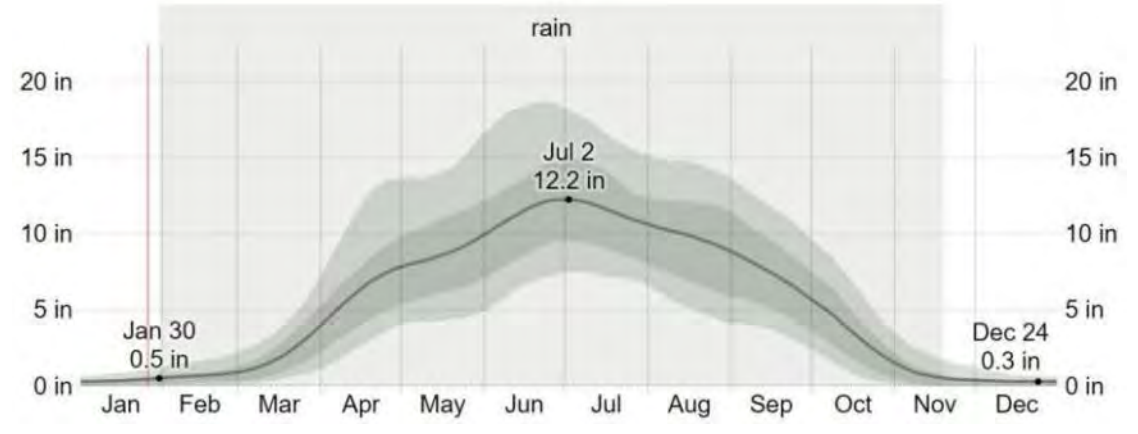
Figure-4: Month Wise Temperature Variation at Mangaldai



Source : https://weatherspark.com/y/112086/Average-Weather-in-Mangaldai-India-Year-Round

23. **Rainfall.** The ASU project area experiences maximum rainfall during Monsoon season from June to October while as least Rainfall is received in November and December. Average annual rainfall at Mangaldai is around 1,637.3 mm. The month- wise rainfall for Mangaldai has been shown in **Figure-5**.

Figure-5: Rainfall Data for Mangaldai



Source : https://weatherspark.com/y/112086/Average-Weather-in-Mangaldai-India-Year-Round

24. **Humidity**. Based on climatological data of the Mangaldai, it is found that relative humidity increases rapidly with the onset of monsoon and reaches maximum (around 96%) during August, when peak monsoon period sets in. Relative humidity is the minimum during the months April to May with February being the driest month (around 6%). Skies are heavily clouded during the monsoon months.

25. **Wind Speed and Directions.** Generally, light to moderate winds prevail throughout the year. Average wind speed from February to June is 8.50 kmph. The wind speed is about 7.10 kmph from July to January. Peak wind speed in March month is about 9.5 kmph.

Topography and Soils

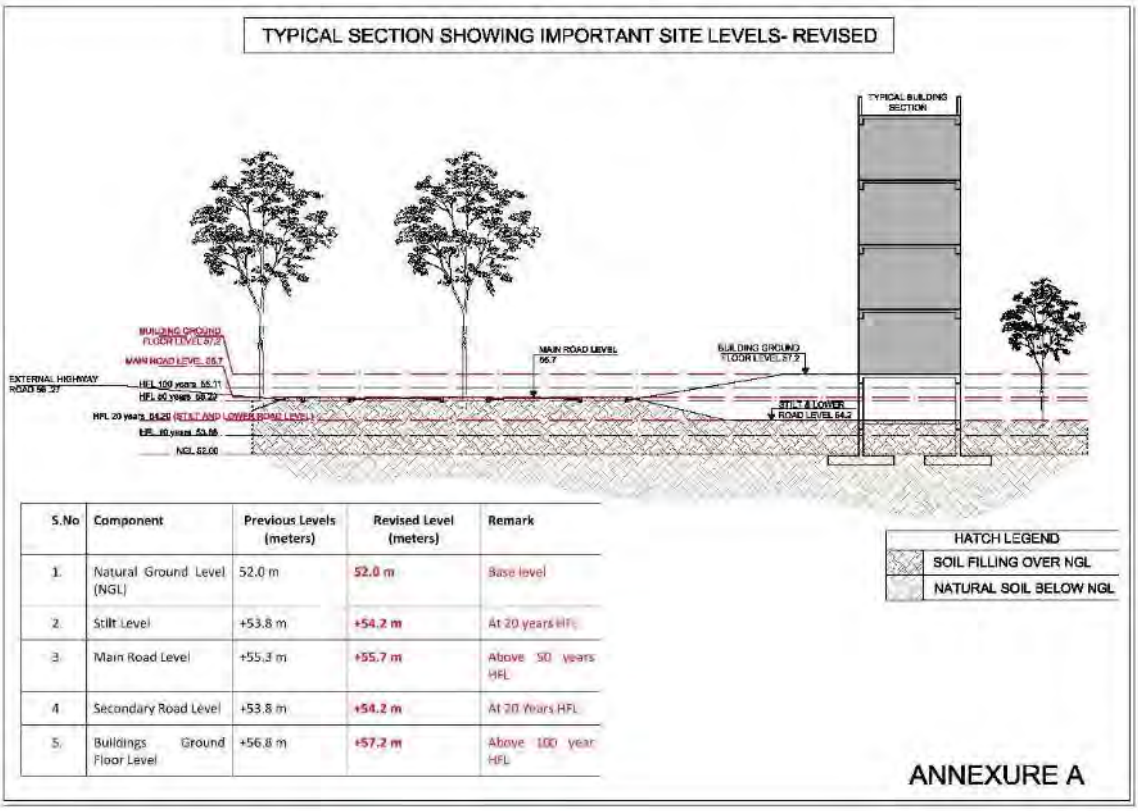
26. The topography of the project site is plain. The average elevation of the site is around 52m above mean sea level. The levels of other site features such as roads have been shown in **Figure-6.** Physiographically, the entire Darrang district is an alluvial plain with flat topography and there is a very gentle slope towards Brahmaputra River, which makes the southern boundary of the district. The district has soil cover of younger alluvium and older alluvium which have undergone diversified pedagogical changes. The soil is characterized by medium to high organic carbon, low to medium phosphate and potash contents. The alluvial soils are light yellow to light grey in color of recent age. At the project site the soil is light grey in color. The texture of the soil ranges from sandy loam to silty loam in nature. At the site texture of soil is silty loam. The soil is suitable for cultivation of rice crops and Maize. To characterize the baseline soil quality, data was collected from secondary published sources for the project region. It has been provided in **Table-4**. Soil testing and geotechnical investigations were carried out for the detailed structural design. The soil results indicate the soil is in a very soft state in shallower depth. The bulk density of soil ranges from 1.76-1.95 ton/m^3 from a depth of 1.5 m to 15 m. According to soil report findings the soil texture is whitish brownish gray poorly graded medium to fine sand in some portions of site and brownish gray clay with some silt (at 2.0 m depth) in some portions. The soil testing and geotechnical investigations reports were vetted by the Civil Engineering Department of Assam Engineering College Guwahati. It has been concluded in the report that potential liquefiable zone (week soil strength for structure) exists up to a maximum depth of 10.5 m in the entire area of site (16 bore holes spread all over site were dug for investigations) accordingly detailed design of building has been completed considering the liquefiable zone. The soil texture results are also available in the above-mentioned reports and these results show 100 % sand in some bore hole samples, 60-70 % sand and 30-40 % silt in some samples and very few bore hole samples have shown 20 % silt and 80 % clay. There was a total of sixteen bore- holes as part of geo-technical investigations for the site.

Table-4: Soil Quality Data for Sub-Project Region

Sl. No.	Parameter	Unit	Value
1	Color	-	Brownish
2	pH	-	6.2
3	Conductivity	Micro mhos/cm	593
4	Bulk Density	gm/cm3	1.14
5	Porosity	%	42.60
6	Water Holding Capacity	%	33.80
7	Texture	-	Sandy –Loam
8	Sand	%	22
9	Silt	%	17
10	Clay	%	29
11	Gravel	%	32
12	Organic Matter	%	1.9
13	Calcium as Ca	%	0.43
14	Magnesium as Mg	%	0.20
15	Sodium	%	0.66
16	Potassium	%	0.15

Sl. No.	Parameter	Unit	Value
17	Sulphur	%	0.08
18	Nitrogen	%	0.21
19	Phosphorus	%	0.16
20	CEC	Meq/100 gm	27.9
21	Copper	mg/kg	2.3
22	Chromium	mg/kg	ND
23	Zinc	mg/kg	4.4
24	Lead	mg/kg	0.50
Source: Environmental Impact Assessment Report for Installation of 2 Mounded Bullets at Guwahati Refinery, Year 2017			

Figure-6: Typical Section Showing Important Site Levels



S.No	Component	Previous Levels (meters)	Revised Level (meters)	Remark
1.	Natural Ground Level (NGL)	52.0 m	52.0 m	Base level
2.	Stilt Level	+53.8 m	+54.2 m	At 20 years HFL
3.	Main Road Level	+55.3 m	+55.7 m	Above 50 years HFL
4	Secondary Road Level	+53.8 m	+54.2 m	At 20 Years HFL
5.	Buildings Ground Floor Level	+56.8 m	+57.2 m	Above 100 year HFL

Surface water and Ground water

27. The ASU site is in Brahmaputra River catchment (at about 5 km in monsoon season). There is no major surface water source close to the site. The site has not been flooded due to Brahmaputra River flow. However, during monsoon, there is water logging in some low-lying portions of site.

28. The ground water quality data for ASU site and surroundings is not available. The contractor has collected ground water samples in pre-construction phase with an aim to establish baseline for ground water quality. The results are given in **Table-5**. It is clear from these results that most of the parameters of ground water quality are within the limits of drinking water parameters specified in IS:10500 (2012). The latest water quality monitoring

results completed in April 2024 (**Reference-Annexure-7**) by the contractor is provided in **Table-6**. It is clear from the results that these are also well within the drinking water quality standards specified in IS: 10500 (2012). The Central Ground Water Board (CGWB-Northeastern Region Office) has conducted some ground water surveys and studies in Darrang district in 2010 and published in 'Ground Water Information Booklet- Darrang District' in the year 2012. As per their study, the ground water of the district is fresh and suitable for both domestic and irrigation purposes. Based on 2012 data of CGWB the depth of water level during pre-monsoon months, in Darrang district ranged from 2 to 4 m below ground level (bgl) and 1 to 2 m in post monsoon months. The stage of ground water development in Darrang district is 31% and the district does not fall in critical category for ground water development. The total reserves/potential of ground water in the district is 575 million m^3 whereas development /usage is only 230 million $m^{3.}$ The hydrogeology map of Darrang district has been shown in **Figure-7.**

Table-5: Ground Water Quality Results (Baseline Monitoring)

Sl. No.	Parameter	Unit	IS:10500-2012 limits	GW1
1	pH	-	6.5-8.5	6.9
2	Total Alkalinity as CaCO3	mg/l	200	44
3	Turbidity	NTU	1	54
4	Total Dissolved Solids	mg/l	500	78
5	Total Hardness as CaCO3	mg/l	200	24
6	Total Coliform	MPN /100 ml	Absent in 100 ml	Absent
7	Calcium as Ca	mg/l	75	18
8	Magnesium as Mg	mg/l	30	6.0
9	Residual Chlorine as Cl2	mg/l	1	Nil
10	Chloride as Cl	mg/l	250	10.0
11	Sulphate as SO4	mg/l	200	4.2
12	Fluoride as F	mg/l	1.0	0.248
13	Nitrates as NO3	mg/l	45	2.4
14	Cadmium as Cd	mg/l	0.01	0.02
15	Arsenic as As	mg/l	0.01	<0.01
16	Copper as Cu	mg/l	0.05	0.03
17	Lead as Pb	mg/l	0.01	0.05
18	Manganese as Mn	mg/l	0.10	<0.05
19	Iron as Fe	mg/l	0.30	2.4
20	Chromium as Cr+6	mg/l	0.05	0.06
21	Nickel as Ni	mg/l	0.01	<0.10
22	Mercury as Hg	mg/l	0.001	<0.001
23	Fecal Coliform	MPN /100 ml	Absent in 100 ml	Absent
Source: Baseline Monitoring completed by the Contractor in Pre- Construction phase at ASU site				

Table-6: Ground Water Quality Results (Construction Phase Monitoring)

Sl. No.	Parameter	Unit	IS:10500-2012 limits	GW1 Results
1	pH	-	6.5-8.5	6.59
2	Conductivity	ms	-	0.36
3	Color	Hazen	5	Colorless
4	Total Dissolved Solids	mg/l	2000	204
5	Total Suspended Solids	mg/l	-	<10
6	Turbidity	NTU	1	<1
7	Dissolved Oxygen	mg/l	-	4.7
8	Biological Oxygen Demand	mg/l	-	2.4
9	Chemical Oxygen Demand	mg/l	-	<5
10	Alkalinity (Total)	mg/l	200	180
11	Chlorides	mg/l	250	20.80
12	Fluoride as F	mg/l	1	<0.50
13	Hardness	mg/l	200	164
14	Calcium as Ca	mg/l	75	26.40
15	Iron as Fe	mg/l	0.30	0.22
17	Copper as Cu	mg/l	0.05	<0.05
18	Lead as Pb	mg/l	0.01	<0.01
19	Zinc as Zn	mg/l	5	0.10
20	Odour	mg/l	Agreeable	Agreeable
21	Sulphates	mg/l	200	7.80
22	Alkalinity as Na2CO3	mg/l	-	26
23	Arsenic as As	mg/l	<0.01	<0.01
24	Cadmium as Cd	mg/l	<0.003	<0.003
25	Chromium as Cr+6	mg/l	<0.05	<0.05
26	Mercury as Hg	mg/l	<0.001	<0.001
27	Magnesium as Mg	mg/l	10	6
28	Nitrate as NO3	mg/l	5	<5
29	Potassium as K	mg/l	10	8
30	Sodium as Na	mg/l	12	10
31	Taste	Agreeable	Agreeable	Agreeable
32	Temperature	Deg C	-	25.9
33	Fecal Coliform	MPN/100 ml	-	Absent
34	Total Coliform	MPN/100 ml	-	Absent

Source: Construction Phase Monitoring (April 2024) completed by the Contractor at ASU site

29. The surface water quality data of local stream close to ASU site is not available. The contractor has collected water samples from the Mangaldai River in pre- construction phase to establish baseline. The results of the water sample of Mangaldai river are given in **Table-7**. Since Brahmaputra is also the river of significance in the project region so water quality data of this river was obtained from past EIA study source. This river in future may also be the source of drinking water supply in Darrang town. Currently ground water is the drinking water

source. The aerial distance of this river from the site is about 5 km in monsoon season. This data is given below in **Table-8**. It is clear from this table that heavy metals like copper, lead, mercury, cadmium, and chromium were below their respective detection limits in both the river water. Brahmaputra River generally conforms to Class-B & C of the CPCB and Mangaldai river conforms to Class-C, which means the water quality of both the rivers is suitable for outdoor bathing and as drinking water source after conventional treatment and disinfection. During the construction phase (April 2024) the surface water quality near the ASU site was tested and results are provided in **Table-9**. It is clear that the surface water quality meets all parameters of drinking water quality except turbidity. So, treatment is needed to make it suitable for drinking. If compared with CPCB criteria for surface water, then it conforms to Class C. It means it can be used as a drinking water source after conventional treatment. The monitoring reports provided in **Annexure-7**.

Table-7: Mangaldai River Water quality in Sub-Project Region

Sl. No.	Parameter	Unit	Value	Permissible CPCB Criteria	
				Class B (Suitable for outer Bathing)	Class C (Drinking Water source after conventional treatment and disinfection)
1	pH	-	6.3	6.5 to 8.5	6 to 9
2	Conductivity	Micromhos/cm	416	Not Stipulated	Not Stipulated
3	Dissolved Oxygen	mg/l	7.4	5 or more	4 or more
4	BOD (3 Days 27^0C)	mg/l	3.2	3 or less	3 or less
5	Total Coliforms	MPN/100 ml	1500	500 or less	5000 or less
6	Faecal Coliforms	MPN/100 ml	730	Not Stipulated	Not Stipulated
6	Turbidity	NTU	20	Not Stipulated	Not Stipulated
7	COD	mg/l	12.4	Not Stipulated	Not Stipulated
8	Total Suspended Solids	mg/l	26	Not Stipulated	Not Stipulated
9	Phosphate as P	mg/l	0.66	Not Stipulated	Not Stipulated
10	Total Hardness (as CaCO3)	mg/l	102	Not Stipulated	Not Stipulated
11	Chloride (as Cl)	mg/l	90	Not Stipulated	Not Stipulated
12	Sulphate (as SO4)	mg/l	30.2	Not Stipulated	Not Stipulated
13	Nitrate (as NO3)	mg/l	1.2	Not Stipulated	Not Stipulated
14	Fluoride (as F)	mg/l	0.223	Not Stipulated	Not Stipulated
15	Calcium (as Ca)	mg/l	62	Not Stipulated	Not Stipulated
16	Magnesium (as Mg)	mg/l	40	Not Stipulated	Not Stipulated
17	Copper (as Cu)	mg/l	0.03	Not Stipulated	Not Stipulated
18	Iron (as Fe)	mg/l	1.6	Not Stipulated	Not Stipulated
19	Zinc	mg/l	0.13	Not Stipulated	Not Stipulated
20	Nickel (as Ni)	mg/l	0.10	Not Stipulated	Not Stipulated
21	Arsenic (as As)	mg/l	<0.01	Not Stipulated	Not Stipulated
22	Mercury (as Hg)	mg/l	<0.001	Not Stipulated	Not Stipulated
23	Lead (as Pb)	mg/l	0.11	Not Stipulated	Not Stipulated
24	Cadmium (as Cd)	mg/l	0.02	Not Stipulated	Not Stipulated
25	Alkalinity (as CaCO3)	mg/l	195	Not Stipulated	Not Stipulated
26	Hexavalent Chromium as Cr+6	mg/l	<0.06	Not Stipulated	Not Stipulated

Sl. No.	Parameter	Unit	Value	Permissible CPCB Criteria	
				Class B (Suitable for outer Bathing)	Class C (Drinking Water source after conventional treatment and disinfection)
Source: Baseline Environmental Monitoring by the Contractor during Pre- construction Phase					

Table-8: Brahmaputra River Water quality in Sub-Project Region

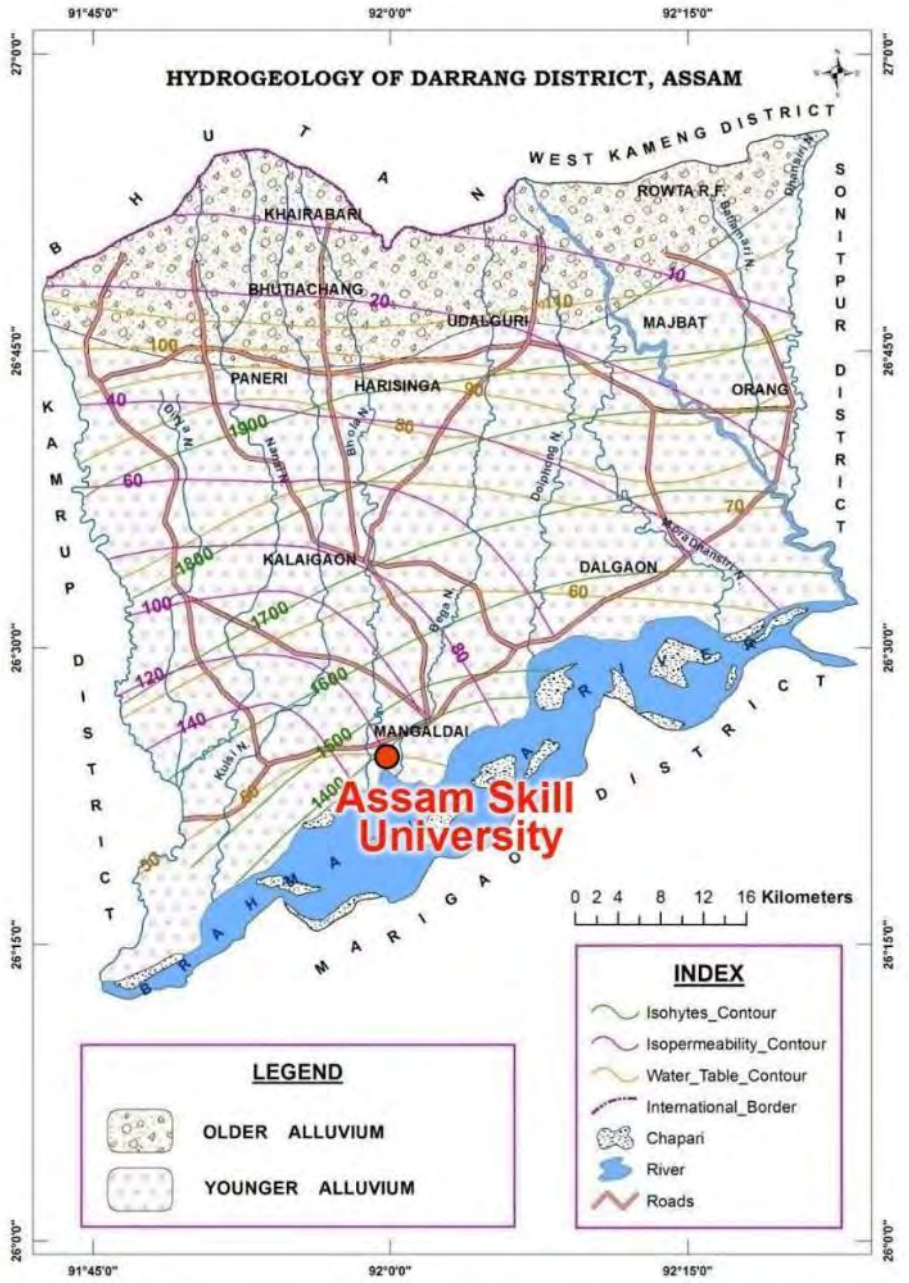
Sl. No.	Parameter	Unit	Value	Permissible CPCB Criteria	
				Class B (Suitable for outer Bathing)	Class C (Drinking Water source after conventional treatment and disinfection)
1	pH	-	7.4	6.5 to 8.5	6 to 9
2	Conductivity	Micromhos/cm	288	Not Stipulated	Not Stipulated
3	Dissolved Oxygen	mg/l	6.7	5 or more	4 or more
4	BOD (3 Days 27^0C)	mg/l	3	3 or less	3 or less
5	Total Coliforms	MPN/100 ml	640	500 or less	5000 or less
6	Total Dissolved Solids	mg/l	168	Not Stipulated	Not Stipulated
7	Oil and Grease	mg/l	1.4	Not Stipulated	Not Stipulated
8	Cyanide as (CN)	mg/l	<0.005	Not Stipulated	Not Stipulated
9	Phenol	mg/l	<0.001	Not Stipulated	Not Stipulated
10	Total Hardness (as CaCO3)	mg/l	99	Not Stipulated	Not Stipulated
11	Chloride (as Cl)	mg/l	25	Not Stipulated	Not Stipulated
12	Sulphate (as SO4)	mg/l	3	Not Stipulated	Not Stipulated
13	Nitrate (as NO3)	mg/l	1.6	Not Stipulated	Not Stipulated
14	Fluoride (as F)	mg/l	0.2	Not Stipulated	Not Stipulated
15	Calcium (as Ca)	mg/l	28	Not Stipulated	Not Stipulated
16	Magnesium (as Mg)	mg/l	7	Not Stipulated	Not Stipulated
17	Copper (as Cu)	mg/l	<0.05	Not Stipulated	Not Stipulated
18	Iron (as Fe)	mg/l	0.40	Not Stipulated	Not Stipulated
19	Manganese (as Mn)	mg/l	<0.05	Not Stipulated	Not Stipulated
20	Zinc	mg/l	0.06	Not Stipulated	Not Stipulated
21	Boron (as B)	mg/l	<0.02	Not Stipulated	Not Stipulated
22	Arsenic (as As)	mg/l	<0.002	Not Stipulated	Not Stipulated
23	Mercury (as Hg)	mg/l	<0.001	Not Stipulated	Not Stipulated
24	Lead (as Pb)	mg/l	<0.05	Not Stipulated	Not Stipulated
25	Cadmium (as Cd)	mg/l	<0.01	Not Stipulated	Not Stipulated
26	Alkalinity (as CaCO3)	mg/l	128	Not Stipulated	Not Stipulated
27	Hexavalent Chromium as Cr+6	mg/l	<0.05	Not Stipulated	Not Stipulated
Source: Environmental Impact Assessment Report for Installation of 2 Mounded Bullets at Guwahati Refinery, Year 2017					

Table-9: Surface Water Quality Results (Construction Phase Monitoring)

Sl. No.	Parameter	Unit	IS:10500-2012 limits	Surface Water Quality (SW1) Results
1	pH	-	6.5-8.5	6.53
2	Conductivity	ms	-	0.20
3	Color	Hazen	5	Colorless
4	Total Dissolved Solids	mg/l	2000	112
5	Total Suspended Solids	mg/l	-	<10
6	Turbidity	NTU	1	2
7	Dissolved Oxygen	mg/l	-	4.9
8	Biological Oxygen Demand	mg/l	-	2.8
9	Chemical Oxygen Demand	mg/l	-	6
10	Alkalinity (Total)	mg/l	200	75
11	Chlorides	mg/l	250	18.9
12	Fluoride as F	mg/l	1	<0.50
13	Hardness	mg/l	200	96
14	Calcium as Ca	mg/l	75	15.2
15	Iron as Fe	mg/l	0.30	0.14
17	Copper as Cu	mg/l	0.05	<0.05
18	Lead as Pb	mg/l	0.01	<0.01
19	Zinc as Zn	mg/l	5	<0.10
20	Odour	mg/l	Agreeable	Agreeable
21	Sulphates	mg/l	200	5.4
22	Alkalinity as Na2CO3	mg/l	-	<2
23	Arsenic as As	mg/l	<0.01	<0.01
24	Cadmium as Cd	mg/l	<0.003	<0.003
25	Chromium as Cr+6	mg/l	<0.05	<0.05
26	Mercury as Hg	mg/l	<0.001	<0.001
27	Magnesium as Mg	mg/l	10	10
28	Nitrate as NO3	mg/l	5	<5
29	Potassium as K	mg/l	10	10
30	Sodium as Na	mg/l	12	12
31	Taste	Agreeable	Agreeable	Agreeable
32	Temperature	Deg C	-	-
33	Fecal Coliform	MPN/100 ml	-	Absent
34	Total Coliform	MPN/100 ml	-	Absent

Source: Construction Phase Monitoring (April 2024) of surface water near ASU site by the Contractor

Figure-7: Hydrogeology Map for Darrang District



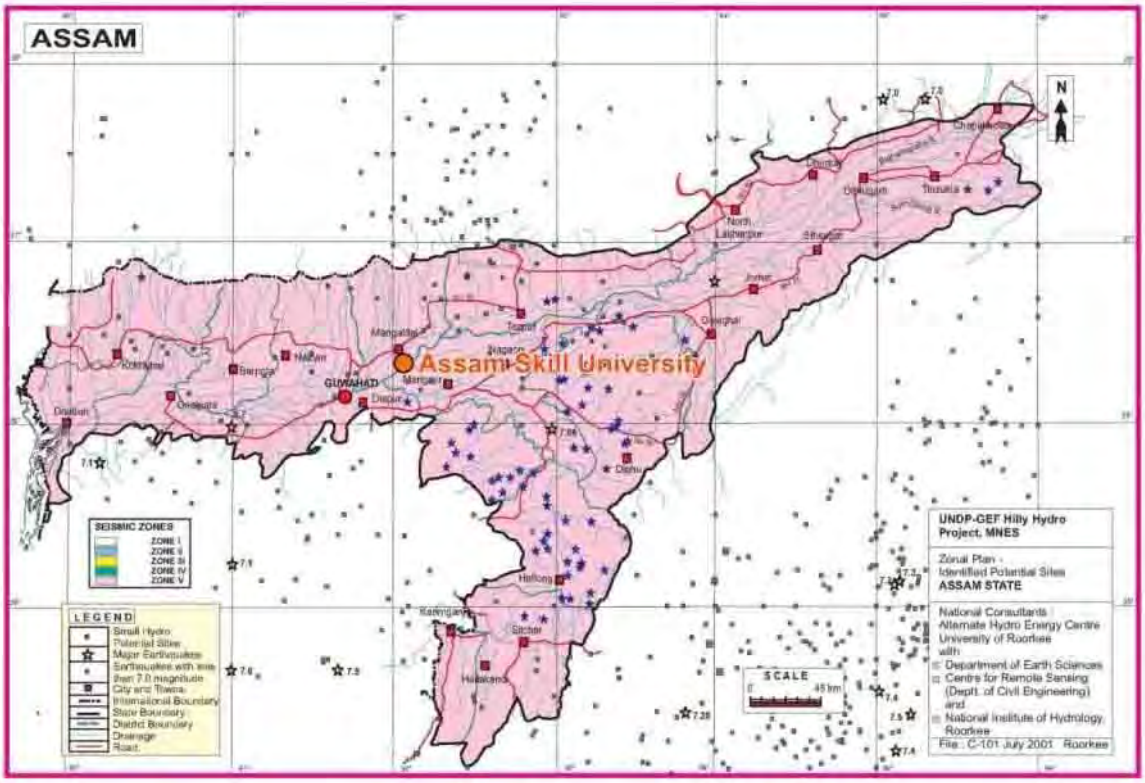
Source: Ground Water Information Booklet Darrang District, Assam -Central Ground Water Board (Year-2013)

Geology and Seismology

30. Geologically, the project region (Darrang district) is occupied by Quaternary sediments of older and younger alluvium, where the northern foothill part is covered mostly by old alluvium consisting of clay, sand, gravel, pebble, and boulder, on the other hand, the southern new alluvium contains clay, silt and fine sand in maximum proportions. With favorable physiographical, geological, lithological, and climatic factors, the project area happens to be an area of large reserve of under-ground water in regionally extensive aquifers up to a depth ranging from 50 to 300 m. There are no rock formations at site and surroundings.

31. India's seismic code divides the country into five seismic zones (I to V). The ASU campus site comes under seismic zone V 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)]. All structures have been designed considering seismic zone V. It may be mentioned that intensity of earthquake increases from Zone I to V. The Zone V includes all North-Eastern states of India, part of northern states such as Himachal Pradesh and Uttarakhand, Kutch in Gujarat, parts of North Bihar, and Andaman & Nicobar Islands. Zones I, II and III mainly cover Central and Southern parts of Indian peninsula. As mentioned above, Zone V covers the areas with the highest risk of suffering earthquakes, so IS code assigns a zone factor of 0.36 for Zone V. Structural designers use this factor for earthquake resistant design of structures in Zone V. The same factor has been used in design of building structures of ASU campus in Phase II. The seismological map of Assam has been given in **Figure-8**.

Figure-8: Seismological Map of Assam



Source: UNDP-GEF Hilly Hydro Project- A Report on Zonal Plan Activity (Volume II) -Thematic Map, Year 2001

Drainage

32. The ASU site is drained by Brahmaputra River (at an aerial distance of about 5 km in monsoon months) and its tributaries (mainly Mangaldai River). No flooding issues have been reported at the site because of the spread of river water during monsoon. However, due to torrential rains in monsoon local depressions and some portions at site get waterlogged. This issue is being addressed in the design through design and implementation of storm water drainage system after detailed hydrological study.The stormwater drainage system is proposed in 2 numbers of Zones to ensure multiple outfall points for the discharging of the stormwater with a capacity of 18.01 m^3/s. Runoff from these zones will be connected to the nearby Noanadi and Mangaldai river with the assistance of the Water Resource Department. The layout of the stormwater drainage plan has been given in **Figure-11** and Para 51. The

HFL(100 years return flood period) level reported is 57.2 m at site.The reported average existing ground level at the site is around 52 m. The site is not in the river land or flood plains. The general slope of the site is towards Brahmaputra River in the southern direction.

B. Ecological Resources

(i) Forests

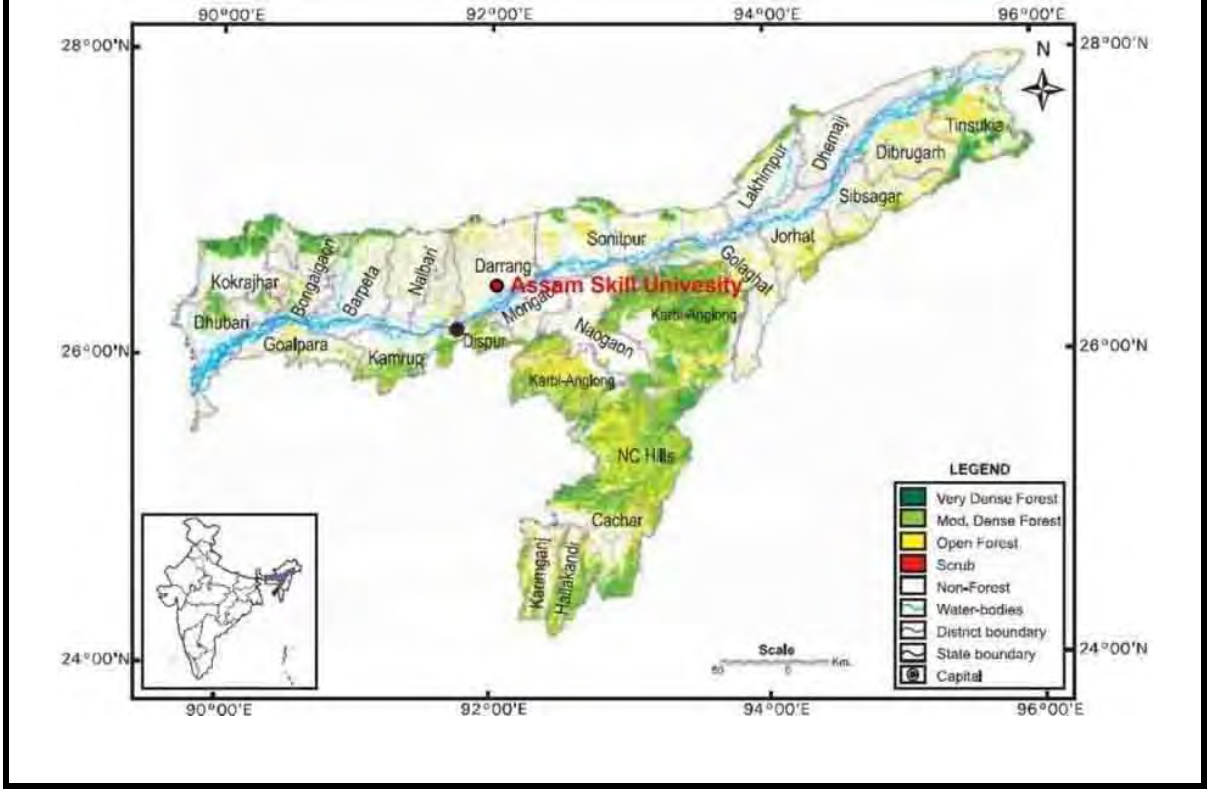
33. Various types of forests in Assam currently cover an area of nearly 28,326.51 km^2, which is about 36.11% of the total land area of the state. The variation in the landscape has created a great diversity of flora and fauna. In terms of forest canopy density classes, the State has 2,794.86 km^2 under Very Dense Forest (VDF), 10,278.91 km^2 under Moderately Dense Forest (MDF) and 15,252.74 km^2 under Open Forest (OF). Darrang district has about 5.64 % forest of the total geographic area of the district. The most portions of these forest areas are managed by the Forest Department. The forest areas under very dense, moderately dense and open category are presented below in **Table-10** for Darrang district.

Table-10: Different Categories of Forests in Darrang District

District	**Very Dense Forest Area (km^2)**	**Moderately Dense Forest Area (km^2)**	**Open Forest Area (km^2)**
Darrang	0	13.89	75.54
Source: State Forest Department (Forest Survey of India Report -Year 2019)			

34. Five major groups of forests in Assam have been identified. These are (1) Tropical Wet Evergreen Forest, (2) Tropical Semi-evergreen Forest, (3) Tropical Moist Deciduous Forest, (4) Littoral and Swamp Forest and (5) Tropical Dry Deciduous Forest. Forest cover map for Assam is shown in **Figure -9.**

Figure-9: Forest cover Map of Assam



Source: Forrest Survey of India, Year 2020

35. The ASU site does not fall within any reserved, protected, or revenue forest areas. The entire area of the ASU plot is also not part of any reserved, protected or revenue forest areas. The forest area in Darrang district is low because it is an agriculture dominated area and is in the flood plains of Brahmaputra. The Phase II components areas are also well within the demarcated ASU plot.

(ii) Flora and Fauna around ASU Site

36. The ASU site is at the outer skirts of Mangaldai town. There are no protected areas within a 15 km radius. Around the ASU site, one only finds domesticated fauna. At present there are no trees on site. There is presence of shrubs in some portions of ASU site. The common trees in the surroundings of ASU site (more than 40 meters away from the boundary) are given in **Table-11**. The International Union for Conservation of Nature (IUCN) category of each tree species is also given in Table**-11**. Some tree species belong to near threatened (NT), vulnerable (VU) and endangered (EN) categories. But none of these species are present at ASU site and these are not expected to be impacted during construction and operation phases. At the locations of Phase II components, there are no trees and shrubs.

Table-11: Common Tree Species around ASU Site

Sl. No.	Scientific Name	Common Name	IUCN Category
1.	*Aegle marmelos*	Bel	*Near Threatened (NT)*
2.	*Alangium chinense*	Kodalkonia	*not available*
3.	*Albizia lucida*	Hoj	*Least Concern (LC)*
4.	*Albizia odoratissima*	Chamkorai Heharu	*Least Concern (LC)*

Sl. No.	Scientific Name	Common Name	IUCN Category
5.	*Acrocarpus fraxinifolius*	Mandhani	*Least Concern (LC)*
6.	*Acrocarpus integrifolia*	Borpat	*Least Concern (LC)*
7.	*Acrocarpus procera*	Korai	*Least Concern (LC)*
8.	*Anona squamosa*	Custard apple	*Least Concern (LC)*
9.	*Azadirachta indica*	Neem	*Least Concern (LC)*
10.	*Bauhinia purpurea*	Kanchan	*Least Concern (LC)*
11.	*Brideliaretusa*	Kohir	*Least Concern (LC)*
12.	*Bauhinia malabarica*	Tengakotra	*Least Concern (LC)*
13.	*Barringtonia acutangula*	Hijal	*Least Concern (LC)*
14.	*Bombax malabarica*	Simalu	*Least Concern (LC)*
15.	*Carallia lucida*	Mohithekara	*not available*
16.	*Callicarpa arborea*	Maskiita	*Least Concern (LC)*
17.	*Casearia glomerata*	Telbhurukia	*Least Concern (LC)*
18.	*Cassia fistula*	Sonam	*Least Concern (LC)*
19.	*Celtisti morensis*	Mahila	*Least Concern (LC)*
20.	*Cordia dichotoma*	Ghapakharea	*Least Concern (LC)*
21.	*Craetera religiosa*	Barun	*Least Concern (LC)*
22.	*Croton oblongifolius*	Makhunda	*Least Concern (LC)*
23.	*Callistemon linearis*	Bottle brush	*not available*
24.	*Canarium bengalensis*	Dhuna	*not available*
25.	*Canarium strictum*	Dhuna	*not available*
26.	*Cassia javanica*	Malayan cassia	*Least Concern (LC)*
27.	*Chrysophylluss lanceolatum*	Bon pitha	*not available*
28.	*Celba pentandra*	White silk cotton	*Least Concern (LC)*
29.	*Cinnnamomum camophora*	Karpur	*not available*
30.	*Cordia sebestina*	Lolu	*Least Concern (LC)*
31.	*Anthocephalus chinensis*	Kodam	*not available*
32.	*Artocarpus chama*	Chamkathal	*not available*
33.	*Artocarpus integrifolia*	Kathal	*not available*
34.	*Acacia auriculiformis*	Akasmani	*Least Concern (LC)*
35.	*Acacia catechu*	Khair	*not available*
36.	*Crescentia cujete*	Bilatibel	*Least Concern (LC)*
37.	*Caesalpinia pulcherina*	Radhasurea	*not available*
38.	*Dalbergia sissoo*	Sisu	*Least Concern (LC)*
39.	*Derris robusta*	Kothriakorai	*not available*
40.	*Dillenia indica*	Outenga	*Least Concern (LC)*
41.	*Dillenia scabrella*	Banjole	*Least Concern (LC)*
42.	*Diospyros variegata*	Koliori	*not available*
43.	*Dysoxylum binectariferum*	Bandardima	*Least Concern (LC)*
44.	*Dalbergia latifolia*	Rose wood	*Vulnerable (VU)*
45.	*Dipterocarpus retusus*	Holang	*Endangered (EN)*
46.	*Ehretia acuninata*	Gual	*Least Concern (LC)*
47.	*Erythrina stricta*	Modre	*Least Concern (LC)*

Sl. No.	Scientific Name	Common Name	IUCN Category
48.	*Eugenia balsamea*	Goolhajam	*Least Concern (LC)*
49.	*Elaeocarpus floribundus*	Jalpai	*not available*
50.	*E. ganitrus*	Rudrakesha	*Least Concern (LC)*
51.	*Eucalyptus tereticornis*	Red gum	*Least Concern (LC)*
52.	*E. globules*	Blue gum	*Least Concern (LC)*
53.	*E. citriodora*	Lemon scented	*not available*
54.	*Exbucklandia populnea*	Diengdok	*not available*
55.	*Ficus bengalensis*	Bot	*not available*
56.	*F. benjamina*	Joribor	*not available*
57.	*F elastica*	Athabor, Indian	*Least Concern (LC)*
58.	*F. hispida*	Dimoru	*Least Concern (LC)*
59.	*F. religiosa*	Ahat	*Least Concern (LC)*
60.	*F. cunia*	Kongroy	*Least Concern (LC)*
61.	*Flacourtia jongomus*	Poniyal	*Least Concern (LC)*
62.	*Garcinia cowa*	Kujithekera	*Least Concern (LC)*
63.	*G. pedunculata*	Borthekera	*Least Concern (LC)*
64.	*G. xanthochymus*	Tepontenga	*Least Concern (LC)*
65.	*Glirici deasepium*	Madera	*Least Concern (LC)*
66.	*Garuga pinnata*	Rohini	*Least Concern (LC)*
67.	*Glochidion lancedarum*	Armlochan	*Least Concern (LC)*
68.	*Glochiolion sphaerogynum*	Bob Jagru	*Least Concern (LC)*
69.	*Magnolia griffithii*	Gahorisopa	*Data deficient (DD)*
70.	*Machilus bombycina*	Som	*Least Concern (LC)*
71.	*Manilkara hexandra*	Oubard	*Least Concern (LC)*
72.	*Mesua ferrea*	Nahae	*not available*
73.	*Melia azedarch*	Ghoranim	*Least Concern (LC)*
74.	*Memelylon cerasiforma*	Kakoichera	*Least Concern (LC)*
75.	*Michelia champaca*	Titasopa	*not available*
76.	*M. oblonga*	Phulsopa	*not available*
77.	*M. montana*	Phulsopa	*Least Concern (LC)*
78.	*Mimusops elongi*	Bakul	*Least Concern (LC)*
79.	*Morus macroura*	Bola	*Least Concern (LC)*
80.	*Moringa oleifera*	Sajina	*Least Concern (LC)*
81.	*Myristica kingii*	Amol	*Least Concern (LC)*
82.	*Mallotus ferrugineus*	Larubandha	*not available*
83.	*Mangifera indica*	Aam (Mango)	*not available*
84.	*Micromelum minutum*	Sagladi	*not available*
85.	*Nyctanthes arbortristis*	Sewali	*not available*
86.	*Oroxylum indicum*	Bhatghila	*not available*
87.	*Premhal atifolia*	Gonara	*Least Concern (LC)*
88.	*Palaquium polyanthum*	Kurta	*Least Concern (LC)*
89.	*Pongamia pinrata*	Tamsica	*Least Concern (LC)*
90.	*Phoebe goalparensis*	Bonscn	*Least Concern (LC)*

Sl. No.	Scientific Name	Common Name	IUCN Category
91.	*Polyalthialongifolia*	Debdaru	*Least Concern (LC)*
92.	*P. pendula*	Pendulum tree	*Least Concern (LC)*
93.	*Psidium guajara*	Madhuriam	*Least Concern (LC)*
94.	*Putrajivaroxburghii*	Putranjibi	Least Concern (LC)
95.	*Phyllanthus emblica*	Amlakhi	*Least Concern (LC)*
96.	*Sapium baccatum*	Cheleng	*Least Concern (LC)*
97.	*Semecarpus anacardium*	Bhela	*not available*
98.	*Syzygium cumini*	Kalajam	*Least Concern (LC)*
99.	*Shorea robusta*	Sal	*Least Concern (LC)*
100.	*Spathodeacam panulata*	Fountain tree	*not available*
101.	*Spondiu spinnata*	Amorea	*not available*
102.	*Swietenia macrophylla*	Mahogeni	*Vulnerable (VU)*
103.	*S. mahagoni*	Mahogeni	*not available*
104.	*Santalum album*	Chanolan	*Vulnerable (VU)*
105.	*Talaumahodgsonii*	Bovehamthuri	*not available*
106.	*Tectona grandis*	Segun	*not available*
107.	*Terminalia chebula*	Silikka	*Least Concern (LC)*
108.	*T Arjuna*	Arjun	*not available*
109.	*T. belerica*	Bhoora	*not available*

Source: Site and surrounding Observations of ASDM Site Team and Environmental Specialist

37. The fauna in the surroundings of ASU site includes Wild Boar, Jungle Cat, Asiatic Jackal, Bengal Fox, Small Indian Civet, Indian Grey Mongoose, Small Asian Mongoose, Rhesus Macaque, Assam Macaque, Capped Langur, Bengal Slow Loris, Indian Palm Squirrel, Porcupine, Lesser Bandicoot Rat, Hoary Bamboo Rat, Indian flying Fox, short nosed Indian fruit Bat, least horseshoe Bat. The reptiles include Tree frog, Ornamented Pygmy, Indian bull frog, Common Pond Frog, Water frog, Common Rat Snake, North-eastern Kukri, Golden Tree Snake, Banded Krait, Indian Roofed Turtle, Indian Soft Shell, Peacock, etc. The common avian in the project ASU site and surroundings are little grebe, little cormorant, Grey Heron, Pond Heron, Smaller egret, little egret, Stork, Lesser adjutant stork, Large whistling teal, Pintail, Common teal, Pariah kite, While backed vulture, Pied Harrier, Crested Serpent eagle Coot, Common Sand piper, Spotted dove, The cuckoo, Koel, Spotted owlet, Common kingfisher, Copper smith, Pied wood pecker. None of these birds are of the threatened or endangered category (Reference: Discussion with Forest Department Officials at Mangaldai and Guwahati in February 2021).

38. There are no endangered or rare species of fauna as the project site is located close to Mangaldai town.

39. The water bodies around ASU site are seasonal in nature. There is not much presence of aquatic life in the water bodies close to the site as these are shallow ponds /low lying areas, which get dried up in winter and summer months. The site is surrounded by open agricultural land and sparse habitation.

(iii) *Protected Areas*

40. The list of protected areas (National Parks and Wildlife Sanctuaries) in Assam is given in **Table- 12**. In Darrang district, there is no National Park or wildlife sanctuary. The boundary

of nearest National Park (Orang) is about 35 km from ASU site. The map of protected areas is shown in **Figure-10**.

Table-12: Protected Areas in Assam

(a) National Parks

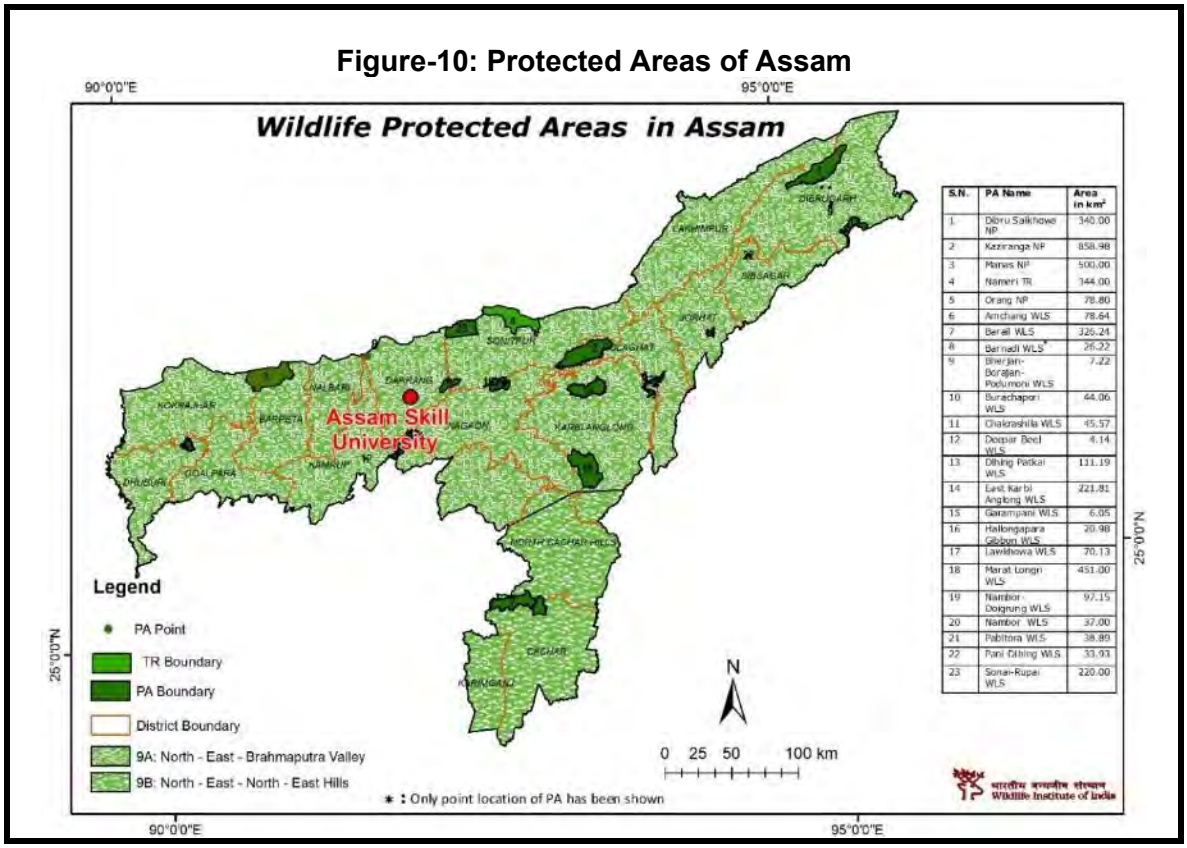
Name	Location	Area (km²)	Year of Notification
Kaziranga National Park	Golaghat, Nagaon district and Karbi Anglong	858.98	1905
Manas National Park	Kokrajhar, Chirang, Baksa, Bajali and Udalguri,	950.00	1985
Nameri National Park	Sonitpur	200.00	1978
Dibru-Saikhowa National Park	Dibrugarh and Tinsukia district	340.00	1978
Orang National Park	Udalguri and Sonitpur district	78.81	1999
Dehing Patkai National Park	Dibrugarh and Tinsukia district	231.65	2020

(b) Wildlife Sanctuaries

Name	Location	Area (km²)	Year of Notification
Hoollongapar Gibbon Sanctuary	Jorhat	20.98	1997
Garampani Wildlife Sanctuary	Karbi Anglong	6.05	1952
Bura Chapori Wildlife Sanctuary	Sonitpur	44.06	1995
Bornadi Wildlife Sanctuary	Udalguri	26.22	1980
Sonai Rupai Wildlife Sanctuary	Sonitpur	220.00	1998
Pobitora Wildlife Sanctuary	Marigaon	38.80	1987
Panidihing Bird Sanctuary	Sibsagar	33.93	1995
Bherjan-Borajan-Padumoni Wildlife Sanctuary	Tinsukia	7.22	1999
Nambor Wildlife Sanctuary	Karbi Anglong	37.00	2000
East Karbi-Anglong Wildlife Sanctuary	Karbi Anglong	222.81	2000
Laokhowa Wildlife Sanctuary	Nagaon	70.13	1972
Chakrashila Wildlife Sanctuary	Dhubri and Kokrajhar	45.57	1994
Marat Longri Wildlife Sanctuary	Karbi Anglong	451.00	2003
Nambor-Doigrung Wildlife Sanctuary	Golaghat	97.15	2003
Dehing Patkai Wildlife Sanctuary	Dibrugarh and Tinsukia	111.19	2004
Borail Wildlife Sanctuary	Cachar and Dima Hasao	326.25	2004
Amsang Wildlife Sanctuary	Guwahati	78.64	2004
Dipor Bil Wildlife Sanctuary	Kamrup	4.14	1989
https://en.wikipedia.org/wiki/List_of_protected_areas_of_Assam			

Source: Department of Environment and Forest, Govt. of Assam, Year 2020)

Figure-10: Protected Areas of Assam



Source: Department of Environment and Forest, Govt. of Assam, Year 2020)

C. Economic Resources Industries

41. Being an agriculture prominent district, there are no large industrial units in the Mangaldai and surroundings. As shown in **Table-13** for Darrang district, there are micro, small, and medium enterprises focusing on agro-products, food, cotton textiles, etc.

Table-13: Details of Existing Micro and Small Enterprises and Artisan Units in Darrang District

NIC Code No	Type of Industry	Number of Units	Employment
10	Manufacture of Food Products	43	1,917
11	Manufacture Beverages	1	10
13	Manufacture of Textiles	3	95
17	Manufacture of Paper and Paper Products	3	47
20	Agro based	1	10
22	Soda water	4	36
23	Cotton textile	34	623
24	Woolen, silk & artificial Thread based clothes.	1	15
27.	Wood/wooden based furniture	1	10
31.	Chemical/Chemical based	1	10

Source: Statistical Handbook of Assam (Year 2016)

Transportation

42. The ASU site (inclusive of Phase II components) is well connected with Guwahati,

West Bengal, and other states of north- eastern region of the country through various national highways and state highways. The nearest rail head is Tangla at about 35 km from the ASU site. The nearest operating airport is Guwahati from the ASU site, and its distance is about 74 km. No clearance or permission from Airport Authority of India (AAI) is needed for the construction of ASU campus.

Land Use

43. A study of the land use (**Table-14**) shows that most of the area in Darrang district is under agriculture and non-agriculture uses. It is also clear that forest land and waste land are not significant. The land use of ASU site is rural open land under the ownership of GoA. If land use of ASU site is to be seen in terms of classification of **Tables 14**, it will fall under 'Land put to non-agriculture uses.

Table-14: Land Use Pattern of Darrang District

Land use	Area (In 000' hectare)
Geographical Area	158.5
Forest land	10.541
Culturable Waste land	3.879
Land put to Non-Agriculture Uses	97.319
Gross Cropped Area	132.670
Net Area Sown	73.319
Area Sown more than once	59.351

Source: District Irrigation Plan 2016-2020 for Darrang District

44. **Agricultural Development**. Darrang district is basically agrarian, where more than 65 percent of the population is engaged in agriculture and allied activities. Agriculture in Darrang is characterized by small holdings operated by family labor, both men & women. Average land holding size in Darrang is 0.95 ha. However, small & marginal farmers who make up 89 % of land holders, have an average farm size of 0.57 ha. Fruit and cash crops are a major source of income. Paddy is the principal crop grown in the district and autumn paddy, winter paddy and summer paddy are the three main types of paddies grown in the district. Next to paddy, wheat, rapeseed and mustard, sugarcane and vegetables are the main agricultural produce. Among cash crops, jute accounted for 3.2 % and sugarcane 0.38 % of the total cropped area.

Electrification

45. The Rural Electrification in Darrang district is 100%.

D. Social and Cultural Resources

Population and Communities

46. As per 2011 Census, the total population of Darrang was 928,500, with a density of population 586 per sq. km, which is higher than the state average of 398. The decadal variation of population for 2001-2011 was 22.19 percent, which had experienced much higher decadal variations during last several decades. Witnessing quite a sluggish process of urbanization, most people in Darrang live in the villages. The district is predominantly rural with more than 94 per cent of the total population in the district residing in rural area while the urban population is 5.98 percent which is lower than the state average of 14.1 percent. In terms of religious

composition, around 58 per cent of the total population in the district is hindu while the muslim constitutes more than 35 per cent of the total population. Almost all the muslims live in the rural areas, while around 4 percent of the hindus live in urban areas. The other minority communities constitute less than seven per cent of the total population of the district. In the district, Dalgaon Revenue Circle is the most populous having 473585 persons while Khoirabari is the least populous Revenue Circle having 8398 persons. Darrang district is basically agrarian, where more than 65 percent of the population is engaged in agriculture and allied activities. Out of the total population, 39.85 percent of the population was involved in agriculture as a main source of income and livelihood. Around 25 percent of the total population had agricultural laborers. Moreover, males were predominantly involved in agriculture and allied activities with 43.60 percent while women share was 27.97 percent of the total population of district. However, women were overwhelmingly occupied in manufacturing and production in household, small scale industry, rearing of livestock and collection of forest woods etc. Like elsewhere, women are also engaged in agricultural labor.

Health facilities

47. Darrang district has one civil hospital, 30 Primary Health Centers, 1 First Referral Unit, 6 Community Health Centers, and 163 Sub Centers of Community Health Centers. In addition to the above mentioned government run health facilities, there are many privately owned facilities available in major urban centers of the district. At the ASU there will be one medical Centre having first aid and referral facilities. The Darrang district hospital is about 3 km from ASU site.

Education facilities

48. In Darrang district there are 1,096 primary schools, 154 Middle Schools, 1,656 Senior Secondary Schools and 18 colleges. There are many technical education training institutes. The current ASU project will also contribute towards skills development and employability of youth from the Assam and North- Eastern states.

Archaeological Resources

49. There are no heritage sites notified by Archaeological Survey of India (ASI) within 300 m distance from the ASU site. Similarly, no common property resources such as public wells, water tanks, playgrounds, common grassing grounds or pastures, market areas and community buildings exist at the ASU site.

IV. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

A. Environmental Impacts

50. Any project creating physical infrastructure will have some impact on the environment. This addendum IEE examines the potential impacts anticipated during the construction and operation phases due to construction and development of ASU campus phase II buildings specially on account of minor increase in areas of residential quarters (Type-2, Type-3, Type-4 and Type-5).

(i) **Location impacts:** Impact associated with location of the project including effect on the environment and resettlement or livelihood related impacts on communities.
(ii) **Design impacts and pre-construction impacts:** Impact arising from project (phase II) 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 ASU campus.

51. ADB's REA checklist for buildings was used while screening the Phase II locations and location of ASU and recommending mitigation measures.

B. Location Impacts

52. The ASU site with 250 Bigha area (Phase II components well within this land) is located on unencumbered land owned by the Government of Assam and allocated to Assam Skill University. The construction works will be on the delineated plot as per drawings issued to the contractor**.** There are no significant ecological resources in the surroundings of ASU site as it is lying vacant and is close to Mangaldai town. There are sparse houses outside the plot boundary of ASU. There are no heritage sites notified by ASI or State Archaeological Department within the delineated site or in the immediate surroundings (300 m distance). The nearest archaeological site to ASU is at a distance of 35km from ASU site. No significant impacts can arise due to ASU location as its components including boundary wall will not impinge upon any area of ecological, archaeological, or historical importance. The ASU site is not in the immediate vicinity of national highway or state highway. The distance of National Highway-15 (connecting Guwahati and Mangaldai) is about 1 km, so air and noise pollution impacts on ASU are not anticipated on account of vehicular traffic. The road connecting to ASU site with National Highway has been strengthened by the Assam State Public Works Department with the help of GoA budget for the roads. This will be standalone activity of Assam PWD. No additional impacts due to slight increase in built up areas of Type-2, Type-3, Type-4 and Type-5 quarters in Phase II components; pertaining location have been identified.

53. The ASU site is located within seismic zone V and earthquakes of major magnitude may damage boundary walls and buildings of Phase I and Phase II components of ASU. No additional seismic impacts on account of change in built up area of phase II components has been identified.

C. Impacts during Design and Pre-Construction Phase

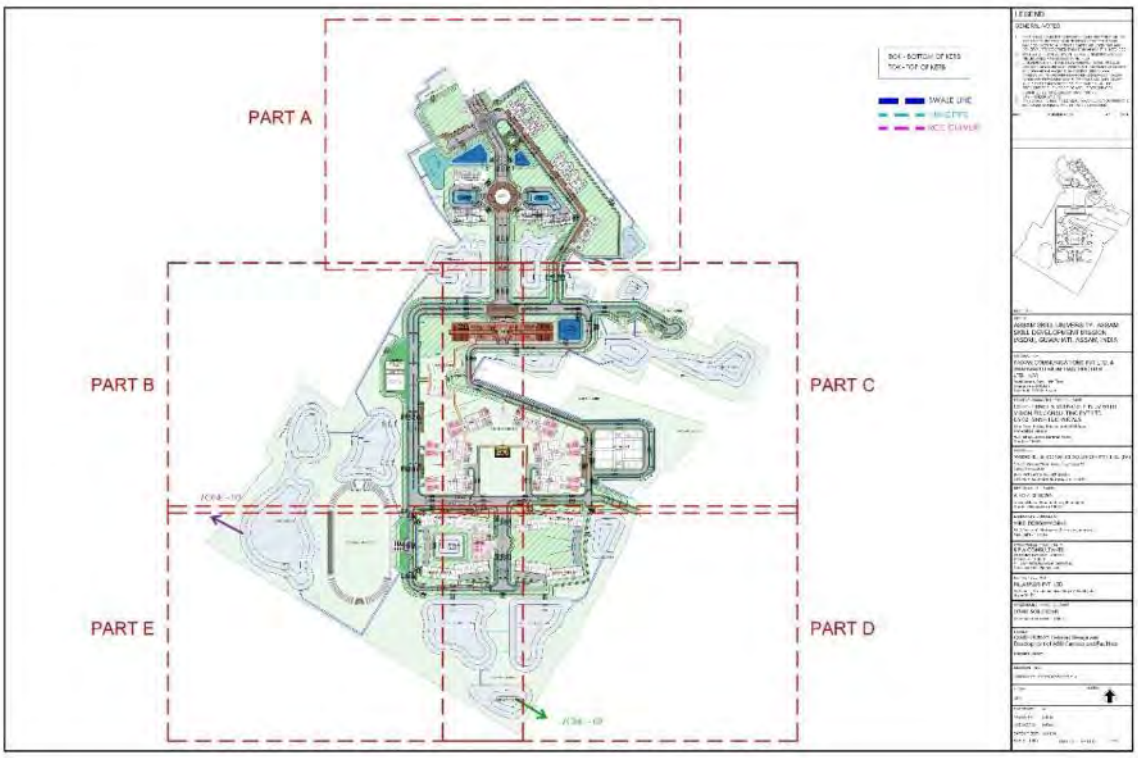
54. As noted above, the project site of ASU is owned by GoA and allocated to ASU. There are few trees at the site, but there are no issues pertaining to tree cutting. There are no trees or shrubs at the locations of Phase II components. Based on the environmental screening of the ASU site, it is concluded that there are no significant adverse environmental impacts during

the design and pre-construction phase of project. There are also no activities pertaining to obtaining environmental and forest clearances for the ASU project. The building plans have been approved by the Mangaldai Development Authority. In the design, sustainable environmental management measures have been built in. There is a water logging issue in some portions of sites during monsoon months. The detailed design of phase II components has taken care of this issue. The liquefaction phenomena (weak soil strength) have been identified in soil and geotechnical reports up to a depth of 10.5 m. Hence, ASU (Phase II components) detailed building design has been completed taking to account liquefaction phenomena and HFL levels of 57.2 m (100 years return period) at the site. No specific impacts on account of slight increase in built-up areas of some Phase II components.

Storm Water Drainage

55. A separate and independent rainwater drainage system has been planned for collecting rainwater from terrace & buildings and shall be diverted towards the waterbody / ponds. The entire complex has been designed incorporating the landscape and gradients to ensure stormwater drainage efficiently employing as few pipe/ drain channels as possible. The waterbodies / ponds have been created to store the stormwater run-off during peak monsoon season. Saucer drain shall be provided for the roads channelizing the water to the catch basin and discharging the stormwater towards the nearest waterbody / pond. Paved areas, lawns and roads shall slope towards the saucer/waterbody. Independent rainwater down takes of appropriate size and number have been planned. The stormwater drainage system is proposed in 2 numbers of Zones to ensure multiple outfall points for the discharging of the stormwater. The total storm water from the two zones has been estimated at 18.01 m^3/s. The drainage map has been provided in **Figure-11**. Due to marginal increase in plinth area of phase II components (Type-2, Type-3, Type-4 and Type-5 quarters), change in storm water quantity generation are almost insignificant and these have been taken care in the latest storm drainage planning, therefore, no additional impacts have been identified.

Figure-11: Layout for Storm Water Drainage



D. Impacts during Construction Phase

56. All construction activities to be undertaken at the ASU site (for the Phase II components) are being approved by the ASU, through PMC and CSQA firm. The regulatory approvals required for building plans have been obtained from authorities. The construction stage impacts due to slight increase in built up areas of phase II components (Type-2, Type-3, Type-4 and Type-5 quarters) are generic to the construction activities. The EMP emphasizes the construction impacts and necessary mitigation measures to be strictly followed by the contractor and supervised by the PMU and its authorized agency appointed (PMC) by the IA. The key potential impacts are covered in the following paragraphs.

57. **Impact due to stockpiles of construction materials**. Improper stockpiling of construction materials could obstruct movement of locals accessing agriculture fields, if stored outside delineated site boundary in open area. Hence, due consideration will be given for proper materials storage within the construction site. Stockpiles (sand, subgrade, and earth) will be covered (with covered bricks or polythene sheet) to protect from dust and erosion. Special care needs to be taken in monsoon months as some portions of sites are prone to water logging. All the materials are being stored within the ASU plot boundary. The slight increase in built up area will necessitate additional storage of materials as materials consumption/requirement will increase. But stockpiles on account of this are not anticipated to be on private land outside ASU plot boundary.

58. **Disposal of construction waste.** The construction waste could lead to untidy conditions at site and surroundings. These wastes comprise of broken pieces of bricks, surplus

earth, discarded and /or spilled construction materials, shuttering materials, etc. In the ASU construction, it shall be mandatory for the contractor to ensure proper disposal of the construction waste at the disposal site as designated by the PMU and CSQA firm. There will be marginal increase in generation of construction waste as materials requirement will increase. The slight increase of waste will also be handled and disposed of along with the other waste.

59. **Quarry and Borrow pits operations.** Since the civil works are of a small size, all construction materials are being procured from market/sources compliant with the environmental regulations of India and GoA. There will not be any need for direct procurement of stone dust and sand and other building materials from quarries. The borrow pit operations are not required as the site is plain. For raising level of the site, sand from approved and operating sand quarries near Brahmaputra River is being obtained. The total fill quantity has been estimated at 450,000 m^3. Necessary regulatory permissions for earth filling works have been obtained by the contractors. The built-up area increase in Phase II components (Type-2, Type-3, Type-4 and Type-5 quarters) will not require of any additional new quarry and /or borrow areas as fill works quantity is unchanged and slightly higher requirements of sand and subgrade shall be met from the already identified and selected sources compliant with the environmental regulations of GoA and GoI.

60. **Increase in noise levels and vibrations.** Noise levels in the immediate proximity of ASU construction site are expected to increase during construction. However, these will be largely imperceptible as civil works will be confined to relatively small area because nature of building construction works is such that it would not generate noises large enough to cause any difficulties. Further, there are no rock formations at site, so there will not be any requirement for blasting. Hence, extreme noise generations are ruled out. The distance of the nearest house is about 50 m from the boundary. The least distance of construction activity from house will be 55 m. Further, well raised (1.8 m height above ground level) permanent boundary wall/temporary barricading has been provided near the houses, so this will also help in reducing noise level exposure to houses due to construction activities of ASU campus. Transportation of construction materials is confined to daytime, depending upon the extent of construction activity. The increase in noise levels is expected to be between 3-5 dB (A) for the nature of construction works involved in the ASU campus Phase II components. This increase will be felt up to 50 m only as the first row of houses at about 50 m boundary will act as a noise barrier to other houses at far distances. This noise will be intermittent in nature and will last only during the construction phase. Necessary monitoring of noise levels is being taken up as part of the environmental monitoring plan. After the completion of detailed design of Phase II components, no implications on noise generating activities have been identified. The ASU construction duration is unchanged so construction noise generation period will remain unchanged.

61. As mentioned earlier soil liquefaction issue is observed in the soil investigation report, so based on construction methodology adopted for laying foundation of building and infrastructure suitable construction methodology will be adopted to minimize noise and vibration. For this CSQA firm in consultation with the environmental specialist of PMC and PMU has prepared a ‘statement of method’ for the contractor. The same method shall be applicable to the Phase II components.

62. **Impacts on biodiversity during construction phase.** No major impacts are expected on the biodiversity during the construction phase as the current ASU site of 250 Bigha area has no presence of trees, very minimal presence of shrubs and is in an open area. There are no endangered or rare species of flora and fauna in the surroundings of the ASU site. The site is not on migratory route of birds and seasonal ponds (low lying areas) do not attract birds. No additional impacts have been identified on biodiversity after detailed design of phase II components of ASU. The change in building footprint is very minor (increase in

building footprint) but it is well limited in ASU plot and no area earmarked for plantation and landscaping is changed. Hence, there will not be any impact on bio-diversity due to increase in built-up areas of Type-2, Type-3, Type-4 and Type-5 quarters.

63. **Disturbance due to traffic during construction phase.** At the time of construction of phase II components, inconvenience to locals is not anticipated as the site is accessible through an existing motorable road and away from habitation. Traffic on the connecting road to the ASU site from NH-15 is almost insignificant. In case of need, the contractor team regulates the traffic on the access road to the construction site.

64. **Impact on cultural properties.** The ASU campus phase II components construction and development will not have any impact on any religious structure or any other structure of historical and/or cultural significance as all components of phase II having slightly higher built up areas are limited in ASU plot boundary.

65. **Ground Water**. Ground water will be used for construction of Phase II and the contractors have taken the ground water abstraction NOC from Central Ground Water Authority. The problem of ground water contamination is not anticipated during the construction phase since there is proper disposal of the wastewater generated from the construction camp and workers' camp. Post the detailed design of phase II components Increase in built-up areas of Type-2, Type-3, Type-4 and Type-5 quarters is noticed. This increase will cause an additional consumption of construction water. This requirement will be met from the ground water for which permission from CGWB is already in place. Additional water requirement is marginal (around 10-15%) and Assam state has long rainy season and rainfall quantity (around 1600 mm rainfall annually) so ground water recharge will offset the additional withdrawal.

66. **Ambient Air Quality.** Generation of dust is anticipated during transportation, excavation, 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 and suspended particulate matter (RSPM) and gaseous emissions (NO_X, SO_2, CO, etc.). The detailed design of phase II components reveals that there is a slight increase in the built-up area (from 18888 to 24902 m^2). Due to this there will be slightly higher consumption and handling of construction materials. This will cause additional handling and storage of raw materials. Due to this, there will be impacts on ambient air quality. This additional impact will be handled with the mitigation measures planned for the entire project for the ambient air quality and these have been indicated in the subsequent paras. However, transportation of construction materials will be confined to a few trips per day and the increase in transportation activities is not likely to be significant. Therefore, impact at this stage will be temporary and restricted to the close vicinity of the ASU construction site only.

67. All vehicles and construction equipment operating for the contractor, CSQA firm, and PMU have obtained and maintained "Pollution under Control" (PUC) certificates. To control dust emissions, vehicles deployed for sand and aggregate haulage are covered with tarpaulins to prevent spillage. Regular sprinkling of water during excavations, loading, unloading, vehicular movement on approach roads, and raw material transport is carried out to prevent the spread of dust and other contaminants. Periodic air quality monitoring is being conducted to ensure that emissions comply with the vehicle emission standards specified by the GoI and ambient air quality standards specified by the Central Pollution Control Board. The contractor submits air quality monitoring results as a compliance with environmental monitoring plan. The impacts related to air pollution on account of construction activities will be felt close to ASU site.

68. **Construction Waste.** Some waste will be generated due to excavated earth material

and waste from construction. On account of the increase in Phase II components (Type-2, Type-3, Type-4 and Type-5 quarters) construction waste generation will increase. This increase shall not exceed 5 % of old builtup area estimates. These wastes will be reused subject to the approval of the Engineer during the construction. Any remaining unutilized waste will be disposed of as per provisions of 'Construction and Demolition Waste Management Rules, 2016' and to the satisfaction of the Engineer. The disposal locations for waste has been finalized in consultation with local civic authorities and in compliance with construction and demolition waste management rules 2016. The clean-up and restoration operations will be implemented by the contractor prior to demobilization. The contractor will clear all temporary structures and dispose of all garbage from the project site. The entire construction site and surrounding vacant area will be left tidy, at the contractors' expense as per the satisfaction of the Engineer.

69. The contractor has engaged local as well as migrant labor for various construction activities. For the migrant labor, the contractor has established a properly designed labor camp with all basic amenities such as dignified well-ventilated and well-lit accommodation, potable water supply, gender segregated sanitation facilities, including provision of septic tanks and soak pits, and COVID-19 protection facilities. The permission for labor employment (registration with local labor office) has been obtained (under the Inter State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979). Dustbins and hand washing facilities have been provided in adequate numbers at the camp site. The EMP lays down some measures to address likely adverse impacts associated with the labor camps.

70. **Occupational Health and Safety and COVID-19.** The occupational health and safety related impacts will include injury to the construction work force, chances of more accidents at site and adverse impacts on health of workers if proper measures are not adopted and necessary protection gadgets are not used. COVID-19 related impacts will cause chances of more infections if protection measures are not provided. The COVID-19 related measures should be taken up at site as per the guidelines issued by the Ministry of Health and Family Welfare and Government of Assam for the construction projects. At present no COVID-19 Protocol is applicable. There will be a slight increase in occupational and safety risks as builtup area is increased for Phase II components so more labor /work force will be required to complete the works in the stipulated time of ASU project.

71. **Site Enclosure to avoid washing of loose earth and other construction materials during monsoon.** As mentioned earlier, that major portion of the site face water logging issues during monsoon and torrential rains. The contractor needs to take appropriate measures such as proper enclosure of site with MS sheet to avoid washing of construction materials during rains and possible damage to crops and houses in the surroundings. No additional impacts on account of increased area of some phase II components has been identified.

E. Environmental Impacts during Operation Phase

72. Since only educational activities will be undertaken at the ASU campus, there will not be any adverse environmental impact during operation. Necessary regulatory permissions (such as occupancy certificate, permission from fire department, consent to operate from Assam Pollution control Board, etc.) will be obtained from civic authorities before start of operations of ASU. The ASU campus design provides for adequate parking, accommodation, and safe disposal for wastewater and solid waste. Toilet blocks will be connected to the sewage network of the ASU campus as a sewage treatment plant has been planned for wastewater treatment. The solid waste generated at ASU campus during operation phase will be segregated. Its disposal will be integrated with Mangaldai town waste disposal. There may be generation of some waste on account of maintenance and operation of solar water heating system. The supplier of the solar water heating system will be responsible for collecting the

waste for possible reuse and recycling. Since STP has been planned for the wastewater treatment, effective operation, and maintenance of STP needs to be undertaken as part of ASU operations and maintenance. One medical center is planned to provide first aid and referral center. There may be generations of biomedical waste at this center. This waste needs collection and disposal as per 'Bio-Medical Waste Management Rules, 2016'.

73. Given the residential nature of ASU campus (Students Hostels and staff quarters), there will not be any significant vehicular increase on account of its operations. Traffic on the road connecting to the campus with NH-15 will be marginal. Hence vehicular emissions on account of traffic movement will be insignificant. A diesel generator (1500 kVA capacity) will be required, but it will be operated only during power cuts. The generator will be of the silent type and will comply with the levels stipulated by the Central Pollution Control Board.

74. The water requirements for the ASU campus during the operation phase will be met from the ground. The water requirement has been estimated to be around 400 kLD. Necessary permission from the Central Ground Water Board will be obtained. Though the requirement is not significant, continuous withdrawal will have an impact on ground water table in the surroundings of institution. This impact shall be taken care of through the design of ground water recharge features (rainwater harvesting structures) in the campus. Based on raw water characteristics, necessary treatment will be provided. The treatment for raw water will include screening, reduction of total suspended solids (TSS) and hardness and disinfection to meet drinking water standards specified in IS:10500 by the Bureau of Indian Standards. The waste generated (mainly sludge) will be disposed of after appropriate treatment in low lying areas in the campus.

75. In the operation phase, there will be generation of different types of solid wastes (municipal waste from residential areas, biomedical waste from medical center, hazardous waste from laboratories/workshops, E-Waste from IT and computer facilities and discarded lead acid batteries). These wastes will require handling, transport, and disposal as per regulatory requirements of their respective categories to avoid environmental impacts.

76. There will be occupational risks due to handling and storage of hazardous and toxic chemicals in some of the laboratories and workshops. These risks include minor fire on account of leakages (e.g., LPG leakage) and injuries due to spillage.

77. After the detailed design of Phase II components and on account of increase in built up areas of Type-2, Type-3, Type-4 and Type-5 quarters, no additional impacts and /or environmental implications have been identified in operation phase as population of campus and consumption of electricity, water and other resources will remain unchanged.

78. **Safety Measures**. The design of the ASU campus buildings includes structural and seismic safety measures required by India's latest building codes (in seismic zone V). The other safety features are explained below:

- The ASU campus will be equipped with fire-fighting systems with portable fire extinguishers and smoke detectors. The staircase will have adequate width to allow for people to exit the campus buildings during any fire-related or other eventuality.
- During natural calamities, the operations will be stopped. The trainees and staff will be safely evicted as per the disaster management plan of Darrang district.
- A medical center will be provided for first aid and preliminary treatment.
- Building design and toilet facilities will be barrier-free for physically challenged persons.

79. **Socio-economic Impacts.** The project will have positive socio-economic impact

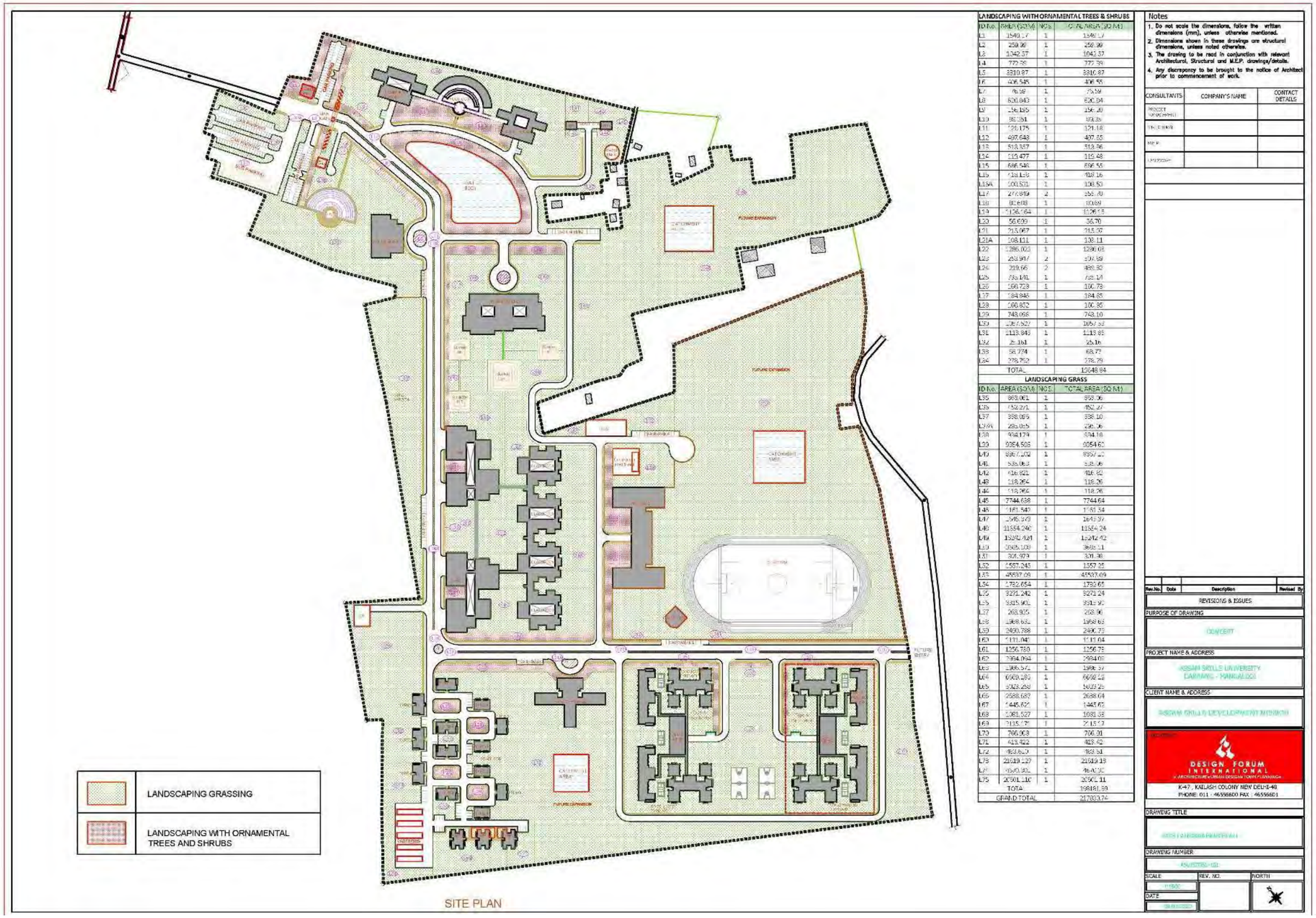
during construction as it will provide employment and business opportunities. In the operation phase, the ASU functioning will also have a positive socio-economic impact since it will provide Assam and other north-eastern states youth and adults an opportunity to enhance job-oriented skills at an affordable price. In addition to the above, local economy will also grow through demand of houses on rentals, local goods consumption, service shops operations and operations of eateries in the Mangaldai town specially ASU campus surroundings.

80. **Flora and Fauna.** The ASU campus land is owned by the GoA. In the absence of any trees or vegetation, no adverse impact on fauna and flora is anticipated. No tree cutting is required. Further, in the ASU campus, plantation of shrubs and landscaping will be taken up along the pathways and vacant spaces to enhance natural ambience. The total area available for shrubs and tree plantation is 217,830.74 m^2. This comprises of 19,648.84 m^2 for landscaping with ornamental trees and shrubs plantation and 198,181.89 m^2 for landscaping with grassing. The ASU layout plan showing green areas is given in **Figure 12**. There is no existence of any wildlife/bird sanctuary, national park or any other area notified by the GoA or MoEFCC for ecological importance within an aerial distance of 15 km from the ASU site. There has been no reduction in green area after the detailed design of Phase II components.

81. **Emergency Plan for Accident and Natural Hazards.** For the operation phase, an onsite emergency plan will be prepared by the ASU. For natural calamities, the Disaster Management Plan prepared by GoA for Darrang district will be followed. The GoA has prepared district wise Disaster Management Plans as per provisions of Disaster Management Act 2005 of Government of India.

82. **Maintenance of Drainage System in the Campus.** It is clear from the earlier description that the project site receives around 1,637.3 mm average rainfall, so there will be flooding issues in campus if drainage system is not maintained properly. A proper drainage system will be implemented for this purpose.

Figure-12: Green Areas in ASU Campus



F. Description of Planned Mitigation Measures for the Identified Impacts

83. Screening of environmental impacts is based on the magnitude and duration of the impact. **Table-15** summarizes the potential environmental impacts for ASU for the project life cycle. The mitigation measures including the institutional responsibilities for implementing the same have also been summarized. The ASU site is located sufficiently away from protected areas and the components proposed will not impact any environmentally sensitive or protected areas. All ASU activities including construction and operation will take place within available government land. When national regulations differ from the performance levels and measures presented in WBEHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent measures are appropriate in view of specific project circumstances, a detailed justification of the applied standard or guideline shall be provided during implementation.

84. The baseline monitoring for ambient air quality of the Project area has been undertaken by the civil works contractor prior to commencing with the works. The proposed mitigation measures are expected to maintain the overall ambient air quality during construction and operation stages. The interventions proposed through the mitigation measures are not expected to improve the prevailing ambient air quality. The air emissions from the construction activities have been monitored for compliance with the national standards as required by the regulatory framework. During implementation, no activities are envisaged that would contribute to deterioration of ambient air quality. The WBEHS guidelines have emission limits more stringent than the NAAQS for PM_{10}, $PM_{2.5}$ and $SO_{2.}$ If the prevailing ambient air quality is observed to be exceeding WBEHS guidelines and/or NAAQS, the efforts would be made to maintain the ambient air quality through the mitigation measures.

85. The mitigation measures detailed are sufficient as no additional and specific environmental implications/impacts have been identified after the detailed design of Phase II components of the ASU project.

Table-15: Summary of Environmental Impacts and Planned Mitigation Measures

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
1	**Location Impacts**				
1.1	Lack of sufficient planning to ensure long term sustainability of the ASU campus features and ensure protection especially from earthquake and other natural disasters	Permanent	Major	For long term sustainability ASU components design should account for earthquake resistance and avoidance of water logging in campus during floods. The detailed design of ASU campus Phase II components has been completed considering earthquake coefficient of zone V. To take care of liquefaction phenomenon at site appropriate foundation with adequate strength is adopted as per findings of geotechnical and soil investigation report. This report is vetted by Assam Engineering College Guwahati. The site is not on the bank of any river or major stream. During the earthquake or any other natural calamity, the Disaster Management Plan prepared by the Darrang district administration will be followed. It will be updated for ASU campus in coordination with district administration. To address the water logging issue at site an effective drainage system has been designed based on hydrological study and historical flood data of Brahmaputra River. A storm water drainage plan based on 2 zones with a total storm water capacity of 18.01m^3/s, is prepared, and this will be implemented. To avoid water logging issues at site, filling with sand and earth will be carried out and quantity of fill is about 4,50,000 m^3 and this will be obtained from quarries compliant with environmental regulations of State and India. All regulatory permissions for transport and	Contractor, PMU, ASU

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				usage to be obtained by Civil Contractor before start of earth works.	
2	**Design and Pre-construction Impacts**				
2.1	Consents, permits, clearances, no objection certificates (NOC), etc.	Permanent	Minor	Obtain all necessary consents, permits, clearances, NOCs, etc. prior to start of civil works. Acknowledge in writing and provide report on compliance with all the obtained consents, permits, clearance, NOCs, land ownership records etc. Permits and clearances obtained and attached in **(Annexure-4 and Annexure 6)** of the addendum IEE Include in detailed design drawings and documents all conditions and provisions, if necessary.	Contractor, ASU, and PMU
2.2	Environmental monitoring in respect of ambient air quality, water quality and noise levels to establish baseline levels	Preconstruction, immediately after mobilization	Nil	ASU site primary baseline data is not available so the baseline in respect of ambient air quality, water quality and noise levels need to establish. Contractor has carried out environmental monitoring immediately after mobilization to establish baseline in respect of ambient air quality, water quality (ground and surface), and noise levels.	Contractor, ASU, and PMU
2.3	Layout of components to avoid impact on the aesthetics of the ASU site	Permanent	Minor	The ASU components should not have any adverse impacts on aesthetics of surroundings and its structures should have pleasant exteriors. The ASU campus Phase II buildings will not have any adverse impacts on aesthetics of project site and surroundings and exteriors of campus buildings will be like the exteriors of buildings in the project region as well as matching with institutional looks. There will be positive impacts as green areas to be developed on campus will enhance the look of the area.	Contractor, ASU, and PMU
2.4	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking	Permanent	Moderate	The ASU design should account for storm water management as on account of paved areas increase storm water will generate from the campus. The detailed ASU layout and design have considered storm water runoff. This will be provided through the development of existing seasonal water ponds (low	Contractor, ASU, PMU

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
	lots, and addition of paved surface			lying areas) into water bodies within the campus. The capacity of these ponds will be increased through excavation. Part of storm water will be diverted to these water bodies and part will be channeled through drainage system (local drains) outside campus. The drainage plan has been prepared and this will be implemented.	
2.5	Integration of energy efficiency and energy conservation programs in the ASU campus planning and design	Permanent	Moderate	The ASU campus design needs to be energy efficient to reduce the carbon footprint during construction and operation. The following energy efficiency measures have been adopted in the ASU campus Phase II components design and subsequent implementation: • Installation of BEE certified equipment at the workshop, laboratories, classrooms and other facilities. • Usage of energy efficient lighting fixtures (LED and solar). The disposal of discarded LED should be done in consultation with civic bodies and suppliers. • Solar energy usage for water heating. • Solar energy utilization for lighting. Roof top solar system of100 kVA proposed.	Contractor, ASU, and PMU
2.6	Impacts on flora and fauna	Temporary	Minor	Bare minimum trees and shrubs should be removed, and green areas and landscaping should be developed in open areas at the end of construction phase. There is no requirement for tree cutting for the development of ASU campus II components. There was a requirement for removal of locally grown shrubs in some portions of ASU site. The removal of shrubs was only from areas delineated for construction. This loss of shrubs will be made up during landscaping and tree plantation works of the ASU. The total area for landscaping will be 217830.74 m^2 and 3,000 trees and	Contractor, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				shrubs will be planted. The detailed landscaping and tree plantation plan will be prepared during project implementation at the end of construction phase.	
3	**Construction Impacts**				
3.1	Construction camps - location, selection, design and layouts	Temporary	Moderate	The construction camp location needs to be proper to avoid any impacts /disturbance to locals and it should be self-contained with civic amenities. Construction camp at the ASU site is located within the ASU plot. The construction camp will not affect the day-to-day activities of residents. Adequate sanitation facilities (with septic tanks and soak pits) shall be provided at the camp site so that no wastewater will be discharged outside.	Contractor, ASU, and PMU
3.2	Traffic circulation plan during construction	Temporary	Minor	A Traffic circulation plan needs to be prepared by the contractor to minimize conflict with the local traffic. Prior to commencement of site activities and mobilization on ground, the contractor has prepared a traffic circulation plan for safe passage of local traffic during construction stage. This includes alternative access routes (for any emergency access), traffic regulations, signages, etc. In the peak time construction related traffic will not exceed 20-25 vehicles per hour, including vehicles in use of construction crew to travel to site. The contractor will disseminate the traffic circulation plan around the project site.	Contractor, CSQA firm, and PMU
3.3	Impacts on flora and fauna	Temporary	Minor	To avoid impacts on flora and fauna the construction crew needs sensitization, and all storage should be within site limits. The PMU and PMC regularly conduct site induction and environmental awareness programs for the construction workers and CSQA team at site. The workers are also sensitive not to cut the trees (outside site) for firewood and hunting local fauna.	Contractor, PMU, PMC, and CSQA firm

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				Construction related activities are being limited within the site of ASU to minimize impacts on flora and fauna. Storage of construction materials is within the project site limits to avoid impacts on flora (local shrubs).	
3.4	Clearance activities, including delineation of construction areas for various buildings and facilities	Temporary	Moderate	The site clearance activities should be taken up after approval from civic authorities and temporarily acquired areas should be restored before demobilization of the contractor. The commencement of clearance activities for the ASU campus was undertaken with due permission from local civic authorities and from the environment specialist of the PMU/PMC 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, CSQA firm, PMU, and PMC
3.5	Drinking water availability	Temporary	Major	A sufficient supply of potable water should be provided and maintained at the construction site and construction camp. If the drinking water is obtained from an intermittent public water supply, then storage tanks should be provided.	Contractor, CSQA firm, PMU, and PMC
3.6	Waste disposal	Permanent	Major	The construction waste disposal location needs to be identified properly, and disposal should not impact any water body. Location of disposal site for construction waste finalized by the environmental specialists of the PMU and PMC. The PMU has confirmed the location of disposal. Further, it will be ensured that disposal of the material will not impact the seasonal water body (at site) or environmentally sensitive areas. For the disposal, Construction and Demolition Waste Management Rules, 2016 will be followed.	Contractor, CSQA firm, PMU, and PMC
3.7	Stockpiling of construction materials	Temporary	Moderate	Stockpiling of construction materials should not impact or obstruct the local small drains and stockpiles should be covered to protect from dust and erosion.	Contractor, CSQA firm, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				The stockpiles shall be bounded so that these are not washed away during intense rainfall.	
3.9	Soil and water pollution due to fuel and lubricants, construction waste	Temporary	Moderate	The fuel storage and vehicle cleaning at site is should be avoided. In case of unavoidable circumstances, fuel storage should be in the leak proof drums and storage of drums should be on temporary raised paved platform. The vehicle and equipment maintenance should be taken at the authorized workshops only to avoid pollution at site.	Contractor, CSQA firm, PMU, and PMC
3.10	Soil erosion	Temporary	Moderate	Temporary slope protection (side slopes of roads, side drains along roads in campus and excavated locations of plinths) may be required during construction at the excavated areas. These slope protection measures should be taken up. Adequate measures should be taken up so that there is no soil erosion causing risks in the vicinity.	Contractor, CSQA firm, PMU, and PMC
3.11	Siltation of existing water ponds due to spillage of construction wastes	Temporary	Moderate	No disposal of construction wastes should be carried out into the existing small water ponds at site. These will be developed as water bodies during campus development. The waste materials should be transported to the pre-identified disposal site for safe disposal. This disposal site has been identified by the PMC, PMU, and CSQA firm in consultation with local civic authorities.	Contractor, CSQA firm, PMU, and PMC
3.12	Generation of dust	Temporary	Moderate	The contractor should take every precaution to reduce the levels of dust at the construction site. The ASU campus site has been barricaded with adequate height (2-3m) prefabricated mild steel sheets near the habitations as well as with permanent boundary wall in some length,to avoid air emissions and dust impacts in the surroundings of site due to construction activities.	Contractor, CSQA firm, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
3.13	Emission from construction vehicles, equipment and machinery	Temporary	Moderate	Vehicles, equipment, and machinery used for construction should conform to the relevant standards (vehicular emission standards of GoI and CPCB specified standards for equipment and machinery) and should be regularly maintained to ensure that pollution emission levels comply with the relevant requirements. The materials should be covered while transportation. The vehicles should also have reverse horns and blinkers.	Contractor, CSQA firm, PMU, and PMC
3.14	Noise pollution and Vibrations	Temporary	Moderate	Noise limits for construction equipment used in this project should not exceed 70 dB (A). Regular monitoring should be taken up at the site as per the monitoring plan. Suitable construction methods as well as adequate strength foundations should be laid to counteract liquefaction phenomenon. For this a method of statement for construction should be prepared by the environmental specialists of PMC and PMU (in consultation with QAQC firm) and issued to the contractor.	Contractor, CSQA firm, PMU, and PMC
3.15	Material handling at site	Temporary	Moderate	The workers should be provided and would be provided in future also with appropriate personal protective equipment commensurate with the safety and health risks associated with the activities such as workers employed (i) on mixing cement, lime mortars, concrete, etc., would be provided with protective footwear and protective goggles; and (ii) in welding works, would be provided with welder's protective eye-shields. PPE kit usage by workers has been ensured during construction works at site. Workers engaged in stone breaking activities should be provided with protective goggles, masks and clothing.	Contractor, CSQA firm, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				The use of any toxic chemical (paints, thinners and anti-corrosive and anti-termite materials, etc.) should be strictly in accordance with the manufacturer's instructions. The CSQA firm should be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site should be kept and maintained up to date by the contractor.	
3.16	Occupational health and safety and measures during construction COVID-19 Health and Safety Plan	Temporary	Moderate	Adequate safety measures for workers during handling of materials at the ASU site should take up. Necessary safety measures should also be taken for working at heights and trenches as per the instructions of CSQA firm team and PMC/PMU environmental specialists. The contractor should comply with all regulations for the occupational safety of workers. Precautions should be taken to prevent danger to the workers from fire, accidental injury, etc. First aid treatment should be made available for all injuries likely to be sustained during the course of work. The Contractor should comply with all anti-malaria instructions/advisories given by the PMU,PMC or CSQA firm. Necessary awareness programs should be carried out for HIV/AIDS and STD. All protection measures pertaining to COVID-19 should be taken at the site as per the protocol specified by the GoA and GoI for the construction sites, if required in future. For this, a COVID-19 Health and safety Plan should be prepared by the contractor after COVID-19 Protocol is enforced by GoA.	Contractor, CSQA firm, PMC, and PMU
3.17	Clearing of construction of camps and restoration	Temporary	Major	Contractors at the ASU site should prepare site restoration plan for approval by the CSQA and PMC at the end of construction phase. These camp site restoration plans should be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures should be cleared away, all rubbish burnt, excreta or	Contractor, CSQA firm, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				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 engineer (PMU and CSQA firm site team). This should be taken up comply with the condition of contract.	
3.18	Onsite emergency plan for accidents and mishaps and disaster management plan for natural calamities	Temporary	Major	The onsite emergency plan should be prepared by the contractor in consultation with PMC and PMU. For natural calamities, a disaster management plan prepared by the Darrang District Administration under the provisions of Disaster Management Act 2005 should be followed. The updating of DMP should l be followed up by the ASU management (for inclusion of ASU operations) with the district administration.	Contractor
3.19	Flooding and Water Logging and construction materials accidental flow with food waters	Temporary	Major	The contractor should take all measures to barricade the site with MS sheet till a permanent boundary wall is constructed. The contractor will maintain quick drainage of site to avoid any water logging and flow of lose construction material with rainwater. The drainage plan prepared for monsoon season should be implemented. The contractor should take all necessary mitigatory measures to ensure that mud and construction materials do not enter agriculture fields of houses from storm water of site.	Contractor, CSQA Firm
4	**Operation and Maintenance impacts**				
4.1	Regulatory permissions for ASU operations	Regularly as per requirements	Moderate	All regulatory permissions such as building occupancy certificate from civic authorities, NOC from fire department, consent to operate from Assam Pollution Control Board, etc. should be obtained before start of ASU operations.	ASU management team, PMU, PMC,
4.2	Environmental conditions	Permanent	Moderate	Air, water, and noise quality should be monitored periodically (once in a season except monsoon season) as per the environmental monitoring plan prepared. This monitoring should be continued for the first two years. The boundary wall and plantation	ASU management team, PMU, PMC,

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				along the periphery should be maintained to avoid any impacts from the ASU campus in the surroundings.	
4.3	Safety risks	Permanent	Moderate	Proper demarcation and flagging of the area requiring safety observations should be taken up after completion of construction works. Necessary precautionary measures should be observed by visitors who will be printed on boards and will be prominently put inside the ASU Campus. The hazardous and toxic materials at the laboratories and /or workshops should be handled and stored as per instructions provided in material safety data sheets.	ASU management team, PMU, PMC,
4.4	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection, handling and disposal	Permanent	Severe	The ASU Management should carry out maintenance of the toilets and carry out the regular waste collection and disposal of the waste to the local disposal site (authorized for use by the Mangaldai Municipal Council). Sewage network and sewage treatment plant should be maintained effectively. For maintenance period, necessary holding capacity should be built for storage of untreated sewage. No wastewater without treatment in STP should be discharged outside ASU campus. Organic and inorganic waste should be segregated. Inorganic waste along with horticulture waste should be used to prepare organic manure by constructing compost pits in the open space. This manure may be used as fertilizer for landscaped areas and plantations. Any waste generated should be handled as per the provisions of 'Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016. Any bio-medical waste generated at Medical Center should be handled, stored, transported and as per the	ASU management team, PMU, PMC,

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures and Status	Institutional Responsibilities
				provisions of 'Bio-Medical Waste Management Rules 2016'. The E-waste generated should be handled and disposed of as per provisions of 'E- Waste Management Rules, 2016'. The used and discarded lead acid batteries for recycling and disposal as per Battery Waste Management Rules, 2020'.	
4.5	Onsite emergency plan for accidents and mishaps and disaster management plan for natural calamities	Temporary	Major	The management team of ASU should prepare on site emergency plan for possible accidents and mishaps during operation phase (due to fire, handling and storage of hazardous and toxic chemicals at laboratories, workshops, water treatment plant, STP, etc.). This plan should cover all types of accidents. For natural calamities, the disaster management plan prepared by Darrang district administration should be followed. The updating of DMP should be followed up by the ASU management (for inclusion of ASU operations) with the district administration	ASU management team, PMU, PMC,
4.6	Waste generated on account operation and maintenance of solar water heating system and roof top solar system	Intermittent	Minor	The supplier of solar panels cells and water heating system will maintain the system. Any waste generated (damaged panels, discarded pipes and storage batteries) should be collected by the supplier for possible reuse and recycling. For this, the necessary agreement should be prepared at the time of supply and installation. Any wastewater generated should be diverted to sewage network.	Operator of solar panels and water heating system, ASU management team, PMU, PMC,
4.7	Maintenance of drainage system of ASU campus	Regularly as per requirements	Major	The ASU management team should maintain drainage system properly to avoid flooding of campus	ASU management team, PMU, PMC,

V. ANALYSIS OF ALTERNATIVES

A. Introduction

86. In this chapter analysis of alternatives has been carried out for 'with' and 'without' ASU project, location selection, project implementation scheduling and materials usage in the detailed design and construction of ASU campus and facilities.

B. Without Project Scenario

87. Despite its abundant natural resources and higher proportion of young population (under 40 years of age) than the rest of India, Assam has yet to unleash its growth potential. Being landlocked, largely rural, and with underdeveloped infrastructure, Assam's economy is dominated by low value added, natural resource-based products and is poorly integrated with regional and global value chains. Its manufacturing sectors are undiversified and small in terms of output and capital investment. Limited availability of skilled workforce has been identified as one of the constraints to infrastructure and industrial development. Fewer prospects for socioeconomic development have propelled out-migration for jobs and education, leading to shortages of higher-level skills in Assam. Technical and vocational education and training and higher education is undersupplied, and the existing systems face many challenges, including low quality and lack of industry relevance of programs leading to poor employability of graduates from industrial training institutes, polytechnics, engineering colleges, and academic colleges and universities. Without project scenario, Assam youth and adults will continue facing challenges of getting job oriented skilled courses. Hence, 'without project' scenario is undesirable. The ASU will not only help youth and adults in Assam but also in the northeastern states.

C. With Project Scenario

88. The project scenario will help Assam and other north-eastern states youth and adults in attaining job-oriented skill courses, qualification to work in the state, country and abroad. The establishment of ASU will strengthen the skills education and training ecosystem since the tag of a 'university' attached to an institution is expected to improve the general perception of skilling institutions as inferior to the conventional education system, i.e. the skill university will make skilling aspirational among youth. Further, the ASU will serve as a one stop skilling solution for the entire northeastern region of the country filling gaps in the existing training and higher education system. The government also expects ASU to cater to skilling needs of industries in neighboring countries such as Bangladesh, Bhutan, and Nepal facing similar challenges. Hence, project scenario is highly desirable. While the 'with subproject scenario' may have negative environmental impacts from construction activities, the environmental impacts are projected to be temporary and short-term in nature. The impacts during construction and operation phase are not irreversible and can be readily mitigated.

D. ASU Location Alternatives

89. Various locations for ASU were evaluated. The considerations for the ASU site finalization were availability of government land, good connectivity, and proximity to planned and proposed manufacturing centers. Based on the above considerations, Mangaldai was selected for locating ASU campus. Mangaldai has been identified as a potential manufacturing center for electrical equipment, electronics, plastics, and pharmaceuticals. This provides ASU a competitive edge over other institutes in the state due to significant placement and industry exposure opportunities for students and faculty members. Moreover, with major infrastructure projects such as hydropower, multimodal logistics parks, etc. which are either ongoing or are in the pipeline, Assam will require highly skilled manpower and ASU will be good source for skilled manpower. The ASU site is encumbrance free land under the ownership of GoA. The

ASU site is more than 15 km aerial distance from notified ecologically sensitive areas such as national parks, wildlife sanctuaries and bird sanctuaries. The ASU site is also devoid of any revenue, reserved or protected forest. There are no sites of cultural and heritage importance within the 300 m distance of the boundary of ASU site. There is no change in finalized ASU location due to change in built area of Phase II components.

E. Material Usage and Sustainability considerations

90. In terms of design, materials (steel bars, cement, and bricks) will be appropriately selected (as per approved design specification) considering that the area is within the seismic zone V classification. There will be no use of asbestos containing sheets or pipes. Further, to conserve natural resources, treated wastewater (300-400 KLD) will be recycled through double plumbing piping system for flushing, air conditioning and irrigation of green areas. The STP design will ensure usage of treated water for the above-mentioned usages. To reduce the carbon foot prints through solar water heating system for 64,000 liters per day capacity and roof top solar system for 100 kWH solar power generations have been planned. The ASU also plans to have energy efficient lighting system. The increase in built up area of Phase II components from 18888 m^2 to 24902 m^2 will not have any implications on the sustainability consideration. It will have positive impact on solar energy harnessing and roof top area will slightly increase.

F. Conclusion

91. It is clear from the above that without project scenario is undesirable and the location of ASU has been strategically selected with only short-term and reversible environmental impacts. To make the project outcome and outputs sustainable, necessary measures have been included in the project design.

VI. ENVIRONMENT MANAGEMENT PLAN (EMP)

A. Institutional Arrangements for Project Implementation

92. The Government of Assam through Skill, Employment, and Entrepreneurship Department (SEED) is the executing agency (EA). The EA (i) assumes overall responsibility for the execution of the project and reporting; (ii) engages adequate permanent or fixed-term staff to implement the project; iii) provides overall strategic guidance on technical supervision and project execution; and (iv) ensures overall compliance with the loan covenants.

93. The implementing agency (IA) for the project is transitioned from ASDM to ASU. The IA responsibilities include (i) project planning and budgeting; (ii) day-to-day assistance, supervision and guidance for the project site team and consultant; (iii) review ASU components for due diligence requirements and approve subproject proposals; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) review compliance with loan covenants, contract specifications, work plans and quality control; (viii) monitoring and reporting of environmental safeguards; and (viii) consolidate and submit progress reports, finance and accounting/audit reports, and matters requiring higher level decision to project steering committee (PSC) and ADB.

94. In Assam, a state level PSC has been established. This committee is chaired by Secretary SEED, with secretaries of industry, agriculture, land and revenue, information technology, health, planning and finance, handloom and textile, tourism, transformation and development, education, public works, social justice and empowerment, and the vice chancellor of ASU as members. The PSC has been empowered to take all decisions on behalf of the state and will provide overall advice and guidance to the EA, IA, and PMU.

95. The ASDM had established a PMU, headed by a full-time Project Director (PD) at ASDM, and consisting of personnel drawn from relevant line departments and market. This PMU also has safeguards specialists (social and environmental). These specialists have been hired from the market and/or from other GoA departments on deputation. The PMU is being supported by the project management consultants (PMC). The PMU is the nodal agency for overall management of all project activities and is responsible for: (i) project planning and budgeting; (ii) providing day-to-day assistance, supervision and guidance for the site team, contractors and consultants; (iii) reviewing ASU components to satisfy ADB's due diligence requirements and coordinating approvals for proposals submitted by contractors, CSQA firm team, and site team of PMU; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) reviewing compliance with loan covenants, contract specifications, work plans and quality control; (vii) monitoring and reporting of environmental safeguards;(viii) consolidating and submitting progress reports, finance and accounting/audit reports, and matters requiring higher-level decision, to the PSC and ADB; and (ix) engaging and mobilization of CSQA firm at Mangaldai ASU site for quality check and construction works supervision. To implement the construction of ASU project smoothly, the contractor has established an ASU site office. In this office, space is available for ASU team, CSQA team and contractor team for better coordination of project activities. This office is of temporary structure and will be dismantled on completion of construction activities.

96. The construction of ASU campus and facilities at site is being supervised by the CSQA firm multidisciplinary team. This CSQA firm team is headed by the Team Leader. The CSQA firm team is responsible for: (i) providing day-to-day assistance, supervision, and guidance to the contractor; (iii) reporting to PMU; (iv) supervising construction, conducting quality control, advising PMU on approval of progress payments to contractors; and (v) maintaining records and accounts on an up-to-date basis and making these available to ADB, its missions, or auditors for inspection.

97. The project management consultant (PMC) has been engaged to provide support to the PMU in overall planning, risk management, implementation, monitoring, reporting, and evaluation under the project. The PMC team has experienced professionals specializing in areas such as procurement, social safeguards, environmental safeguards, finance, etc. The PMC assists the PMU and ASU in meeting the relevant requirements of ADB, GoA, and GoI for project implementation. The PMC team reports and works under the overall guidance of the PMU.

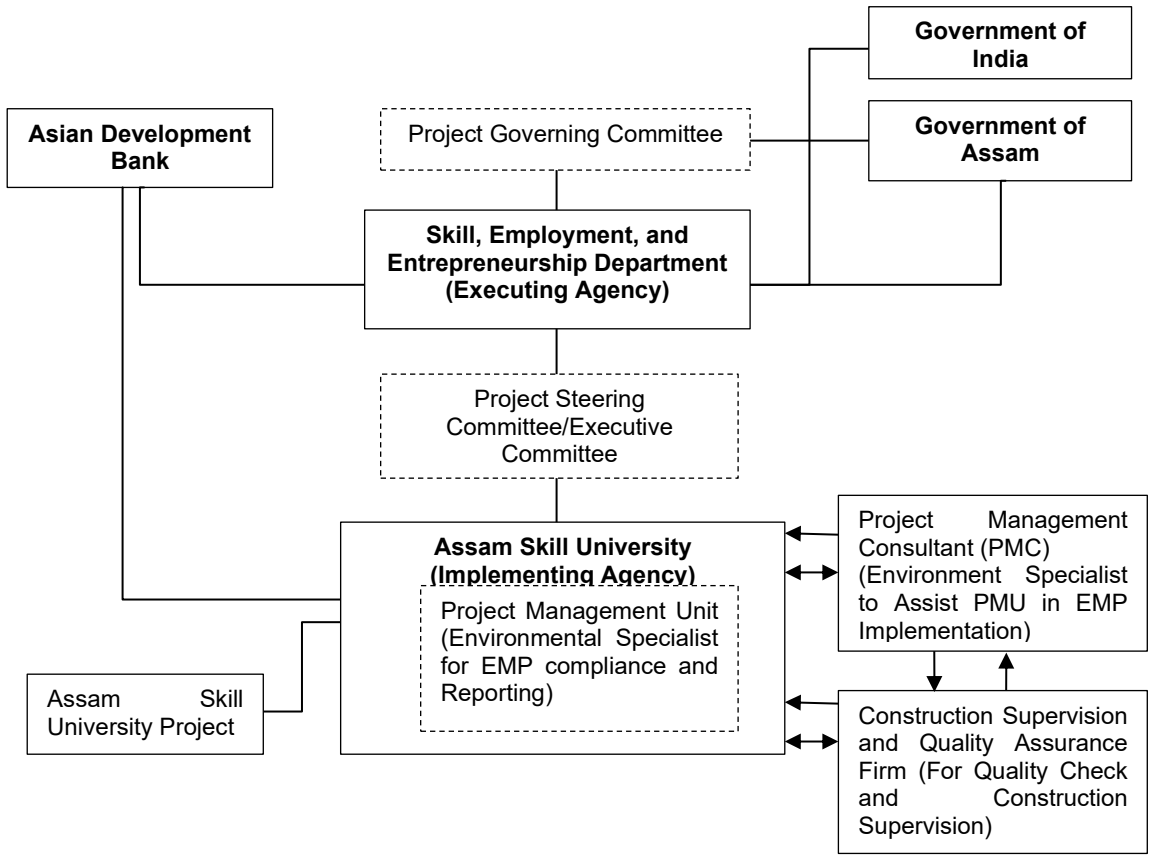
98. To ensure effective implementation of safeguard related components in the phase II components of the ASU project, PMU has safeguard experts (one environmental specialist and one social development specialist). These safeguard experts ensure implementation of environmental management plan and social safeguard actions under the project.

99. As mentioned earlier, PMC has one environmental safeguard specialist in their team. This environmental specialist is a qualified graduate in environmental sciences with about 10 years of professional experience in environmental assessment and management in projects financed by international financial institutions. The environmental safeguard specialist of PMC provides support to PMU safeguard specialists for the EMP implementation during construction, reporting, safeguards related documents preparation, disclosure, and capacity building of CSQA firm team and contractors.

100. The contractor in the current subproject has appointed one environmental, health, and safety officer for the implementation of addendum IEE and updated EMP requirements at site. The project implementation arrangement for safeguard compliance is shown below in **Figure-13**.

101. The updated EMP for the detailed design and construction of ASU campus and facilities (Phase II) for pre-construction, construction and operation phases is given in **Tables-16 to 18**. It may be mentioned that the EMP for Phase II buildings is sufficient after the detailed design as no additional environmental impacts have been identified after the detailed design of Phase II components of ASU project.

Figure-13: Project implementation arrangement for safeguard compliance



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

102. **Responsibility for monitoring.** During construction, the environmental specialist of PMU and environmental specialist of PMC monitor the contractor's EMP implementation at site and update IEE if there is change in scope of ASU campus features or a new component is added. During the operation phase, monitoring will be the responsibility of the PMU and/or ASU management handling ASU operations.

103. **Responsibility for Reporting.** PMU submits semiannual 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 (such as non-compliances with regulatory requirements, etc.) in adhering to the IEE (including this addendum IEE document) and/or EMPs for specific sub-projects shall be reported to ADB immediately. There have been no such instances of lapses till date. The PMC's environment specialist assists the PMU in finalizing the semiannual environmental monitoring reports. These semi-annual monitoring reports will be submitted till the project completion report is prepared. The frequency of submission of environmental monitoring report will be revised from semi-annual to annual in the operation phase.

104. For any non-compliance observed, corrective actions will be implemented in a time bound manner. The cost for mitigating non-compliance will be borne by the contractor as per contract provisions. During the bidding process, prospective contractors were made aware of these requirements and conditions during pre-bid meetings and inclusion of IEE document as General Conditions of Contract in the contract of selected contractor. In case mitigation costs of any unforeseen impacts are not coming in scope of contract, these will be met out of contingencies built in the overall project cost.

Table-16: Pre-Construction Phase Environmental Management Plan for Detailed Design and Construction of ASU Campus and Facilities (Phase II Components)

Sl. No.	Environmental Issues	Mitigation Measures and Status	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 ensure long term sustainability of the ASU campus and its facilities (Phase II components) and protection of assets	The long term sustainability of infrastructure should be ensured through adequate factors and considerations for seismic risks, wind load and flood risks, etc. Any additional measures required for increased built up area of residential quarters. The detailed design has included provisions for ensuring effective maintenance of ASU campus infrastructure (included in Phase II), to ensure the long-term sustainability. The long-term sustainability has been ensured by taking into consideration appropriate Bureau of Indian Standards Codes (BIS) in the design of ASU infrastructure considering seismic Zone V coefficient. Appropriate wind load factor (corresponding to 39 m/s wind speed, maximum possible load) has been considered in the building design (maximum wind. The detailed design of Phase II components has been	Verification of site-specific design parameters	Contractor	CSQA firm, PMU, and PMC	Review after completion of detailed design	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		completed after a topographic survey of ASU site. The plinth level has been kept at 100 years highest flood level to ensure long term sustainability. To address the water logging issue at site an effective drainage system has been designed based on hydrological study and historical flood data of Brahmaputra River. The foundation of adequate strength has been provided to take care of liquefaction phenomenon at site and suitable construction methodology shall be adopted to minimize noise and vibrations during the construction.					
2	Environmental monitoring to establish baseline monitoring	Environmental monitoring in respect of ambient air quality, water quality (Ground and surface) and noise levels immediately after mobilization to establish baseline at ASU site should completed. Locations for sample collections were finalized in consultations with	Sample collection, finalization of locations for monitoring	Contractor	PMU and PMC environmental specialist	Once before start of construction activities	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		PMU and PMC environmental specialist.					
3	Layout of components to avoid impacts on the aesthetics of the project site and surroundings	The ASU campus Phase II building components should not have any adverse impacts on aesthetics of project site and surroundings and exteriors of campus buildings should be similar to the exteriors of buildings in the project region as well as matching with institutional looks. There will be positive impacts as green areas to be developed on campus will enhance the look of the area.	Campus buildings exteriors	Contractor	CSQA firm, PMU, and PMC	Review of exterior color of buildings after completion of brickwork and plaster	Contractor
4	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lot, and addition of paved surfaces	The ASU layout and design should consider storm water runoff. This will be provided through the development of existing seasonal water ponds (low lying areas) into water bodies within the campus. The capacity of these ponds will be increased through excavation. The part of storm water will be diverted to these water bodies and part will be diverted through drainage system (local drains) outside campus. The effective drainage plan (based on based on 2 zones)	Arrangement for proper diversion of storm water runoff	Contractor	CSQA firm, PMU, and PMC	Design of drainage system and layout of ASU	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		has been prepared by the contractor, and it will be implemented in the construction phase.					
5	Consents, permits, clearances, no objection certificate (NOC), building drawings approvals from civic authorities, labor licenses of contractors, insurance for workers etc.	Obtain all necessary consents, permits, clearances, NOCs, etc. prior to start of civil works. CTE obtained for the ASU project and other clearances and permissions have also been obtained. Acknowledge in writing and provide report on compliance (with terms and conditions) for, all obtained consents, permits, clearances, NOCs, etc.	Consents, permits, clearance and NOCs Records and communications	Contractor	CSQA firm, PMU, ASU	Check permission from district administration	Contractor
6	Integration of energy efficiency and energy conservation programs in the ASU campus planning and design	The ASU campus design should be energy efficient to reduce carbon foot print. The construction should also be energy efficient. The following energy efficiency measures have been adopted in the ASU campus Phase II components design and subsequent implementation:	Specifications of equipment, LED lights, solar panels specifications	Contractor	CSQA firm, PMU, and PMC	During installation of solar system for heating, electrification and equipment installation	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		• Installation of BEE certified equipment at the workshop, laboratories, classrooms, and other facilities. • Usage of energy efficient lighting fixtures (LED and solar). The disposal of discarded LED shall be done in consultation with civic bodies and supplier. • Solar energy usage for water heating. • Solar energy utilization for lighting. Roof top solar system of 100 kVA proposed. The implementation of above measures planned and will be completed.					
7	Establishment of baseline environmental conditions prior to start of civil works	1. 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. 2. Carry out environmental monitoring at ASU project site for ambient air quality, water	Records and photographs, baseline environmental monitoring results	Contractor	PMC and PMU environmental specialist	Once prior to start of construction works	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		quality and noise levels to establish baseline environmental monitoring for the parameters indicated in the monitoring plan. Baseline monitoring carried out at ASU site.					
8	Utilities (mainly electric line and possibility of underground cables)	• Confirm that none of the utility due to phase II components is being impacted. • Require contractor to prepare a contingency plan to include actions to be done in case of unintentional interruption of services due to any reason. • Obtain the list of affected utilities and operators (Assam Electricity Supply Department, Water Supply Department, Telecommunication Departments, etc.). • If relocations are necessary; contractor should coordinate with the providers to relocate the utility (Relocation not anticipated).	List and maps showing utilities to be shifted Contingency plan for services disruption	• Contractor will prepare preliminary list and maps of utilities to be shifted • During detailed design phase, contractor to prepare (i) list and operators of utilities to be shifted; and (ii) contingency plan	CSQA Firm Team and PMU	After delineation of ASU site	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
9	Social and cultural resources	Develop a protocol for use by the contractor in conducting any excavation work, to ensure that any chance finds are recognized, and measures are taken to ensure they are protected and conserved.	Chance find protocol	PMU and PMC safeguard specialists to develop protocol for chance finds	PMU	Prior to start of construction activities	PMU operation costs
10	Construction camp-locations, selection, design and layout	Sitting of the construction camp, if required, at project site shall be as per the guidelines below and details of layout to be approved by PMU. The potential sites for labor camp and construction camp shall be identified by the contractor and this identified site shall be visited by the environmental specialists of PMU and PMC and the one having least impacts on environment will be approved by the PMU. The labor camp and construction camps have been established at the vacant land in ASU plot. Locations for storage of construction materials have been identified at the site. Sanitation facilities at construction camps have been adequately planned.	Construction Camp sites, and locations of material storage areas, sanitation facilities	Contractor	PMU and PMC	At the time of construction camp establishment and finalization of storage areas	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
11	Sources of construction materials	Use quarry sites and sources compliant with environmental regulations of India at the national, state and local levels till the end of construction phase. Verify suitability of all material sources and obtain approvals from PMU. Submit to PMU on a monthly basis documentation of sources of materials.	Environmental permissions issued to quarries, mines and sources of materials Environmental permissions of concrete batching plants are obtained from the above.	Contractor PMU and CSQA firm to verify sources (including permits) if additional is requested by contractor	PMU and CSQA firm	Upon submission by contractor	Contractor
12	Access for construction material transportation	Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of ASU campus site because close to site access roads are narrow Schedule transport and hauling activities during non-peak hours (between 1100 to 1700 hours). Locate entry and exit points for the site in a way that traffic congestion is minimum on access roads to site.	Traffic management plan	Contractor	CSQA Firm and PMU	During delivery of construction materials	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Keep the site free from all unnecessary obstructions. Drive vehicles in a considerate manner. Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours (in case of exigencies).					
13	Occupational health and safety	Comply with IFC EHS Guidelines on Occupational Health and Safety. 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 project.	Health and safety (H&S) plan	Contractor	CSQA Firm, PMU, and PMC	During pre-construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Include in H&S plan measures such as: (i) type of hazards at construction site; (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. Ensure that there will be no use of asbestos containing materials such as roofing sheets and pipes. Provide medical insurance and accident coverage for all workers (skilled, semi-skilled and unskilled) of contractors and sub-contractors.					
14	Measures for the protection of COVID-19 at ASU campus site	All protection measures pertaining to COVID-19 should be taken at the site as per the protocol specified by the GoA and GoI for the construction sites. For this, a COVID-19 Health and safety Plan should be prepared by	COVID-19 screening and protection facilities	Contractor	PMU, CSQA Firm, and PMC	During pre-construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		the contractor after mobilization (at present no protocol specified). The protection measures for COVID-19 will continue till pandemic threat continues.					
15	Stakeholder consultations	Continue information dissemination, stakeholder consultations, and involvement/participation of stakeholders during project implementation. Stakeholder consultations are being held at site periodically and are being documented.	Disclosure records Consultations	Contractor, PMU, and PMC	ASU	• During updating of IEE Report (if required) • During preparation of site- and activity-specific plans as per EMP • Prior to start of construction • During construction	PMU and contractor
16	Disclosure of Addendum IEE and updated EMP	The Addendum IEE report including updated EMP and monitoring table should be disclosed in English and Assamese language at ASDM website (after approval from ADB) and hard copies to be made available at ASU site office, and Deputy Commissioner Darrang office. Addendum	IEE, EMP and environmental monitoring table	PMU	ASU	Before start of construction works	PMU

Sl. No.	Environmental Issues	Mitigation Measures and Status	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		IEE for phase II disclosed at ASU website.					
17	Establishment of grievance redress committee and functionality	Grievance Redress Mechanism (formation of committees) to be notified by the IA (ASDM).GRC formed and notified.	Committees and contact details at site, PMU and state level	PMU	ASU	Notification before start of construction works (The GRM is notified by the IA).	PMU

Table-17: Construction Phase Environmental Management Plan for Construction of ASU Campus and Facilities (Phase II components)

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	Regulatory compliances	Following regulatory compliances should be ensured at site in the entire construction phase: 1- Environmental clearances of sand and subgrade quarries/crushers, concrete batching plant and hot mix plants (construction material sources) 2- Labor licenses (local labor and inter-state labor license) from Government of Assam 3- Copies of medical insurance and accident insurance coverage for all workers at site	Compliance clearance copies	Contractor and PMU	ASU	Validity during entire construction phase	Contractor and PMU

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		4- Utility shifting permissions 5- Valid Consent to establish from Assam Pollution Control Board for the ASU project 6-Permission from relevant authority for obtaining sand from licensed and legal quarry					
2	Sanitation, Drinking water facilities and accommodation of construction workers at construction camp	The contractor should provide and maintain sanitation facilities at the camp site. These facilities should include dust bins in adequate numbers for solid waste collection, drinking water facilities, and separate toilets for male and females. These toilets facilities should be well maintained, and septic tanks/soak pits should be provided at the toilets. The dust bins should be regularly emptied and waste from camp site should be disposed off at designated locations. The accommodation should be well lit and ventilated and will have amenities such as water supply and sanitation as explained above.	Construction camp sanitation and drinking water facilities	Contractor	CSQA firm, PMU, and PMC	Regularly during construction phase	Contractor
3	Traffic circulation plan during construction phase	Prior to commencement of site activities and mobilization on ground, the contractor should prepare and get approved (from local traffic police after the review of CSQA firm) traffic	Safe movement of traffic	Contractor	CSQA firm and PMU	Every day during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		circulation plan during construction for safe passage of public vehicles so that locals are not at inconvenience. The contractor shall carry out dissemination of these information and traffic circulation plan at ASU construction site.					
3	Clearance activities, including delineation of construction areas	Only ground cover shrubs, if any, that impinge directly on the permanent works or necessary temporary works should be removed with prior approval from the environmental specialists of PMU and PMC. All areas used for temporary construction operations should be subjected to complete restoration to their former conditions with appropriate rehabilitation procedures. The photographic records should be maintained for the temporary sites used for construction. These will help in proper restoration.	Pre-construction records of site and vegetation in area of construction	Contractor	PMU, PMC, and CSQA firm	During site clearance activities	Contractor
4	Drinking water availability at construction camp and construction site	Sufficient supply of cold potable water to be provided by the contractor and maintained. If the drinking water is obtained from an intermittent public water supply, then storage tanks	Water supply source and availability of water	Contractor	CSQA firm and PMU	During construction phase regularly	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		should be provided. For this, the contractor should submit plans which detail how availability of drinking water shall be assured.					
5	Waste disposal	The pre-identified disposal location should be part of a comprehensive waste disposal plan. Solid waste management plan to be prepared by the contractor in consultation with local civic authorities. The environmental specialist of PMU should approve these disposal sites after conducting a joint inspection on the site with the contractor and PMC environmental specialist. Contractor should ensure that waste shall not be disposed of near water stream in the surroundings of site and along the access path.	Waste disposal sites, waste management plan	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor
6	Stockpiling of construction materials	Stockpiling of construction materials should be done in such a way that it does not impact and obstruct the drainage and movements of locals for accessing their agriculture fields. The stockpiles should be covered	Stockpiling locations at ASU site	Contractor	CSQA firm, PMU and PMC	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		by tarpaulin sheet to protect from dust and erosion. The stockpiles should be bunded so that these are not washed away during intense rainfall.					
7	Arrangement for construction water	The Contractor should provide a list of locations and type of sources from where water for construction shall be acquired. To avoid disruption/ disturbance to other water users, the contractor should arrange water from the market or from local municipality and consult PMU before finalizing the source.	Water availability at identified water source locations	Contractor	PMU, CSQA firm	Regularly during construction phase	Contractor
8	Siltation of existing water ponds due to spillage of construction wastes	No disposal of construction wastes should be carried out into the existing small water ponds at site. These will be developed as water bodies during campus development. The waste materials should be transported to the pre-identified disposal site for safe disposal.	Water ponds at ASU campus site	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor
9	Water pollution from fuel and lubricants	The contractor should not store fuel and lubricants at site to avoid water pollution on account of spillage. These	Vehicle parking, refueling sites, etc.	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		should be purchased on need basis. The maintenance of vehicles and equipment should be avoided at site. It will be taken up at authorized workshops. The contractor should ensure that all vehicle/machinery and equipment operation and refueling should be carried out in such a manner that spillage of fuels and lubricants does not contaminate the ground. The monitoring of ground water quality should be taken up as per the monitoring plan.					
10	Soil pollution due to fuel and lubricants and construction wastes	Fuel and lubricants storage at site should be avoided to avoid soil pollution on account of spillage. These should be purchased on a need basis from the market. Vehicle and equipment cleaning and washing shall be avoided at site.	Vehicle parking area	Contractor	PMU, PMC and CSQA firm	Regularly during construction phase	Contractor
11	Soil erosion	Temporary slope protection may be required during construction at the excavated areas. These slopes should be protected.	Excavated areas, erosion measures taken	Contractor	PMU, PMC and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Adequate measures should be taken up so that there is no soil erosion causing risks in the vicinity. The construction site should be properly barricaded so that lose material and earth at site are not eroded during intense rain and carried way with storm water.					
12	Generation of dust	The contractor should take every precaution to reduce the levels of dust at the construction site. The ASU campus site should be properly barricaded with adequate height prefabricated mild steel sheets from all sides to avoid air emissions and dust impacts in the surroundings of site. All filling works to be protected/covered in a manner to minimize dust generation.	ASU site, air quality monitoring results	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor
13	Emission from construction vehicles, equipment and machinery	All vehicles, equipment and machinery used for construction should conform to the relevant Bureau of India Standard (BIS) norms. The discharge standards promulgated under the Environment Protection Act, 1986 should be strictly adhered to. The silent/quiet equipment available in the market should be used in the construction.	PUC certificates of vehicles and machinery	Contractor	PMU, PMC and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		The contractor should maintain a record of Pollution under Control Certificates (PUCs) for all vehicles and machinery used during the contract period which shall be produced for verification whenever required.					
14	Noise pollution and Vibration levels	The contractor should confirm that all construction equipment used in construction shall strictly conform to the MoEFCC and CPCB noise standards and all vehicles and equipment used in construction shall be fitted with exhaust silencers. At the construction sites noisy construction work such as operation of DG sets, use of high noise generation equipment should be stopped during the nighttime between 10.00 pm to 6.00 am. Noise limits for construction equipment used in this project will follow IFC's EHS standards. No construction activities should be taken up in nighttime (2200 hours to 0600 hours) to avoid noise impacts. Like construction activities, no	Certificates of vehicles conforming noise standards, noise monitoring results	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		construction vehicle movement should be allowed in the night hours. Since the liquefaction phenomenon has been identified at site foundations of suitable strength should be laid and for this suitable construction technology should be adopted. To minimize vibration, issue a Statement of method should be prepared by the environmental specialists of PMC and PMU in consultation with QAQC firm to minimize vibrations during construction. Noise monitoring should be taken up as per the monitoring plan.					
15	Impacts on flora and fauna	Minimize impacts on flora and fauna during construction phase by limiting site clearance bare minimum and limiting all types of pollution generation. The total area for landscaping to be done will be 217830.74m^2 and 3000 trees and shrubs will also be planted. The detailed landscaping and tree plantation plan should be prepared during project implementation. Plantations should be taken up	Landscaping area and tree plantation	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		along boundary wall, side slopes of roads in campus.					
16	Material handling at construction site	Workers employed in mixing cement, lime mortars, concrete, etc. should be provided with protective footwear and protective goggles. Workers who are engaged in welding works should be provided with welder's protective eye shields. Workers engaged in stone breaking activities should be provided with protective goggles and clothing. The use of any toxic chemical (paints, thinners and anti-corrosive and anti-termite materials, etc.) should be strictly in accordance with the manufacturer's instructions. The PMU site in-charge (District Program Manager/Deputy Director Project) should be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the contractor.	Data on available personal protective equipment	Contractor	PMU and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
17	Disposal of construction waste, and debris	The contractor should confirm that safe disposal of the construction waste should be ensured in the pre-identified disposal locations. In no case, any construction waste should be disposed of around the ASU campus site.	Disposal site	Contractor	PMU, PMC and CSQA firm	Regularly during construction phase	Contractor
18	Onsite emergency plan for minor accidents and mishaps and disaster management plan for natural calamities	The onsite emergency plan should be prepared by the contractor in consultation with CSQA firm, PMU and PMC. For natural calamities, a disaster management plan prepared by the Darrang district administration under the provisions of Disaster Management Act 2005 should be followed.	Onsite emergency plan document and disaster management plan document of Darrang District	Contractor	PMU, CSQA firm, and PMC	Mock drill every quarter	Contractor
19	Occupational Health and Safety and COVID-19 measures during construction	Adequate safety measures for workers during the handling of materials at the construction site should be taken up. The contractor has to comply with all regulations for the safety of workers. Precautions should be taken to prevent danger to the workers from accidental injuries, fire, etc. First aid treatment should be made available for all injuries	Records of availability of personal protective equipment, availability of first aid kits	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		likely to be sustained during work. The contractor should comply with all anti-malaria instructions given by the PMU, PMC, and CSQA firm. Necessary COVID-19 protection measures should be taken up as per prescribed protocols of GoA and GoI guidelines. There should not be any use or handling of asbestos containing materials such as roofing sheet and plumbing pipes.					
20	Flooding and Water Logging and construction materials accidental flow with food waters	The contractor should take all measures to barricade the site with MS sheet till a permanent boundary wall is constructed. The contractor should maintain quick drainage of site to avoid any water logging and flow of lose construction material with rainwater The contractor should take all necessary mitigatory measures to ensure that mud and construction materials do not enter agriculture fields or houses from storm water of site.	Flooding and water logging	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase and especially during monsoon months	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
21	Clearing of construction of camp and restoration	The contractor to prepare site restoration plan for approval by the PMU or its authorized agency (such as CSQA Firm). The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures should 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 ASDM.	Restoration plan, and records of pre-construction of temporary sites	Contractor	PMU, ASU, CSQA firm	End of construction phase	Contractor

Table-18: Operation Phase Environmental Management Plan for ASU Campus and Facilities (Phase II components)

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	All regulatory permissions for operations of ASU	All regulatory permissions such as building occupancy certificate from civic authorities, NOC from fire department, consent to operate from Assam Pollution Control Board, etc. should be obtained before start of ASU operations.	List of permissions /NOCs required	ASU management team, PMU, and PMC	ASU	Regularly for validation / renewal of permissions	ASU operational budget

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
2	Environmental Conditions	Air, water, and noise quality will be monitored periodically as per the environmental monitoring plan prepared. The boundary wall and plantation along the periphery should be maintained to avoid any impacts from the ASU campus in the surroundings.	Ambient air quality standards, drinking water quality standards, and ambient noise standards	ASU management team, PMU, and PMC	ASU	Every season except monsoon for first two years	ASU's operational budgets
3	Safety risks	Proper demarcation and flagging of the area requiring safety observations should be taken up after completion of construction works. Necessary precaution measures to be observed by visitors should be printed on boards and should be prominently put inside the ASU Campus. The hazardous and toxic materials at the laboratories and /or workshops shall be handled, stored and disposed of as per instructions provided in material safety data sheets.	Risk area identification, boards for precautionary measures	ASU management team, PMU, and PMC	ASU	Regularly during operation phase	ASU's operational budgets
4	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection	The ASU operations and management team should carry out maintenance of the toilets and carry out the regular waste collection and disposal of the waste to the local disposal site. Sewage network and sewage treatment plant should be	Maintenance schedule of the STP, sewage network and toilet blocks, disposal plans of various solid wastes	ASU management team, PMU, and PMC	ASU	Regularly during operation phase	ASU's operational budgets

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		maintained effectively. No wastewater without treatment should be discharged outside ASU campus. Any hazardous waste generated waste generated should be handled as per the provisions of 'Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016. Any bio-medical waste generated at Medical Center should be handled, stored, transported and as per the provisions of 'Bio-Medical Waste Management Rules 2016'. The E-waste generated should be handled and disposed of as per provisions of 'E- Waste Management Rules, 2016'. The used and discarded lead acid batteries for recycling and disposal should be as per Battery Waste Management Rules, 2020.					
5	Natural disasters	Necessary procedures to be followed by the visitors, students, and ASU staff during natural disasters shall be written at prominent locations.	Warnings of disasters by Meteorological Department	ASU management team, PMU, and PMC	District Administration	Regularly during operation phase	Government of Assam
6	Onsite emergency plan for minor	The operations and management team of ASU should prepare an on-site	Onsite emergency plan document	ASU management team	ASU	Mock drills every quarter	ASU operational budgets

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	accidents and mishaps	emergency plan for possible minor accidents and mishaps (due to fire, handling and storage of hazardous and toxic chemicals at laboratories, workshops, water treatment plant, STP, etc.) during operation phase.					
7	Waste generated on account of operation and maintenance of solar water heating system and roof top solar system	The supplier of solar panels cells and water heating system should maintain the system. Any waste generated should be collected by the supplier for possible reuse and recycling. For this, necessary agreement should be prepared at the time of supply and installation.	Waste generation from solar system	Suppliers of solar panel cell and water heating system	ASU operations and management team, PMU, and PMC	Regularly	ASU operational budgets
8	Disposal of waste from ASU campus	The ASU operations and management team should prepare waste disposal plans for municipal waste, bio-medical waste and hazardous waste in consultations with local civic authorities and local office of Assam Pollution Control Board	Waste disposal plans for various types of wastes	ASU management team, PMU, and PMC	ASU	Regularly	ASU operational budgets
9	Maintenance of drainage system of ASU Campus	The ASU management Team should maintain drainage system constructed properly to avoid flooding of campus	Drainage maintenance schedule and clearing of drains before monsoon	ASU management team, PMU, and PMC	ASU	Regularly as per requirements	ASU Operational Budget

C. Environmental Monitoring Plan

105. Environmental monitoring will be undertaken during construction at three levels. Environmental monitoring (which covers EMP implementation and compliance with rules and regulations with respect to the environment, and handling of solid and liquid waste) at site will be undertaken by the contractor during pre-construction and construction phases and will be supervised by PMU (with the support of PMC and CSQA Firm teams). Environmental monitoring during operation phase will be taken up by the PMU through an accredited laboratory. Water logging is not anticipated as ASU layout design includes ASU campus drainage system as per site conditions. The environment safeguards specialists of the PMU and PMC will ensure that addendum IEE and EMP are updated for any changes in future in accordance with ADB's and GoA's requirements. The CSQA firm team and environmental specialists of PMC and PMU will ensure that all the provisions of the EMP are being adhered to by the contractor.

106. To ensure the effective implementation of mitigation measures and revised EMP during pre- construction and construction phases of this subproject, it is essential that an effective environmental monitoring plan is followed as given in **Table 19**. The proposed monitoring of all relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards and responsible agencies are presented in this table. The increase in built areas of phase II components (type-2, Type-3, Type-4 and type-5 quarters) does not require any additional environmental tests. Hence previous monitoring plan holds good in post detailed design of Phase II components of ASU.

Table-19: Environmental Monitoring Plan for the Detailed Design and Construction of ASU Campus and Facilities (Phase II Components) during Pre-construction, Construction and Operation Phases

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored and applicable standards	Locations	Frequency	Responsibility	Cost (INR/US$)
1	Air quality	During pre-construction phase	CO, NOx, PM_{10}, $PM_{2.5}$, and SO_2 (applicable standards – national- National Ambient Air Quality Standards)	Location of maximum construction activity at the ASU site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction and construction phase and ASU management team during operation phase	INR160,000/US $2300
		During construction phase			Once in a quarter except monsoon quarter (June to September) during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
2	Ground water quality	During pre-construction phase	TDS, TSS, pH, Hardness, BOD, Faecal Coliform (applicable standards – national- Drinking Water Quality Standards specified in IS:10500)	Ground water close to ASU construction site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction and construction phase and ASU management team during operation phase	INR160,000/US $2300
		During construction phase			Once in in a quarter except monsoon quarter during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
3	Treated Waste Water in Recycle use in ASU campus	During operation phase	TDS, TSS, pH, Hardness, BOD, Faecal Coliform (applicable standards – national- Drinking Water Quality Standards	Treated water from STP used for recycling	Once in a quarter except monsoon quarter for first two years	ASU management team	INR 60,000/US$850

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored and applicable standards	Locations	Frequency	Responsibility	Cost (INR/US$)
			specified in IS:10500)				
4	Noise Levels	During pre-construction phase	Noise quality as per National Ambient Noise Standards on dB(A) scale (Applicable standards – national- National Ambient Noise Standards)	Noise levels at location of maximum construction activity at ASU site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction and construction phase and ASU management team during operation phase	INR 48,000/US $700
		During construction phase			Once in quarter except monsoon quarter during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
		During pre-construction phase					

Summary of Site- and Activity-Specific Plans/Programs as per ASU EMP

107. **Table-20** summarizes site- and activity-specific plans to be prepared as per EMP tables.

Table-20: Site- and Activity-Specific Plans/Programs as per Updated EMP Post Detailed Design of Phase II components

To be Prepared During	Specific Plan/Program	Purpose	Responsible for Preparation	Responsible for Implementation
Pre-construction phase	Environmental monitoring program as per detailed design	Indicate sampling locations, methodology and parameters to the contractor	PMU and PMC	Contractor
Pre-construction phase	Chance find protocol	Address archaeological or historical chance finds	PMU and PMC environment specialists	Contractor
Pre-construction phase	List of pre-approved sites for construction camp, stockpiles, and waste disposal sites	Location/s for construction camp, areas for stockpile, storage, and disposal for minimization of impacts	PMU and PMC environment specialists, CSQA firm, and contractor	Contractor
Pre-construction phase	Waste management plan	Mitigate impacts due to waste generation	Contractor	Contractor
Pre-construction phase	Spill prevention and containment plan	Mitigate impacts of accidental spills of oil, lubricants, fuels, concrete, and other hazardous materials	Contractor	Contractor
Construction phase	Traffic management plan	Mitigate impacts due to transport of materials and project related traffic movement	Contractor	Contractor
Construction phase	COVID-19 health and safety plan	To comply with COVID-19 guidelines issued by the GoA and Ministry of Health and Family Welfare, GoI (MoHFW)	Contractor	Contractor
Construction phase	Health and safety (H&S) plan	To comply with IFC's EHS guidelines on occupational health and safety	Contractor	Contractor
Construction phase	Erosion control and re-vegetation plan	Mitigate impacts due to erosion and vegetation	Contractor	Contractor

To be Prepared During	Specific Plan/Program	Purpose	Responsible for Preparation	Responsible for Implementation
		removal at ASU site		
Construction phase	Environmental monitoring plan implementation	To check efficacy of mitigation measures	Environment specialists of PMU and PMC and contractor	Contractor
Operation Phase	Environmental monitoring plan implementation for first two years	To check efficacy of mitigation measures	ASU management team in close coordination with PMU	ASU management team
Operation Phase	Solid waste management plan	For effective disposal of all types of wastes	ASU management team in close coordination with PMU	ASU management team
Operation Phase	Onsite emergency plan	For handling any mishap at ASU campus on account of fire, explosion, accident, etc.	ASU management team	ASU management team

108. The guidelines for preparation of site-specific traffic management plans are in **Annexure-4.**

D. Capacity Building

109. In addition to the primary objective of project strengthening industry-aligned and flexible skills education and training systems in Assam, the subproject will also raise awareness about environmental conservation amongst implementing agency, contractors, CSQA firm team, and local communities. The project will have the opportunity to build capacity in environmental protection for the above-mentioned stakeholders. In the operation phase, ASU campus management team will take up awareness about environmental conservation with the assistance of PMU.

110. The environment specialists at PMU and PMC 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. The proposed training program along with the frequency of sessions is presented in **Table 21**. **There is no change in capacity building training modules post completion of detailed design of phase II components of ASU project.**

Table-21: Training Modules for Environmental Management

Program	Description	Participants	Duration	Training Conducting Agency
A. PRE-CONSTRUCTION STAGE				
Sensitization workshop on environment	• Introduction to Environment: environmental assessment and social due diligence requirements in the project, regulatory clearances, and	PMU, CSQA firm, ASDM officials involved in the project, other engineering staff associated with	½ working day	Environment specialists of PMU and PMC

Program	Description	Participants	Duration	Training Conducting Agency
	permission requirements in the project • Environmental management plan implementation, introduction of ADB Safeguard Policy Statement, 2009, and ADB guidelines on environmental considerations in planning, design and implementing projects	the subproject, and contractors' technical staff		
Session 1	• Environmental impacts due to ASU project during construction and operation phases, pollution generation activities during preconstruction and construction phases • Environmental management, environmental provisions, implementation arrangements, methodology of assessment, and good engineering practices to be integrated into contract documents	PMU, CSQA firm, ASDM officials involved in the project, other engineering staff associated with the subproject, and contractors' technical staff	½ working day	Environment specialists of PMU and PMC
B. CONSTRUCTION STAGE				
Session 2	• Roles and responsibilities of officials, contractors, consultants toward protection of environment • Implementation arrangements and environmental monitoring during construction phase	PMU, CSQA firm, ASU officials involved in the project, other engineering staff associated with the ASU project, and contractors' technical staff	½ working day	Environment specialists of PMU and PMC
Session 3	• Monitoring and reporting system	PMU, CSQA firm, ASU officials involved in the project, and other engineering staff associated with the ASU project	¼ working day	Environment specialists of PMU and PMC

E. Environmental Budget

111. Most of the mitigation measures require the contractor to adopt good site practices, which should be part of their normal procedures, and these are mandated under the prevailing regulations and standards, hence there are unlikely to be major costs associated with compliance. Only those items not covered under budgets for construction are included in the IEE budget. The revised IEE costs include mitigation, monitoring and capacity building costs. The summary budget for the environmental management costs for the sub-project is presented in **Table 22.** There is no change in environmental budget post completion of detailed design of phase II (increase in built up areas of type-2, Type-3, Type-4 and Type-5 quarters) components of ASU project.

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

Monitoring Component	Rate	Amount (INR)	Source of Fund
Pre-Construction and Construction Phase			
Ambient Air Quality: One location at location of maximum construction activity at ASU site (one sample during pre- construction phase and nine samples during construction phase - Total 10 samples)	10,000	100,000	Contractor
Water Quality: One ground water sample from ASU construction site from existing bore well/hand pump (one sample during pre- construction phase and nine samples during construction phase - Total 10 samples)	10,000	100,000	Contractor
Ambient Noise Quality: One location of maximum construction activity at ASU construction site (one sample during pre-construction phase and nine samples during construction phase - Total 10 samples)	3000	30,000	Contractor
Cost for Occupational Health and Safety Measures Occupational health and safety measures at construction site and workers' camp	Covered in the construction cost of contractor as EMP is part of bid and contract document.		Contractor
Capacity Building Training Program	Covered in the consultancy cost of the operation cost of PMU		PMC and
Total: Pre-Construction and Construction Phase Monitoring Cost (A)		**230,000**	
O&M Phase			
Ambient Air Quality One location at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
Drinking Water Quality One treated drinking water sample at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
Treated wastewater Quality One treated wastewater sample used for recycling in ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
Ambient Noise Quality One location at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	3000	18,000	PMU and ASU
Maintenance of Plantation, Shrubs and Landscape Areas	Covered in operation and maintenance cost of ASU campus		
Capacity Building	Covered in operation and maintenance cost of ASU campus		

Monitoring Component	Rate	Amount (INR)	Source of Fund
Maintenance of drainage system of ASU campus to avoid water logging and flooding	Covered in operation and maintenance cost of ASU campus		
Total O&M Phase Monitoring Cost (B)		**198,000**	
Total Cost (A+B)		**4,28,000**	
Contingencies @ 5 %		**21,400**	
Total Budgeted Cost (INR)		**4,49,400 (approx. 4,50,000)**	

F. Environmental Monitoring and Reporting

112. The PMU with the assistance of PMC monitors and measures the progress of EMP implementation during construction phase. During operation phase PMU safeguard cell in close coordination with ASU operations and management teams will take care of EMP implementation.

113. During construction phase, CSQA firm team with guidance from PMC and PMU environmental specialists submits monthly monitoring and implementation reports to ASDM. The PMU environmental specialist, with the assistance of PMC environmental specialist, prepares semi-annual environmental monitoring reports for submission to ADB on behalf of EA. The semi-annual monitoring report documents monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. The frequency of submission of environmental monitoring reports to ADB will be reduced to annual in the operation phase. These reports on an annual basis will be prepared by the PMU environmental specialist and submitted to ADB till the project completion report is issued by the ADB. Monitoring reports will be posted on ADB website and in other IA locations accessible to the public.

114. If there are any unanticipated impacts found during implementation, the EA, through the PMU will update the IEE and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts. To date there have been no unanticipated impacts.

115. 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 social and environmental safeguards will be integrated into the project performance management system. ADB will monitor the project on an ongoing basis until a project completion report is prepared.

VII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Process For Consultations Followed

116. The detailed design and construction of ASU campus and facilities does not involve any elements which could have an adverse impact on the community. There is no deprivation of any sort for the residents or displacement of any groups. Particularly, with regard to environmental impacts, this subproject can be characterized as having no significant adverse impacts.

117. In view of this, the need for holding a public hearing(as defined in EIA Notification 2006 of GoI) was not perceived at this stage as EIA Notification is not applicable to ASU project. However, in compliance with the ADB's guidelines, focused public consultations were undertaken during the site visit to the ASU site in Mangaldai. The consultations were also held with the Deputy Commissioner Mangaldai, Revenue Authorities of district and local people living close to the ASU site. The stakeholders were informed about the ASU project components and subsequent implementation in their area and their views were obtained. Initial consultations were carried out on November 12 and 13, 2020 and February 5 and 6, 2021. After inclusion of additional 40 Bigha area to the project site, stakeholder consultations were carried out on March 03, 2022. During construction period, consultations were carried out on December 16, 2022. During the preparation of this addendum IEE, consultations were also held on 4th April 2023. The number of participants (male and female) is given in **Table-23**. In addition to above mentioned consultations, the Government of Assam laid the foundation stone for ASU at the site on February 15, 2021, and for this event, there was a public ceremony attended by about 20,000 people. This was also a mode of communication about the establishment of ASU and this ceremony was covered by local media. The consultations at the ASU sites were carried out in January 2024 and in these consultations the stakeholders were informed about changes in built up areas of Phase II components after detailed design. Their views and comments were also sought on this change in built up area components.

118. The process of consultations was an integral part of the ASU campus design and environmental assessment, in accordance with ADB's guidelines to achieve the following objectives:

- To educate the general public, especially potentially impacted or benefited communities, individuals and stakeholders about the proposed ASU and its detailed design and construction.
- To familiarize the people with technical and environmental issues of the detailed design and construction of ASU campus and facilities for better understanding.
- To solicit the opinion of the communities, local authorities and individuals on environmental issues and assess the significance of impacts due to the subproject.
- To foster co-operation among officers of EA and IA, the community and the stakeholders to achieve a cordial working relationship for smooth implementation of the project; and
- To identify the environmental issues relating to the proposed activity.

119. During the consultations residents opined that there is a need to provide skills and job-oriented education to the youth of Assam State so that better employment opportunities are made available to them. The project will help rural youth in getting training and skills enhancement education. The project will also provide employment and business opportunities to the local population during construction and operation phases. The local people demanded fast implementation of the overall project. The dates of consultations and stakeholders consulted are summarized in **Table 23**. The views, comments and suggestions of stakeholders and their incorporation in project design are presented in **Tables 24 and 25.** The records of consultations (list of participants with signatures) and consultation photographs are

given in **Annexure- 5**

Table-23: Dates and Stakeholders Consulted

Sl. No.	Stakeholders Consulted	Dates of Consultations	Number of Participants	
			Male	Female
1	ASU campus site	12 and 13 November 2020	10	4
2	Deputy Commissioner Darrang Office	12 November 2020	12	4
3	Assam Skill Development Mission	12 and 13 November 2020	9	2
4	District Revenue Authorities	13 November 2020	4	0
5	ASU campus site	06 February 2021	23	6
6	Principal Chief Conservator of Forest, Assam State Forest Department, Guwahati	05 February 2021	4	0
7	Assam Pollution Control Board	05 February 2021	5	0
8	Environmental Impact Assessment Authority, Assam State	05 February 2021	4	0
9	ASU Campus Site	03 March 2022	20	10
10	ASU Project Site Mangaldai	16 December 2022	2	8
11	Deputy Commissioner, Water Resources Deptt., T&CP, Mangaldai	4th April 2023	13	3
12	ASU construction site	12 January 2024	12	1
13	Meeting with Water Resource Department, Revenue officials and ASUP officials for planning the Storm water drainage plan outside ASU Campus	30 January 2024	9	2

120. Most of the suggestions of stakeholders were considered in the project design, as shown in **Tables 24 and 25**.

Table-24: Views, Comments, and Suggestions of Stakeholders at ASU Campus Site and Considerations in ASU Design

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
1	ASU campus site	12/11/2020 and 13/11/2020	With local people near the site, ASDM officials, and elected representatives of the State Assembly	Project components, benefits of project, implementation schedule, environmental and social impacts during	1. Participants, especially elected State Assembly Member (MLA), welcomed the commencement of the project and assured all help during project implementation. The environmental specialist (ADB project preparation

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
				project implementation, etc.	consultant) and ASDM officials thanked the MLA. 2. One local participant suggested that the local population should be given preference in supply of construction materials and employment during construction. The environmental specialist replied that contractors once appointed will procure manpower and materials. At that time the local population may interact with them for the supply of materials and employment. 3. One participant enquired about the access road to the ASU site. The environmental specialist replied that access road from NH-15 will be developed. Once Mangaldai Bypass has been constructed by the National Highways Authority of India, access road from new bypass will also be developed by the Authority. 4. The environmental specialist solicited suggestions for environmental protection from the participants. The participants suggested that plantation and waste disposal should be done with care. The environmental specialist replied that plantation and landscaping plans for the campus will be prepared and implemented. The solid waste disposal will be as per regulatory requirements. 5. One local participant suggested during discussion that there is intense rainfall in Mangaldai, so drainage should be installed. The consultant and ASDM officials informed that campus will be designed

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
					with proper drainage system considering rainfall.
2	ASU campus site	February 06, 2021	With local people near the site, ASDM officials, and village Panchayat elected representatives	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, etc.	1.The participants suggested that tree plantation in the campus should also include fruit bearing trees growing locally. The environmental specialist replied that tree plantation and landscaping plan will be prepared as part of design of the campus. In the tree plantation plan, locally grown fruit bearing trees will be considered for plantation. 2.The environmental specialist inquired from the participants about the water availability in two small ponds at site. The participants replied that these get dried up in winter months. The environmental specialist informed the participants that these ponds will be retained and further developed during ASU campus construction. 3. All the participants said that they welcome the project in their area and will provide full cooperation during project implementation. The ASDM officials and environmental specialist thanked the participants. 4.The village head suggested that the site should have proper drainage as there is water accumulation during monsoon time. The environmental specialist informed the participants that drainage system of ASU is being designed considering rainfall intensity in the region.
3	ASU Campus Site	March 03, 2022	With local people near the site, ASDM officials, Town and Country Planning Department officials and village Panchayat elected representatives	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, additional 150 Bigha area included in the	1. The locals participating in the project requested an early start of construction works and were happy about the project in the area. One of the local participants suggested that preference to locals should be given in employment. The contractor representative replied that locals will be employed as per skills suiting for the construction works. 2. Deputy Director Town and Country Planning Department

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
				previous delineated plot, etc.	(T&CP) suggested that the drainage problem at site should be properly addressed. The Deputy Project Director - ASUP replied that the storm water drainage system of project is being designed and the problem of drainage will be addressed. 3.The officials of T&CP further suggested that Building Rules and National Building Code (NBC) should be followed in design and all necessary permissions should be obtained. The ASUP officials replied that the design building rules and NBC have been followed and all necessary permissions required for start of construction works obtained. 4. One participant suggested that Rainwater Harvesting (RWH) structures should be designed and constructed. The environmental specialist replied that because of intense rainfall and high-water table in the area, RWH may not be successful, but RWH has been designed in the form water bodies in the campus. The detailed examination is under progress and based on technical decision these will be implemented. 5. All the participants welcomed the decision of inclusion of additional 150 Bigha area for the ASU site and B expressed happiness that the campus will be bigger and open.
4	ASU Project Site Mangaldai	December 16, 2022	Local people	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, etc.	Local people were made aware of the GRM, and the functionality of the GRM, different modes of receiving complaints, discussion about addressing environmental and social issues at site through GRM. The local people were happy and conveyed that there are no grievances due to the project implementation.

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
5	ASU Project site, Mangaldai	January 12, 2024	Locals, site workers, contractor site team, Quality Assurance firm team, and ASU site team, PMU environmental specialist	ASU Project progress, issues pertaining to construction, environmental and social impacts, project benefits	All the participants were happy that the project is progressing and requested for the faster implementation. The PMU environmental specialist replied that ASU management is trying to implement the project as soon as possible. There was no specific suggestion or comment on the environment, the locals suggested that dust control should be taken up appropriately. The PMU environmental specialist enquired from locals about any inconvenience due to the construction activity, they replied that no inconvenience is felt. The participants were informed that built up areas of Phase II components is changed from 18888 m^2 to 24902 m^2. The components having changes are Type-2, Type-3, Type-4 and Type-5 quarters. The participants made no specific comments as all components are confined within the ASU plot.

Table-25: Summary of Stakeholder Consultations at Institutional Level

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
1.	Deputy Commissioner Darrang Office 12/11/2020	Darrang District Deputy Commissioner, local NGO, Revenue Officials, and Darrang Municipal Council elected representatives	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, etc.	1. The Darrang District Deputy Commissioner informed ADB project preparation consultant team that elected public representatives are in favor of project and district administration will extend all help for the project. He further suggested that Darrang district being agriculture predominant area so modern courses based on agro processing, and local agriculture-based products should be taught in the ASU. ASDM team replied that suggestion has been noted and while finalizing the courses the suggestion will be considered.

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
				2. One participant suggested that if trees are to be cut down, then these should be replanted at another location. The environmental specialist replied that there is no requirement of tree cutting as site is flat and vacant. 3. The official from the local office of the State Pollution Control Board suggested that the environmental impacts of the project should be assessed thoroughly.The environmental specialist replied that environmental assessment of the project is being done and an IEE report will be completed as part of project preparation. 4. One participant suggested that a small portion of ASU should also develop a water body. In this water body rainwater should be collected from rooftop as well as from ground. This will help in ground water recharge. ADB project preparation consultant team replied that suggestions have been noted and will be considered while finalizing layout plan of ASU. 5. The Deputy Commissioner informed that after COVID-19 pandemic, cultivation on land is in demand by the youth. Darrang district is a major production center of maize so courses related to food processing should be offered at ASU. The ASDM officials replied that suggestions have been noted and courses pertaining to food processing will be planned. 6. One participating NGO from Darrang suggested that jute production is good in Darrang district and jute is exported so local youth should be trained for export of jute-based products and exotic vegetables. The ASDM officials replied that suggestions have been noted and courses will be planned

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
				considering the suggestions given in the consultation meeting.
2.	Guwahati 12/11/2020 and 13/11/2020	ASDM Director and officials	Site Issues, ASU project components, regulatory permissions required and project site revenue records	1. Environmental specialist enquired about land title and tree cutting requirements at site. The ASDM Director informed that there is no requirement for tree cutting. The land has been transferred in the name of ASDM. 2. The environmental specialist informed us that the project will be category B as per ADB safeguard policy Statement 2009 (SPS 2009). To comply with the policy, an IEE report contained in environmental management plan (EMP) will be prepared for each component (sub-project such as boundary wall and ASU Campus). The EMP is to be included in bidding documents and the EMP budget in the project cost. The ASDM officials replied that compliance with ADB SPS 2009 and regulatory requirements will be ensured.
3	Guwahati 05/02/2021	Principal Chief Conservator of Forests (PCCF), State Forest Department	Dissemination of project information and enquiry about requirement of clearance/permissions from the forest department	1- The ASDM officials explained ASU project features. The environmental specialist enquired about the clearances and permissions required from the forest department and any special rule in the state. The PCCF replied that there is no requirement for any clearance since the land of the ASU campus site is government land. He advised that that letter to divisional forest officer (DFO) may be written to confirm that no forest land is in the delineated plot of ASU. This will avoid any complications later. ASDM subsequently obtained confirmation from the forest department and the letter is enclosed in **Annexure-6.** 2- Similar to the forest land confirmation, PCCF also advised to obtain confirmation letter from divisional forest officer (wildlife) that the land of the ASU campus site does not fall in the eco-sensitive zone of Orang National Park. The environmental specialist thanked the PCCF and said that confirmations for both forest and

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
				eco-sensitive will be obtained from the respective DFOs. ASDM subsequently obtained confirmation from the wildlife division of forest department and letter is enclosed in **Annexure-6.**
4	Guwahati 05/02/2021	Chairman of State Environmental Impact Assessment Authority (SEIAA), Assam State	Dissemination of project information and enquiry about requirement of prior environmental clearance for the project	1- The environmental specialist explained the project features to the chairman of Assam State Environmental Impact Assessment Authority and enquired whether the project will require prior environmental clearance. The SEIAA chairman replied that education institutes are exempted from obtaining the prior environmental clearance as per MoEFCC notification. So, the project will not require prior environmental clearance. ASDM officials and environmental specialist thanked the Chairman for clarification.
5	Guwahati 05/02/2021	Assam Pollution Control Board	Dissemination of project information and enquiry about requirement of 'No Objection Certificate and permissions' from Assam Pollution Control Board for the project	1-The ASDM officials explained the project and enquired about permissions and clearances required from the Assam State pollution Control Board for the project. The state pollution control board officials replied that under the national consent management scheme of Central Pollution Control Board, the project will require consent to establish and consent to operate from the Assam Pollution Control Board. Application for the consent to establish may be submitted once the design of the ASU campus and facilities have been completed. The environmental specialist thanked the officials and told them that application will be made on completion of design.
6	ASU Site 04/04/2023	Deputy Commissioner, Darrang, Water Resources, T&CP, ASUP officials	Storm water drainage system development at and around ASU campus	A detailed discussion regarding the storm water drainage plan was done. Based on the drainage plan of the ASU Campus, three zones have been identified to carry the run-off to the nearby Noanadi River, Mangaldai River and the Moranadi River. District Administration, Darrang ensured necessary cooperation during the implementation of the drainage plan.

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
7	The Water Resources Department Mangaldai 30/01/2024	Officials of Water Resources department	Storm water Drainage system finalization and construction outside ASU campus	The storm water drainage of ASU campus was discussed with the Water resources department, Revenue officials, Darrang and NHAI Officials. It was requested that the external drainage may be made more effective so that internal drainage under construction works well. The drainage plan was finalized after discussing the feasibility of the proposed drainage with all the departments along with the estimate to be prepared for the work. The Water Resources Department agreed to release the work order of finalized drainage as soon as possible.

B. Future Consultation and Information Disclosure

121. To ensure continued public and stakeholder participation in the ASU project life cycle, periodic consultations and focus group discussion shall be continued. A grievance redress committee (GRC) has been formed at the site and also at PMU level to register grievances regarding technical, social and environmental issues. The participatory process will ensure that all views are adequately reviewed and suitably incorporated in the design and implementation process. Further, to ensure an effective disclosure of the ASU project proposal to the stakeholders and the communities in the vicinity of site, an extensive project awareness campaign will be carried out.

Information Disclosure

122. An electronic version of this addendum IEE will be placed in the official websites of ASU and ADB (after clearance of this document by the GoA and ADB). On demand, any person seeking information can obtain a hard copy of the complete IEE document by paying the cost of photocopy from the office of the PMU and ASU site office on a written request. The hard copies of addendum IEE report summary in Assamese language will be available at ASU office, Guwahati, ASU site office, Mangaldai and Deputy Commissioner office, Darrang for reference.

123. The PMU issues important notifications on the disclosure mechanism on its website for creating awareness of the project implementation among the public.

C. Grievance Redress Mechanism- ASUP

124. A three tier Grievance Redressal Mechanism has been established for ASUP. This mechanism has been approved by SEED and ADB. The affected person(s)/aggrieved party can give their grievance verbally or in written to the ASU site office in Mangaldai. Grievances of affected person will first be brought to the attention of the officer in charge of the site (Project Technical Manager of ASUP), who can resolve the issue at the site level. If the matter is not solved within 7 days period by the site in charge, it will be brought to the GRC constituted for the purpose at site. This GRC shall discuss the issue in its monthly meeting and resolve the issues within one month after receiving the grievance. If the matter is not resolved by GRC at

the site level within the stipulated time, it shall be referred to GRC at PMU level by the officer in-charge of the site.

125. GRC at PMU shall discuss the issue and try to resolve it and inform the ASU site office. If the matter is not resolved by the GRC at PMU level within one month, the matter will be referred to the state level project steering committee (SPC), who will resolve the complaint within one month. However, the aggrieved person/party can bring the matter to the Court of Law any time during the process or even without approaching the GRC. The PMU and ASU site keep records of all grievances received including contact details of the complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date the actions were taken and their final outcome. A complaint box and register are maintained at the construction site. The grievance redress process is shown below. The cost for the operation of GRM will be accounted for in project cost as part of PMU operation.

126. Further, person(s)/aggrieved party who are, or maybe, adversely affected by the 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.

D. Composition and functions of GRC

127. **Site Level Grievance Redress Committee (GRC-Site).** This committee comprise of Project Technical Manager-PMU, environment specialist-PMU, site engineer-PMU, gender and indigenous people specialist-PMU, DPM-ASDM and one locally elected representative from Panchayat. The GRC-Site is headed by Project Technical Manager. It meets at least once a month. The agenda of the meeting is 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 remain with GRC at site level for one month.

128. **GRC at PMU.** There is one GRC in PMU. GRC at PMU comprises of the CEO- ASUP, DPD-ASUP, safeguard specialists (Environmental and Social) of the PMU, HR and Admin Executive-PMU, Communication Manager, PMU and Legal advisor, ASDM. The Committee is headed by the Mission Director, ASDM. This committee shall look into the matters, which are referred to and not resolved by GRC at site level. If the matter is not resolved by the GRC at PMU level within one month, then the aggrieved person or party can bring the matter to the state level project steering committee (PSC) which is in-charge of the project. The GRC mechanism at PMU will also refer the complaint to the PSC.

129. **GRC at State Level-Executive Agency (SEED).** Grievances that cannot be solved at the PMU Level or where matter is directly presented to Principal Secretary by the complainant will be deliberated upon in the SLSC meeting and the solution of the same will be intimidated to the complainant by letter.

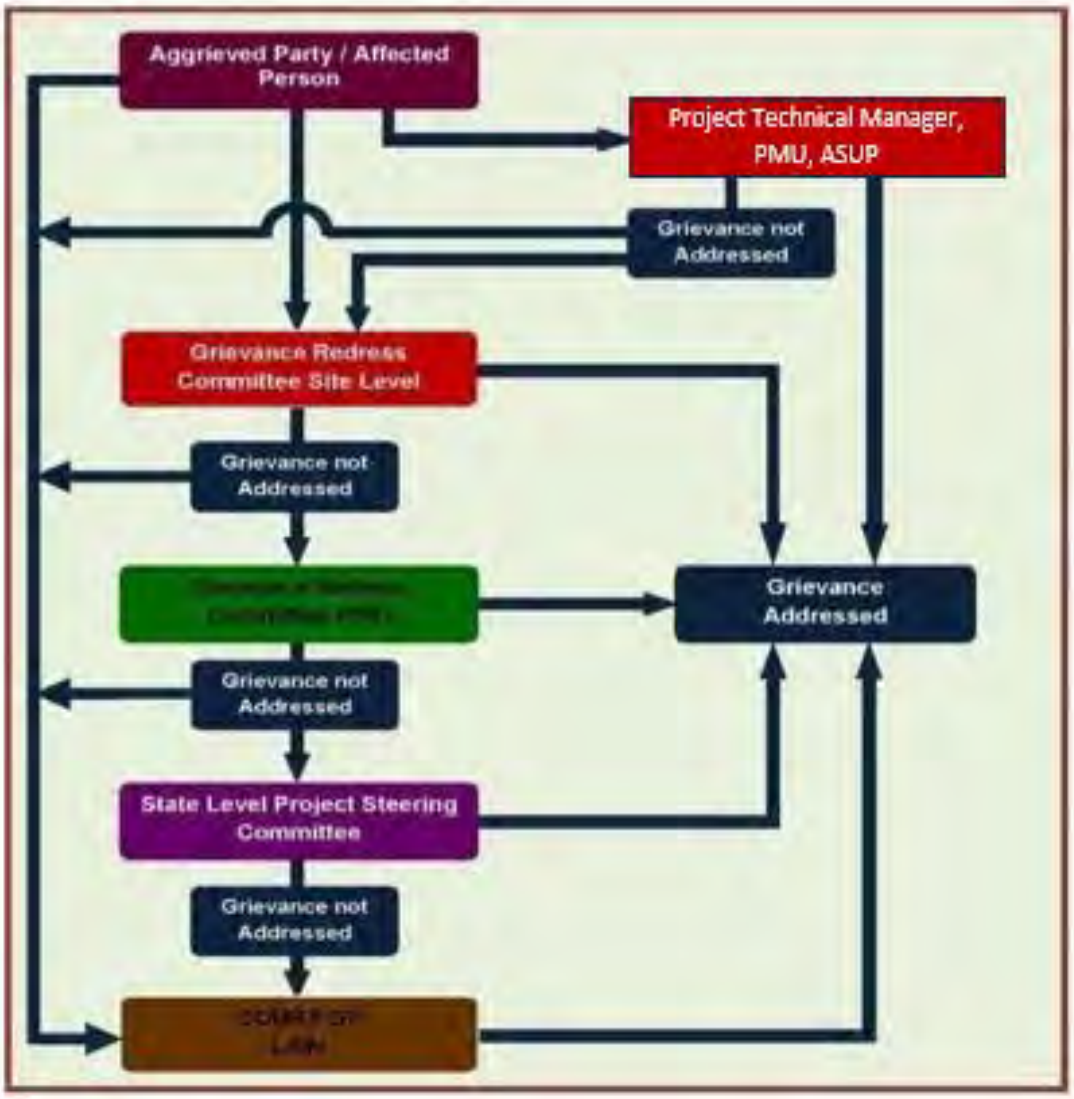
130. **Approach to GRC.** Affected person or aggrieved party can approach the GRC for redress of his/their grievances through any of the following modes:

- Web based: A separate corner has been developed at the ASDM/ASU website (s) so that public and affected person can register their complaints in the online column.
- ASU project information board has been installed at site and on this board, contact details (name, phone number and email) of complaint receiving officer is available.
- Telephone based: A telephone number is available on the website of ASU and at the

construction site so that general public can register their complaint through telephone/mobile phone to the ASU site office and PMU office. One complaint register is maintained at the construction site and PMU office.

131. The grievance redress mechanism for the project for any safeguard related issues is shown below in **Figure-14:**

Figure-14: Grievance Redress Mechanism (ASU Project)



VIII. FINDINGS AND RECOMMENDATIONS

132. The construction and development of ASU campus on the delineated plot does not involve any interventions in and around the natural and cultural heritage destinations and has no significant (direct and indirect) environmental impacts. It is expected that the ASU will offer industry-aligned and flexible skills education and training programs for youths and adults. This will help them in getting gainful employment locally and internationally.

133. This addendum IEE has not identified any new and /or additional impacts due to change in built up areas some Phase II components (residential quarters of Type-2, Type-3, Type- 4 and Type-5) from 18888 to 24902 m^2, other than those identified earlier and relating to construction activity. Only minor impacts on water, air and noise during construction have been identified and these have defined mitigation measures and detailed in IEE report. Minor impacts have also been identified during the operation phase and mitigation measures have also been given in the addendum IEE. Those mitigation measures are being implemented and monitored during project implementation. The overall environmental quality of the ASU project site and surroundings will not be affected because of the construction and operation of the ASU campus.

134. The specific management measures laid down in the addendum IEE will effectively address any adverse environmental impacts due to the ASU project as a whole. The effective implementation of the measures proposed will be ensured through the building of capacity towards environmental management within the PMU supplemented by the technical expertise of safeguards specialist of the PMC. Further, the environmental monitoring plan provides adequate opportunities towards course correction to address any residual impacts during ASU phase II components construction.

IX. CONCLUSIONS

135. Based on the addendum IEE, it is expected that the subproject (Phase II components) has only minor, localized, temporary and reversible environmental impacts. No additional and /or new impacts have been identified after detailed design of Phase II components and on account of increase in built up area from 18888 to 24902 m^2. The components having increased in built up areas are Type-2, Type-3, Type-4 and Type-5 quarters in other components there is no change in built up areas. The identified impacts can be easily mitigated through adequate mitigation measures and regular monitoring during the design, construction, and post construction phases of the project. Negative impacts on water, air quality and noise levels during civil works will be appropriately monitored and adequately mitigated. This report has not identified any comprehensive, broad, diverse, or irreversible adverse impacts caused by the ASU project Phase II components. Based on the findings of the addendum IEE, the classification of the project as Category “B” is confirmed. No further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009).

ANNEXURE-1: MOEFCC NOTIFICATION ON EXEMPTION OF ENVIRONMENTAL CLEARANCE FOR EDUCATIONAL INSTITUTIONS

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.

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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 form 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.

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	33. Excess treated water disposal plan to be submitted. 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. 35. The final disposal point for excess treated water discharge will be municipal sewer for areas where sewerage network is present. 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. 37. Storm water disposal plan to be submitted. 38. The final disposal point for storm water will be municipal storm drain for areas where storm water network is present. 39. In areas where storm water network is absent, the storm water surface runoff can be disposed off in nearby natural water streams/ nallas.
f.	Ground Water	40. Hydro-geological survey for ground water analysis shall be submitted. 41. Aquifer capacity and Ground water yield shall be determined. 42. Rain water harvesting plan shall be submitted indicating the number of recharge pits and bores and total rain water to be harvested. 43. Rain water to be harvested and as a safety precaution, rainwater on-line filters be provided as per NBC norms.
g.	Solid Waste Management	**A} During construction phase:** 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. 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. 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. 47. Miscellaneous site debris such as broken tiles etc shall be used on site for leveling /backfilling purpose. 48. Packaged STP /mobile toilets shall be provided for labour camp. 49. Polymer bags used for cement and gypsum shall be handed over to authorized recyclers. 50. Cardboard boxes and other packaging material will be handed over to authorized recyclers. **B} Post construction phase:** 51. Organic waste composter (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. 52. The non-biodegradable waste or e-waste shall be handed over to authorized recyclers. 53. STP sludge shall be removed using filter press or centrifuge mechanism. The dried sludge cakes shall be used as manure in landscaping. 54. Minimize waste generation, streamline waste segregation, storage, and

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		disposal; and promote resource recovery from waste.
		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.
		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.
		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. 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.
h.	Air Quality and Noise Levels.	**A} During construction phase:** 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. 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. 60. Burning of waste to be banned. 61. The construction site DG to be maintained regularly so that the smoke emission and noise levels are as per permissible norms. 62. Regular P.U.C check for all construction machinery coming on site be done. 63. Noise cancellation and insulation devices such as mufflers, barricades etc to be used to avoid noise propagation to adjoining areas. **B} Post construction phase:** 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. 65. Air quality monitoring to be done quarterly. 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. **C} During Construction & Operation** 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. 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.
i.	Energy	69. Appropriate processes and material be used to encourage reduction in carbon foot print. 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. 71. Solar water heater to be provided adequately.

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.

		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. 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. 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.
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	90. The Project Proponent should provide at least the minimum level of accessibility for persons with disabilities. • 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	91. Provide minimum 1 tree for every 80 sq.mt of plot area. 92. Wherever trees are cut or transplanted, compensatory plantation in the ratio of 1:3 to be done in the premise. 93. Native species of trees to be planted. 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. 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.
m.	Disaster/Risk Assessment Plan	96. Fire tender movement plan to be submitted. 97. Firefighting system to be provided as per the fire NOC. 98. Turning radius to be kept as per Fire NoC or as prescribed in the local by-laws. 99. Public address system to be installed as per the Fire Safety norms. 100. Place of assembly to be indicated.
n.	Socio Economic Impact and CSR	101. Biodegradable and non-biodegradable waste bins to be provided for every household to promote waste segregation at source. 102. Importance of environment and various environment drives to be initiated. 103. Importance of maintenance of environment infrastructure to be showcased by issuing pamphlets etc. 104. Provision for health care, medical kit, crèche, First-Aid room shall be given during construction phase for the construction workers. 105. Adequate shelter for resting hours, crèche, clean and potable drinking water to be provided to construction workers. 106. All local labour welfare laws must be complied. 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.

o.	Environment Management Plan (EMP)	108. Detailed environment management plan comprising of estimated capital cost and O&M cost for the following environment infrastructure should be submitted: **a.** Sewage Treatment Plant **b.** Landscaping **c.** Rain Water Harvesting **d.** Power backup for environment infrastructure. **e.** Environment Monitoring **f.** Solid Waste Management **g.** Solar and Energy Conservation 109. Environment Monitoring Cell with defined functions and responsibility shall be set up and its details be submitted.

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.

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ANNEXURE-2: 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, RSES 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 (53277): Assam Skill University Project (ASU: Construction and development of ASU campus)- Phase II
Sector Division:	SAHS

Screening Questions	Yes	No	Remarks
A. Project Sitting Is the project area adjacent to or within any of the following areas:			The project (output 1) involves construction of the campus and facilities of the Assam Skill University (ASU) on a green field site under the ownership and possession of Assam Skill Development Mission (the implementing agency). The total built up area was around 73,530.92m^2 at the time of loan processing/tendering. As part of project implementation plan, detailed design of Phase II components of ASU project is completed and drawings good for construction have been approved. As per these drawings total area of Phase II components is 24901 m^2. The total area of Phase II components was 18888 m^2 at the time of loan processing and tendering. The Phase II components include Staff Quarter type 2 (3233 m^2), Staff Quarter type 3 (5127 m^2), Staff Quarter type 4 (6492 m^2), Staff Quarter type 5 (801m^2). Mess and Canteen (1200 m^2), Community centre (1600 m^2), Food court (801 m^2), Sub station pump room (319 m^2), Security office (264 m^2), Stadium block (513 m^2), Corridor (1200 m^2), Garage with corridor (3102 m^2), and Open air theatre (250 m^2) ' in addition to support infrastructure facilities such as DG set for power back-up, water supply, sewage treatment plant, etc. The ASU site inclusive of Phase II components is not located within core or buffer zones of national parks, sanctuaries, tiger reserves, or biosphere reserves; nor within 300m from the boundary of protected monuments of archaeological importance.
▪ Underground utilities		√	There are no underground utilities at the site of ASU including locations of Phase II components.
▪ Cultural heritage site		√	There are no buildings of archaeological and cultural heritage importance close to the ASU site. (Within 300m distance and beyond also in Mangaldai town). The nearest archaeologically protected structure is about 35 km from the site.
▪ Protected Area		√	There are no protected areas (wildlife park or bird sanctuary) within 15km aerial distance around the site of ASU and phase II components. The nearest wildlife sanctuary is about 35 km aerial distance from ASU site.
▪ Wetland		√	There is no wetland within 50km aerial distance around the ASU site .
▪ Mangrove		√	The site of ASU is away from coastal areas. Hence this is not applicable.
▪ Estuarine		√	The site of ASU is away from coastal areas. Hence this is not applicable.
▪ Buffer zone of protected area		√	The site of ASU is not in the buffer zone of any protected area.
▪ Special area for protecting biodiversity		√	There is no special protected area for biodiversity within 15km aerial distance from the site of ASU. The nearest protected area to the site is at about 35 km from ASU site.
▪ Bay		√	The proposed site of ASU is away from the coast. Hence this is not applicable.
B. Potential Environmental Impacts Will the Project cause…			

Screening Questions	Yes	No	Remarks
▪ Encroachment on historical/cultural areas?		√	There are no historical or cultural areas within 300m from the ASU site.
▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?		√	The ASU site is located in Mangaldai, an urban area. Hence, it is away from any sensitive or protected areas.
▪ Impacts on the sustainability of associated sanitation and solid waste disposal systems?	√		For wastewater, sewage network system for sewage transport and sewage treatment plant for wastewater treatment plant are planned. The sewage treatment plant and sewer network will be maintained. The proper operation and maintenance of sanitation facilities will be ensured through the implementation of the environmental management plan (EMP). The EMP is part of contract for the contractor. During operation phase, solid waste will be disposed of as part of the disposal systems of the local civic body in Mangaldai.
▪ Dislocation or involuntary resettlement of people?		√	All project related construction works are being taken up in the vacant and encumbrance-free land. There is no involuntary resettlement or dislocation of people.
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	No negative impacts on the poor, women and children, indigenous peoples, or other vulnerable groups are foreseen. The project will enhance access to industry-aligned, multidisciplinary, and flexible skills education and training for graduates from higher secondary education, industrial training institutes, polytechnics, engineering colleges, academic colleges, and universities, as well as professionals and other working age population, including the poor, women, and indigenous peoples.

Screening Questions	Yes	No	Remarks
▪ Accident risks associated with increased vehicular traffic, leading to loss of life?	√		The ASU site is not on the national highway or state highway. It will be connected to the national highway through the strengthening and repair of existing local roads. The Public Works Department of Assam has strengthened the existing road connecting ASU site to the National Highway (NH-15). Traffic near the site is insignificant. During construction, traffic is expected to increase (for material and site staff movement). To minimize any conflict with the local population, vehicles will be driven in a considerate manner. However, to rule out any accident due to the project related vehicular traffic, flagmen are deployed near the construction site to regulate the traffic. Traffic management plan is prepared for the construction phase. The traffic management plan has been elaborated in the addendum IEE. The IEE and EMP are part of the contract document for the contractor. Since ASU will have hostels and residential accommodations for faculty and staff, there will be traffic increase in the operation phase. The connecting road will be properly developed and will have road signages for precautions (such as speed, no use of horn, curved approaches, etc.) to be observed by the road users. These measures will avoid conflict with the local community and accident risks.
▪ Increased noise and air pollution resulting from increased traffic volume?	√		There will be an increase in air and noise pollution due to the movement of construction vehicles. The increase is expected to be marginal and intermittent in nature because of the limited number of construction-related vehicles. To minimize impacts on the local community, mitigation measures (no movement of vehicles at night, mandatory pollution under control certificate, water sprinkling for dust suppression, and regular monitoring of ambient air quality and noise levels) have been elaborated in the EMP. Skills education and training activities at ASU are not envisaged to result in any air or noise pollution. There will be an increase in traffic volume owing to this project so there is a likelihood of some increase in dust and noise levels and vehicular exhaust emissions. To minimize impacts, mitigation measures (plantation of shrubs, landscaping of open areas and trees on side slopes of access road, regular monitoring, etc.) have been included in the EMP. These measures will be implemented during construction and operation phases.

Screening Questions	Yes	No	Remarks
▪ Occupational and community health and safety risks?	√		The environmental impacts related to the construction of new buildings (under phase II) under the project are minor in nature and mostly limited to the duration of construction. The impacts are confined mainly within the construction site. These minor impacts are being mitigated through the EMP. Potential occupational health and safety risks during construction period will be addressed by including provisions in the contract documents and implementation of the EMP. In the operation phase, safety risks due to the usage of equipment, machinery, and instruments in the laboratories and workshops of ASU will be mitigated through the formulation of safe operating procedures (SOPs). These SOPs will be developed during installation of equipment and will be displayed at equipment, machinery instruments, practical training tables, platform of laboratories and workshops.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	√		The environmental impact related to the construction of new buildings (under phase II) are minor in nature and mostly limited to the duration of construction. There will be limited physical, chemical, and biological hazards during construction and operation of ASU. The usage of any radioactive material during construction and operation is not envisaged at present. Adequate provisions will be included in the relevant contract documents to address potential occupational health and safety hazards during the construction. For operation phase, SOPs will be followed to minimize risks and vulnerabilities due to the usage of machinery, equipment and instruments in the laboratories and workshops (including usage of any radioactive materials if unavoidable). These SOPs will be displayed at suitable locations.
▪ Generation of dust in sensitive areas during construction?	√		During construction, there is minor dust generation due to material handling and operation of construction machinery and equipment. This is being controlled through dust suppression measures (e.g., water spray) and proper maintenance of construction equipment and machinery. It is also being ensured that construction equipment and machinery conform to the emission norms laid down by the Central Pollution Control Board. The necessary provisions are included in the contract document of the contractor.

Screening Questions	Yes	No	Remarks
▪ Requirements for disposal of fill, excavation, and/or spoil materials?		√	Since buildings planned in Phase II are being constructed on a green field site, spoiled materials will be generated. There will be excavations for construction works. The excess earth generated due to these excavations will be utilized in fill works in low-lying areas of the site or any other disposal site as directed by the relevant government agencies. Given that the site is plain land, a significant generation of excess excavated earth is not expected as there are substantial fill works. The utilization of excess earth will be suitably included in the contract document.
▪ Noise and vibration due to blasting and other civil works?		√	During construction, some noise is generated due to the operation of construction equipment and machinery. Adequate mitigation measures have been stipulated in the EMP. No blasting activity is envisaged during construction. Hence, there will not be any significant shaking or vibrations. Further, no construction works are being carried out during nighttime. These will be avoided in future also. There will be periodic ambient noise level monitoring at the construction site as per the monitoring plan prepared as part of the EMP.
▪ Long-term impacts on groundwater flows as result of needing to drain the project site prior to construction?	√		The Assam State has an average annual rainfall of about 1600mm. This intense rainfall causes water to log in plain land. The long-term impact on ground flow is not expected because as part of construction works, an efficient drainage system will be developed after the completion of fill works. The ground water recharging systems such as rainwater harvesting structures are part of ASU design and will be implemented as part of the EMP during the remaining period of construction phase. Due to construction of an efficient and effective drainage system, water logging issues are not envisaged in the operation phase.
▪ Long-term impacts on local hydrology as a result of building hard surfaces in or near the building?		√	Since the site area is about 82.7 acres, the area to be occupied by buildings and other infrastructure will be around 20-25 acres only and the rest will remain open and green. Therefore, no long-term impacts on local hydrology are anticipated. Further, there is an average rainfall of around 1600 mm in Assam. This will help quick recharge to the aquifer.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		√	ASU may have a maximum of 5,000 students, faculty and staff. Some may be accommodated at hostel facilities and residential accommodations. As most students will be from Assam, a large population influx is not anticipated. As part of construction works, adequate water supply and sanitation systems (as per specified codes) facilities have been developed. Therefore, no burden on social infrastructure and services is anticipated. During construction, a workforce of around 500 is expected. A construction camp with adequate potable water supply and sanitation facilities is established. Hence, there will not be any burden on social infrastructure and services. Necessary provisions for these requirements are included in the EMP and contract documents of the contractor.

Screening Questions	Yes	No	Remarks
▪ Social conflicts if workers from other regions or countries are hired?		√	Preference will be given to locally available labor. The construction activities are relatively small in nature and will take place within the land owned by the Assam Skill University (the implementing agency) in Mangaldai. At present, no need to hire workers from other regions or countries is envisaged.
▪ Risks to community safety caused by fire, electric shock, or failure of the buildings safety features during operation?		√	Since all the buildings of ASU will be new, the latest national building codes and safety measures will be adopted. The regulatory permissions for occupation of the buildings will be obtained from the local civic authorities, including fire department and other regulatory bodies after complying with the safety regulations for fire and electricity shocks.
▪ Risks to community health and safety caused by management and disposal of waste?	√		During construction, waste collection and disposal system will be developed and operated by the contractor. The processes being followed will be reviewed and approved by the Assam Skill University or its appointed representative entity (construction supervision and quality assurance firm). Project management consulting firm is also helping the Assam Skill University in ensuring that the required safety measures are adhered to while managing and disposing of waste. In the operation phase, adequate provisions will be made in the building designs for management and disposal of wastewater and other solid waste.
▪ Community safety risks due to both accidental and natural hazards, 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?	√		All the construction works will be limited to within the fenced area of ASU in Mangaldai and community safety risks are not foreseen in construction phase. Skills education and training activities of ASU during operation phase will not cause any hazards to the community as these will be limited to teaching and learning in classrooms and practical training classes in workshops and laboratories. The activities of ASU will not interfere with the activities of the population living outside the campus. Further, the buildings will be maintained regularly in the operation phase to avoid any accident or hazard pertaining to building upkeep. Appropriate traffic safety measures would be deployed during construction and operation phases to minimize accidents with local communities.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: India (53277): Assam Skill University Project (ASU: Construction and development of ASU campus
Sector: Education
Subsector: Technical and Vocational Education and Training
Division/Department: SAHS
/

Screening Questions		Score	Remarks[5]
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?	1	There are two rivers near the site-Noa Nadi River, and Mangaldai River and also channels of Brahmaputra to which the water from the site will drains to. However, considering very high rainfall, when Brahmaputra is at spate, the level of water at outlet of campus may be higher than Brahmaputra. Therefore, the ground floor level of the buildings and road levels of the campus have been proposed at a level of 100 years HFL and 50 years HFL respectively to avoid being affected in case of any flood (in design ground floor level kept at 57.2 m - 100-year return flood period level). The site receives around 1637 mm rainfall, so issue of drought is not at site. The site being in a plain and agrarian area so not prone to landslides, but there are occasional storms during summer

[5] 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.

			months of April and May.
	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 ASU site do not demand usage of any specific construction material to counteract 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 ASU site do not 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?	1	Yes, Extreme weather/climate conditions during construction may prolong construction period and in operation phase training /teaching activities may get affected.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

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): Medium Risk

Other Comments: None

Prepared by:

ANNEXURE-3: TRAFFIC MANAGEMENT PLAN

A. Principles

1. It is expected that there will not be any major or prolonged disruption of local traffic during the construction phase. Nevertheless, it is good to prepare a traffic management plan (TMP) to minimize and avoid public inconvenience to the extent feasible. This indicative TMP will ensure the safety of all the road users along the work zone and minimize public inconvenience. It addresses the following issues:

(i) The safety of pedestrians, bicyclists, and motorists travelling close to the construction zone;
(ii) Protection of work crews from hazards associated with vehicle and equipment movement;
(iii) Avoiding traffic congestion and
(iv) Maintenance of access to adjoining properties.

B. Operating Policies for TMP

2. The following principles will help to promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

(i) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
(ii) Inhibit traffic movement as little as possible.
(iii) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
(iv) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
(v) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
(vi) Keep the public well informed.
(vii) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

C. Analyze the impact due to street closure, if required

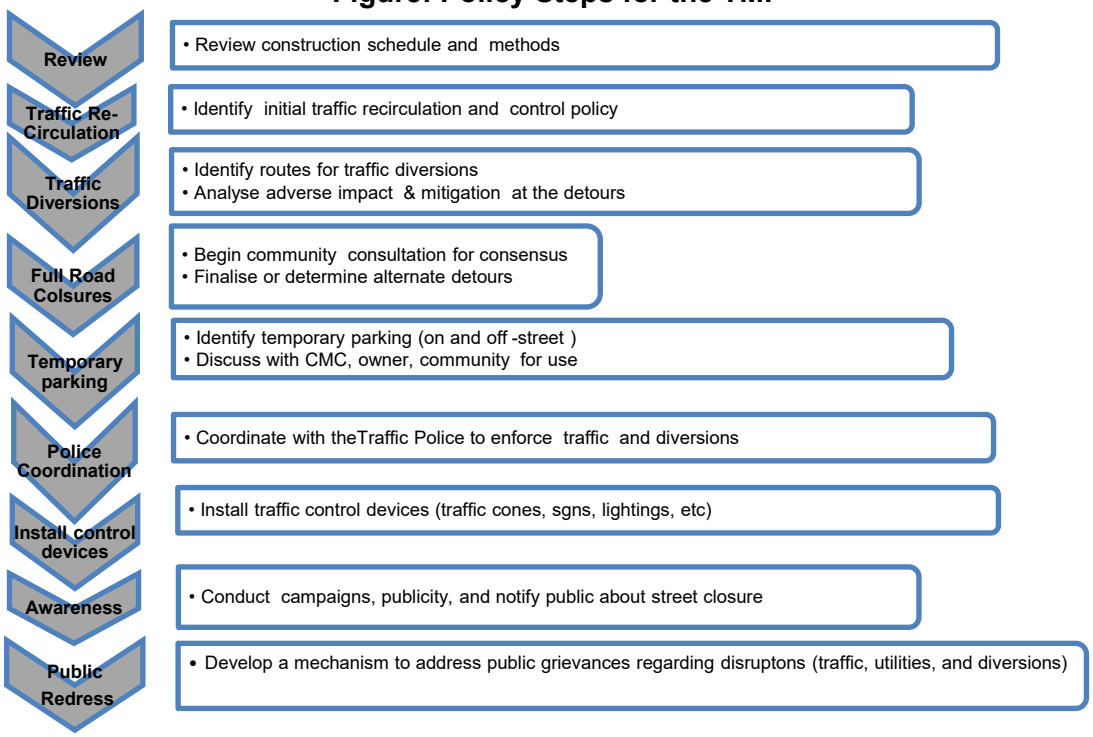
3. A final decision to close a particular street and divert the traffic should involve the following steps:

(i) Approval from the PMU site team and local administration to use alternative local streets as detours;
(ii) Consultation with businesses, community members, traffic police, PWD, etc., regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
(iii) Determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
(iv) Determining if additional traffic control or temporary improvements are needed along the detour route;
(v) Considering how access will be provided to the worksite;
(vi) Contacting emergency service, school officials, and transit authorities to determine if there is any effect on their operations; and

(vii) Developing a notification program to keep the public informed. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

4. If full road closure of certain streets within the area is not feasible due to inadequate capacity of the detour streets or public opposition, then full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning rush hour traffic.

Figure: Policy Steps for the TMP



D. Public awareness and notifications

5. The PMU site team and the contractor will issue timely notifications to inform the public about the following issues:

(i) Road blockages and alternative routes along with the duration (as applicable)
(ii) Traffic control devices placed around the construction zones (signs, traffic cones, barriers, etc.).
(iii) Reduced speed limits to be enforced at the work zones and traffic diversions.

8. It may be necessary to conduct an awareness campaign on road safety during construction. It will target relevant groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

(i) Explain why the brochure was prepared, along with a brief description of the project.
(ii) Advise the public to expect the unexpected.

(iii) Educate the public about the various traffic control devices and safety measures adopted at the work zones.
(iv) Educate the public about the safe road user behaviour to emulate at the work zones.
(v) Tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
(vi) Indicate the office hours of relevant offices.

E. Vehicle Maintenance and Safety

10. A vehicle maintenance and safety program shall be implemented by the construction contractor. The contractor should ensure that all the vehicles are in proper running condition and comply with roadworthy and meet certification standards of GoA. All vehicles should be in good condition and meet the pollution standards of GoI and GoA. The drivers will follow the special code of conduct and road safety rules of GoA. They will ensure that all loads are covered and secured. The vehicle cleaning and maintenance will not be taken up at site.

F. Install traffic control devices at the work zones and traffic diversion routes

10. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is the key for achieving the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices will be used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

11. Procedures for installing traffic control devices at any work zone vary depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary “STOP” and “GO”).

12. The work zone should take into consideration, the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

13. Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers or personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic.

14 In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There

should be provision for lighting beacons and illumination for night constructions. The PMU site team and contractor will coordinate with the local administration and traffic police regarding the traffic signs, detour, and any other matters related to traffic. The contractor will prepare the traffic management plan in detail and submit it along with the EMP for the final approval.

ANNEXURE-4: LAND RECORDS CERTIFIED BY THE REVENUE DEPARTMENT OFFICIALS SHOWING GOA OWNERSHIP

Assam Schedule XXXVII Form No. 30

Chitha for Surveyed Villages / জৰীপ হোৱা গাঁৱৰ চিঠা

জিলা দৰং	মহকুমা মঙলদৈ (সদৰ)	চক্ৰ মঙলদৈ
মৌজা ৰঙামাটি	লাট-লাট নং ৩	গাওঁ চৰ: গেৰিমাৰিচাপৰী

দাগ নং	মাটিৰ শ্ৰেণী		কালি (বি-ক-লে)	পট্টাৰ নং আৰু প্ৰকাৰ	ৰাজহ(টকা)	স্থানীয় কৰ(টকা)
	কৃষি	অকৃষি				
১	২		৩	৪	৫	৬
২২/১৬৫১	বিশেষ ফৰিং		১০০-০-০	০ ,চৰকাৰী	0.00	0.00

পট্টাদাৰৰ নাম, পিতাৰ নাম আৰু ঠিকনা	নামজাৰী হবলগীয়া দখলদাৰৰ নাম, পিতাৰ নাম, ঠিকনা	ৰায়ত/ আধিয়াৰৰ নাম, পিতাৰ নাম, ঠিকনা	ৰায়তৰ প্ৰকাৰ/ খতিয়ন নং, খাজানা বা ফচলৰ নিৰিখ	তলতীয়া ৰায়তৰ নাম, পিতাৰ নাম, ঠিকনা	বছৰ	বেফচলী মাটিৰ কালি		ফচলী মাটিৰ কালি				ফলৰ গছৰ নাম আৰু সংখ্যা	মন্তব্য
						মাটি কেনেদৰে ব্যৱহৃত	কালি (বি-ক-লে)	ক'ৰপৰা পানী পায়	ফচলৰ নাম	কালি (বি-ক-লে)	একাধিক ফচলী মাটিৰ কালি		
৭	৮	৯	১০	১১	১ম ২য় ৩য়	১২ ১৮ ২৪	১৩ ১৯ ২৫	১৪ ২০ ২৬	১৫ ২১ ২৭	১৬ ২২ ২৮	১৭ ২৩ ২৯	৩০	৩১
1)চৰকাৰী (অভিভাৱক চৰকাৰ) 100 B -0 K -0 L ঠিকনা ( )					2020 2019 2018								**মগুলৰ টোকা** () দৰং জিলাৰ উপায়ুক্ত মহোদয়ৰ 12-08-2020 তাৰিখৰ DRS/89/2017/155 নং চিঠি মৰ্মে ও অসম চৰকাৰৰ ৰাজহ ও দুৰ্যোগ প্ৰশমন বিভাগৰ উপ সচিব মহোদয়ৰ 05-08-2020 তাৰিখৰ RSS.53336/2018/104 আৰু 10-08-2020 তাৰিখৰ ECF No.53336/2018/107 নং হুকুম মৰ্মে ৰঙামাটি মৌজাৰ গেৰিমাৰি চাপৰি গাৱৰ 22 নং ডি জি আৰ দাগৰ অংশ 100 বিঘা জমি ছিল চিটি ,দৰংৰ নামত সংৰক্ষণ মুক্ত কৰি পৃথক 1651 নং হিচাপে নথি সংশোধন কৰা হল।—জয়প্ৰকাশ দাস

Print this page | Close this window

GOVERNMENT OF ASSAM
OFFICE OF THE CIRCLE OFFICER: MANGALDAI REVENUE CIRCLE
MANGALDAI : DARRANG

No.MRC- 12/2018/9165 Dtd. 12/10/2020

Land Holding Certificate

This is to certify that a plot of land measuring 100 Bighas covered by Dag No.22 at village Gerimari Chapori under Rangamati Mouza under Mangaldai Revenue Circle is recorded in the name of Skill City, Darrang in pursuance of Govt. order ECF No.53336/2018/26 Dated Dispur, the 13th January,2020.

Schedule of the Land:

Dag No.	Mouza	Village	Area	Remarks
22	Rangamati	Gerimari Chapori	100 Bighas	Recorded in the name of Skill City, Darrang in the Field index.

Circle Officer,
Mangaldai Revenue Circle
Mangaldai.

Circle Officer
Mangaldai Rev. Circle
Mangaldai

GOVT. OF ASSAM
OFFICE OF THE DEPUTY COMMISSIONER :: DARRANG :: MANGALDAI
(LAND SETTLEMENT BRANCH)
Tel : 03713 222135 :: Fax - 03713 222800, Email : dc-darrang@nic.in. Website : http: www. darrang.nic.in

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No. DRS. 85/2017/187 Dated Mangaldai, the 6 th January, 2021

To,

The Mission Director,
Assam Skill Development Mission,
Katabari, NH-37, Guwahati-781035

Sub : Allotment of land in favour of Assam Skill University.

Sir,

With reference to the subject cited above and as per discussion held on 05.01.2021 in the office of the undersigned, I have the honour to inform you that in continuation to earlier allotment of 100 Bighas of land in favour of Assam Skill University vide Govt. letter No. 53336/2018/106 dated 31.07.2020, the Sub-Divisional Land Advisory Committee held on 11.12.2020 has recommended another 150 Bighas of land in favour of Assam Skill University adjacent to earlier allotment in the same village Gerimari consisting of Dag No. 28, 29, 30, 31, 32, 33, 34, 35, 36, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 201, 202, 203, 204, 205, 206, 207and 208 under Rangamati Mouza of Mangaldai Revenue Circle.

This is for favour of your information and necessary action.

Enclo : As stated above.

Yours faithfully,

Deputy Commissioner
Darrang, Mangaldai

ANNEXURE-5: PHOTOGRAPHS AND ATTENDANCE SHEETS OF CONSULTATIONS

A. Photographs of Consultations in November 2020 and February 2021

Discussion with Stakeholders at Site

Another View of Discussion with Locals at Site

Discussion with locals near Site

View of Stakeholder Consultations at Darrang Deputy Commissioner Office

B. Photographs of Consultations in March 2022

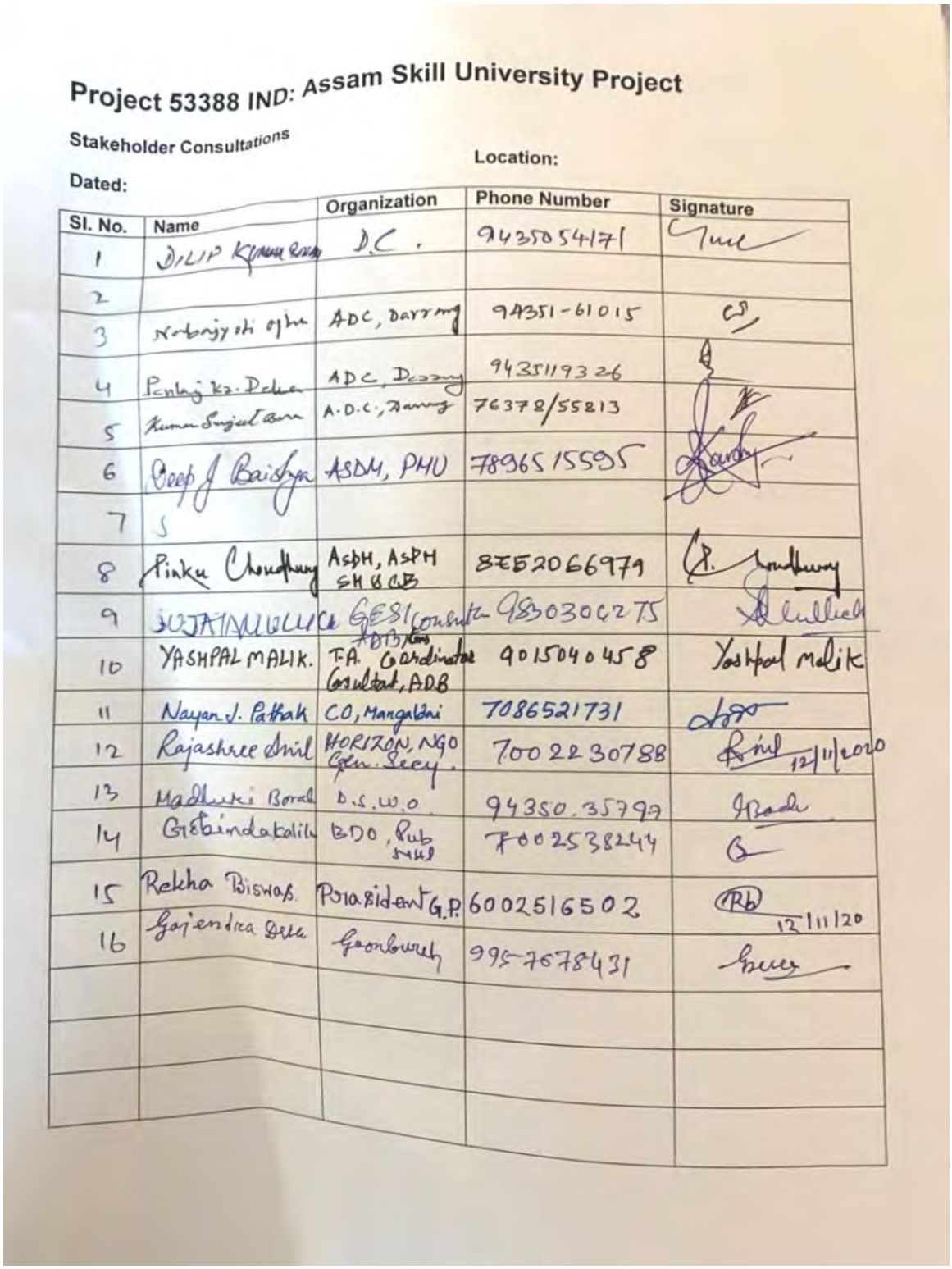
Discussion with stakeholders at site

Another view of discussion at site

C. Photographs of Consultations in January 2022 at ASU Site

D. Photographs of Consultations in January 2024 with Water Resource Department at ASU Site

E. Attendance Sheets of Stakeholder Consultations during Nov2020 and Feb 2021



Project 53388 IND: Assam Skill University Project

Stakeholder Consultations

Location:

Dated:

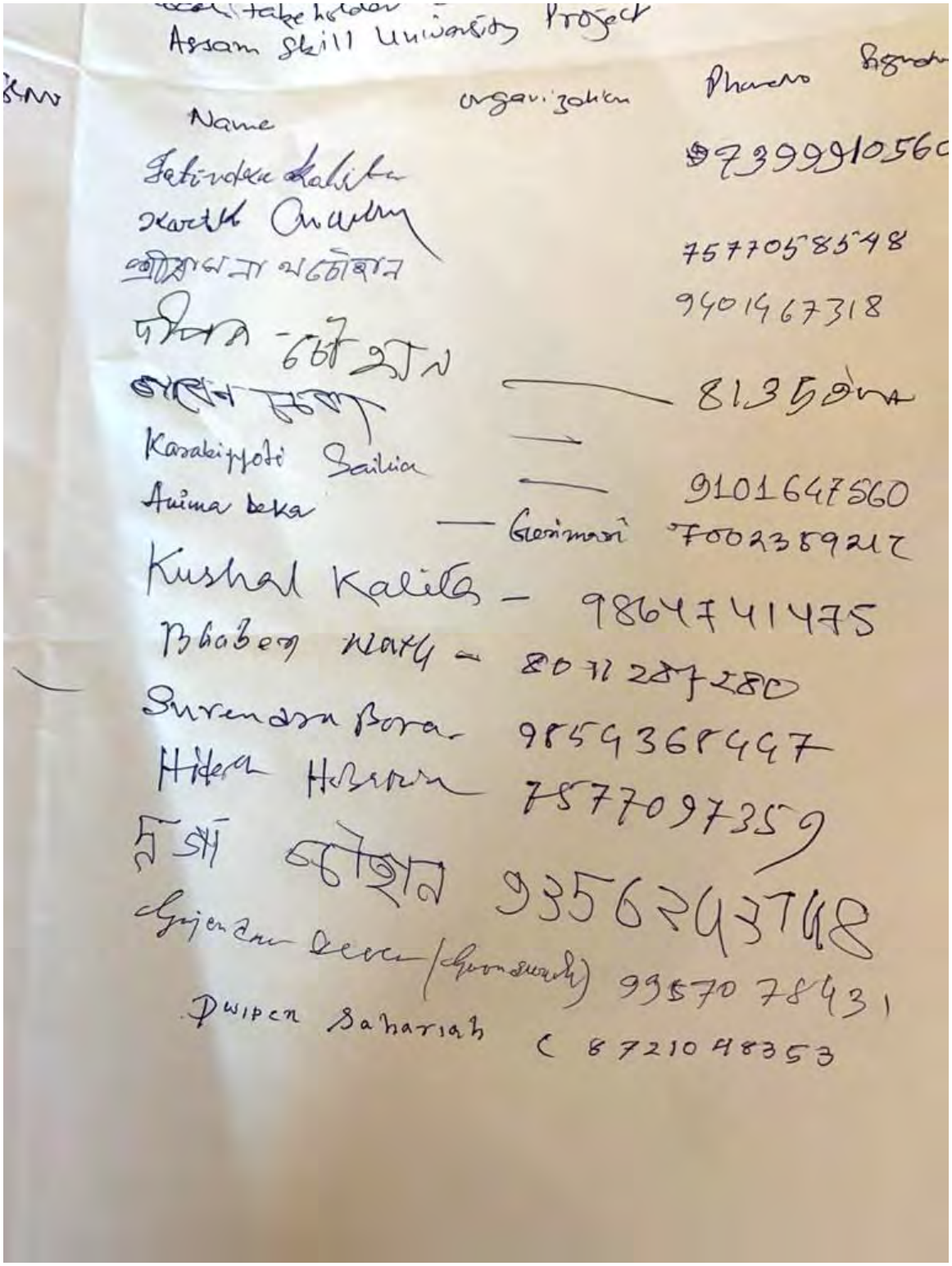
Sl. No.	Name	Organization	Phone Number	Signature
1	Dilip Kumar Roy	D.C.	9435054171	
2				
3	Nabajyoti Ojha	ADC, Darrang	94351-61015	
4	Pankaj Kr. Deka	ADC, Darrang	9435119326	
5	Kumar Sujit Barua	A.D.C., Darrang	76378/55813	
6	Deepak J Baishya	ASDM, PHU	7896515595	
7	S			
8	Pinku Choudhury	AsDH, AsPH SH & CB	8752066979	
9	SUJATA MULLICK	GESI Consultant ADB Kobe	9830062775	
10	YASHPAL MALIK.	T.A. Coordinator Consultant, ADB	9015040458	Yashpal Malik
11	Nayan J. Pathak	CO, Mangaldai	7086521731	
12	Rajashree Anil	HORIZON, NGO Gen. Secy.	7002230788	12/11/2020
13	Madhurjya Borah	D.S.W.O.	94350.35797	
14	Gobindakalita	BDO, Rub SMS	7002538244	
15	Rekha Biswas	President G.P.	6002516502	12/11/20
16	Gajendra Deka	Gaonburah	995-7078431	

Attendance of consultations during November 2020

ATTENDENCE SHEET FOR THE MEETING HELD ON 12.11.2020
CONFERENCE HALL OF DEPUTY COMMISSIONER : DARRANG AT 12 P.M

Sl. No.	Name	Designation	Mobile	Signature
	Kumar Sanjeet Barua	A.D.C., Darrang	76378/55813	
	Pankaj Kr. Deka	ADC, Darrang	9435119326	
	Kabinjyoti Ojha	ADC, Darrang	94351-61015	
	Shreenivas Vaze	Environment Specialist - Consultant ADB	9811224458	
	N. Dhiraj Singha	SPM - SMLCB	7002017638	
	YASHPAL MALIK	TA COORDINATOR. Consult - ADB.	9015040458	Yashpal malik
	Sujata Mullick	GESI Consultant ADB	9830304275	
	Pinku Chaudhury	ASDM - SMLCB ASDM	87520 66979	
	Dipjyoti Baishya	ASUP, PMU team	7896515595	
	Dipankar Barman	SPM - ASDM	9864099104	
	MRIDUL BORUAH	AE, PCBA, RLO, TEZPUR	9101421844	
	Gautranga Kr. Das	Dist. Labour officer	9435151181	12/11/2020
	Madhurie Bakali	District social	94350-35773	
	Gobinda Kalita	welfare officer BDO, Pub Mangaldai	7002536244	
	Rekha Biswas.	President G.P.	6002516502	
	Gajendra Sen	Gaonburah	9957078431	
	Rajashree Anil.	Gen Secy. HORIZON NGO.	7002280788	12/11/2020
	Nayan J. Pathak	CO, Mangaldai	7086521731	

Attendance of consultations during February 2021



F. Attendance Sheets of Stakeholder Consultations in March 2022

Project 53388 IND: Assam Skill University Project

Stakeholder Consultations

Dated: 3/3/2022 **Location:** ASUP Site, GerimariChapori, Mangaldai

Sl. No.	Name	Organization	Phone Number	Signature
1	Gajendra Deka	Gaonburah	9957078431	[signature]
2	Deep Jyoti Baidya	ASDM	7896515595	[signature]
3	Babul Bordoloi	Mangaldai ...	9101477415	[signature]
4	Karabijyoti Saikia	Mangaldai Bar Association	9101647560	Karabijyoti Saikia
5	Bharati Biswas	(A.P.M)	8473810594	Bharati Biswas
6	Kalpana Deka	Local		Kalpana Deka
7	Rum Choou	local	8822019782	Rum Choou
8	Gulam Esha Hoque	local	6000407355	[signature]
9	EPSITA BARUA	SOCIAL WORKER	86380-98773	Epsita
10	Kabita Adhikari	Social worker	9864575450	K Adhi
11	Angmika Kalita	social worker	7002327278	AKalita
12	Jibanchandra Deka	Social Worker	8473861393	[signature]
13	Debendra Narayan Konwar	"	8403897875	[signature]
14	Minarul.	"	9365157153	[signature]
15.	Kabita Saikia		9706529533	KS
16.	Bhadra Saikia	Gerimari	6900378204	[signature]
17	Ronu ...	Gerimari Anganwadi Moni Sai, Pathorighat ...	8638553243	Ronu ...
18)	D. N. Sarma	RCPL/BIL LLP	9435235115	[signature]

Sl. No.	Name	Organization	Phone Number	Signature
19	Biraj Deka	Dicomer.	6001273375	[signature]
	Bhupen Kalita	LM	8134913346	[signature]
20	Shoozab Ali Ahmed	BTL	9859924042	[signature]
21	Saughita Dutta	AS UP	8876396955	S. Dutta
22	Himalay Sarma	ASUP	8800188757	[signature]
23	Rupom K Bora	ASUP	9864092761	[signature]
24	J. S. Lahoty	Dy Dir TCP	9859339420	[signature]
25	Buli Barua	J.E. T&CP Mld	7002436926	[signature]
26	Bharati Saharia	Tracer T&CP	9365622391	[signature]
27	Ratan Ch. Mandal	J.E, T&CP	9706062539	[signature]
28.	Anima Deka		7002359217	[signature]
29	Shreeniwas	9811224458 Environmental Spl	9811224458	[signature]
30	Nayan Pathak	CO, Mangaldai	7086521731	[signature]

G. Attendance of the Storm water drainage meeting held at ASU Site, April,2023

Meeting on Storm Water Drainage Plan for Assam Skill University Campus, Mangaldai

Date: 04-04-2023 Time: 2:00PM-

Venue: ASU Site

Sl. No.	Name	Organization/ Designation	Signature	Ph/mail	
1	Shri Munindra Nath Ngadey, ACS	DC, Darrang		9435143050	
2.	Jyotish Kr. Sarmah	OSD, ASU		9435014818	
3.	Jitendra Sarma Kakoty	Deputy Director, T&CP		9859339420	
4.	Himalay Sarma	DPD, ASUP		[illegible]	
5	Pradip Bardalai	Chairman MDA		7002025883 8486259156	
6	Ajit Borah	Secy, Nalbari G.P		9435760982	
7	Jayanta Sharma	PTM, ASUP		9401329639	
8.	Deepak Bhalla	EE WRD		9435087900	
9.	Bhupendra Malakar	EE, PWRD UDTRD		9435113075	
10	Pranab Kr. Saikia	AE PWRD		7636893271	
11	SARAVANAN S	QS STC		9941876805	
12	Niranjan Das	EE. Irrigation		9435045549	
13	Putul Ch. Sarma	QE STC		9435123312	
14	Deep Jyoti Bordoloi	DPMT & GRO ASUP		9895871897	
12	Yashman Angira	Site Engineer ASUP		7002051252	
13	Jagadish Bhattacharyya	DPO, DDMA		9864116646	
15	Karishma Gogoi	PMU, ASUP	Gogoi	7002361628	
16	Sanghita Dutta	PMU, ASUP	S. Dutta	8876396955	

H. Attendance Sheets of Stakeholder Consultations in December 2022 at ASU Site

Stakeholder Consultation

Topic of discussion: Grievance redressal mechanism

Date: 16.12.2022 Venue: ASU Site, Mangaldai

Participants:

Sl. No.	Name	Type of stakeholder	Gender	Social Category (ST/PWD etc.)	Signature	Phone
1	Hemalata Deka	Surrounding Community	F	NA	Hdeka.	
2	Nipan Deka	"	M	NA	Deka	
3	Dulumoni	"	F	NA	D Nath	
4	Momi Nath	"	F	NA	M. Nath	
5	Juti Nath	"	F	NA	J.N.	
6	Karishma Gogoi	PMU-ASUP	F	NA	Gogoi	
7	Gouza Pati Nath	Community Member	M	NA	Gnath	
8	Rinu nath	"	F	NA	R. Nath	
9	Liku Saharia	"	F	NA	Saharia	
10	Sanghita Dutta	PMU-ASUP Env. Specialist	F	NA	S. Dutta	
11						
12						
13						
14						
15						
16						
17						
18						

I. Attendance Sheets of Stakeholder Consultations in January 2024 at ASU Site

68

DATE:- 30/01/2024

Minutes of Discussion			
Project Name :	Assam Skill University Project		
Date of Meeting :		Location :	Site office ASUP
Meeting Objective :			
Members present			
Name	Organisation	Contact No.	Signature
(1) Shri. Jyotish Kr Sarmah	ASU, OSD	9435014918	30/1/2024
(2) KISHOR KR. PATHAK	E.E. [illegible] W.R. Divn.	8638159904	
(3) Paresh Nath	P.T.C ASUP	9435019680	
Abdul Matin	AEE, Mangaldai W.R. Sub-divn	9435045850	
Paresh Deka	PTM ASUP	9435011673	
Ellora Kalita	Civil Eng		
Babul Bordaloi	Lat Mandal	9101477415	
Durgeswar Deka	Lat Mandal	7099118457	
Sanghita Dutta	PMU, ASUP		S. Dutta
Yashwan [illegible]	SE ASUP	7002051252	
Jayanta Chakraborty	TL-CSC2	6289787863	

ANNEXURE-6: NO OBJECTIONS FROM FOREST AND WILDLIFE DIVISIONS OF STATE FOREST DEPARTMENT

GOVERNMENT OF ASSAM
OFFICE OF THE DIVISIONAL FOREST OFFICER
MANGALDAI WILDLIFE DIVISION, MANGALDAI

No. B/46/Misc/ 220 Dated: 08.02.2021

To,

The Mission Director
Assam Skill Development Mission

Sub: Establishment of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang.

Ref: Your office letter No. ASDM-49/2017/482 dtd. 05.02.2021

Dear Sir,

With reference to the subject cited above, I would like to inform your goodself that, the proposed site of Assam Skill University at Gerimari Chapori Mangaldai Darrang, does not fall under proposed Eco Sensitive Zone of R G Orang National Park.

This is for your kind information.

Sincerely Yours,

(B V Sandeep, IFS)
Divisional Forest Officer
Mangaldai Wildlife Division

GOVERNMENT OF ASSAM
OFFICE OF THE DIVISIONAL FOREST OFFICER:: NORTH KAMRUP DIVISION :: RANGIA

Letter No. B/ 219-20 Date : 25/2/2021

To
The Mission Director
Assam Skill Development Mission
Katabari, DPS Road, NH-37
Garesuk, Guwahati-35

Sub : Establishment of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang.

Ref : Your letter no. ASDM-49/217/483, dt-05-02-2021.

Sir,

With reference to the subject & letter cited above, I am to inform you that as per report submitted by Beat Forest Officer, Mangaldai Beat, Mangaldai, it appears that the proposed site identified for establishment of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang does not fall under any Reserve Forest / Proposed Reserve Forest of North Kamrup Division, Rangia.

Therefore, this Forest Division has not any objection for establishment of Assam Skill University at the proposed site.

This is for your information and necessary action.

Yours faithfully

Divisional Forest Officer
North Kamrup Division, Rangia

Copy to
1. The Beat Forest Officer, Mangaldai Beat, Mangaldai for information and necessary action.

Divisional Forest Officer
North Kamrup Division, Rangia

D:\General\Genl- 139 Phone No. 03621-240571 e-mail : dfo.t.northkamrup@gmail.com

Azadi Ka Amrit Mah

GOVT. OF ASSAM
OFFICE OF THE DIVISIONAL FOREST OFFICER
MANGALDAI WILDLIFE DIVISION, MANGALDAI
P.O.- MANGALDAI, DIST- DARRANG (Pin-784125), ASSAM
email: dfo.mangaldoiwl@gmail.com

No. B/ 46/Misc/ 1844 Date: 22/03/2022

To,

The Mission Director,
Assam Skill Development Mission
5th Floor, Katabari, DPS Road,
Garchuk, Guwahati- 781035

Sub: **Establishment of Assam Skill University at Gerimari Chapori, Mangaldai.**

Ref: Your office letter No. ASDM/ASUP/12/2022/8 dated 10th March,2022.

Sir,

With reference to the subject cited above, I would like to inform you that the proposed site of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang. The new survey area does not falls under proposed Eco Sensitive Zone of the Orang National Park & Tiger Reserve, Silbori.

This is for favour of your kind information and necessary action.

Yours faithfully,

(Pradipta Baruah, AFS)
Divisional Forest Officer
Mangaldai Wildlife Division

GOVT. OF ASSAM
OFFICE OF THE DIVISIONAL FOREST OFFICER :: NORTH KAMRUP DIVISION :: RANGIA

Letter No B/Genl/427-28 Date : 30-04-2022

To,
The Deputy Commissioner,
Darrang, Mangaldoi.

Sub:- Establishment of Assam Skill University at Gerimari Chapori, Mangaldoi.

Ref:- I. OSD, Assam Skill Development Mission, Garchuk, Guwahati-35 letter No. ASDM/ASUP/12/2022/7, dt-10.03.22
II. C.O. Mangaldoi Revenue Circle letter no. MRC.45/2021/521, dt-30.04.2022.
III. B.O. Mangaldoi Beat letter No. MB/30/Land/2022-23/24, dt-30.04.2022.

Sir,

With reference to the subject cited above, I have the honour to inform you that the proposed site of Assam Skill University at Gerimari Chapori, Mangaldoi, Darrang does not falls under notified Reserved Forest area as reported by the Circle Officer, Mangaldoi Revenue Circle, Mangaldoi & Forest Beat Officer, Mangaldoi Beat, Mangaldoi vide letter under references II & III(Copy enclosed).

This is for your kind information and necessary action.

Enclo:-As stated above.

Yours faithfully
SUNNYDEO CHOUDHARY
Digitally signed by SUNNYDEO CHOUDHARY
Date: 2022.04.30 15:53:50 +05'30'
Divisional Forest Officer
North Kamrup Division, Rangia

Copy to the OSD, Assam Skill Development Mission, Garchuk, Guwahati-35 of his kind information.

SUNNYDEO CHOUDHARY
Digitally signed by SUNNYDEO CHOUDHARY
Date: 2022.04.30 15:57:49 +05'30'
Divisional Forest Officer
North Kamrup Division, Rangia

ANNEXURE-7: ENVIRONMENTAL MONITORING REPORTS FOR SUMMER SEASON

গ্রীনটেক্ এনভাইৰনমেন্টল ইঞ্জিনিয়াৰ এণ্ড কন্সালটেন্টছ্
GREEN TECH ENVIRONMENTAL ENGINEER & CONSULTANTS
House No-11, Champaknagar, Narayan Path, Bhetapara, Guwahati-781028, www.greentecheec.in
Telefax -0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in
TC-5991

Format No:GEEC/FM/47A

ULR NO.: TC599124000000299F			
Report No: GEEC/FL/32/NLM/2024/04/03		Date:	24/04/2024
Customer Name:	PCPL & BIL (JV) 4th Floor, Royal Arcade, B. Baruah Road Ulubari, Guwahati, Assam-781007	Lab Id.:	GEEC/NLM/2024/03
Name of the Project:	Assam Skill University, Bidyanagar, Mangaldoi Darrang, Assam 784125		

Noise Level Report

Monitoring Location:	Project Site	Date of Monitoring:	08/04/2024 & 09/04/2024
Weather/Wind:	Clear	Sound Level Meter Model	SWAN-308
Monitored By:	Mr.Dilip Kr. Deka	Sl.No.	573002

Measurement Results (Day Time)

Sl. No.	Location	Sound Parameters (dBA)		
		Leq	Lmin	Lmax
1	Location No.1 (Admin Block) N:26°25'21", E:92°00'59"	59.6	55.4	63.4
2	Location No 2 N:26°25'28", E:92°00'56"	56.4	49.2	61.6
3	Location No 3 N:26°25'28", E:92°00'55"	60.3	55.8	63.4
4	Location No 4 N:26°25'28", E:92°00'55"	62.3	59.2	71.6

Remark: Noise level CPCB Limit Day Time Leq < 75 dBA. Night time Leq < 70

Checked by
Dr. Belinda Lahon
Quality Manager

Reviewed by
Pranjal Buragohain
Authorised Signatory

End of Report

Page 01/02

গ্রীনটেক্ এনভাইৰনমেন্টল ইঞ্জিনিয়াৰ এণ্ড কন্সালটেন্টছ্
GREEN TECH ENVIRONMENTAL ENGINEER & CONSULTANTS
House No-11, Champaknagar, Narayan Path, Bhetapara, Guwahati-781026, www.greentecheec.in
Telefax :0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in
TC-5991

Format No:GEEC/FM/47A

ULR NO : TC599124000000299F			
Report No: GEEC/FL/32/NLM/2024/04/03		Date:	24/04/2024
Customer Name:	PCPL & BIL (JV) 4th Floor, Royal Arcade, B. Baruah Road Ulubari, Guwahati, Assam-781007	Lab Id.:	GEEC/NLM/2024/03
Name of the Project:	Assam Skill University, Bidyanagar, Mangaldoi Darrang, Assam 784125		

Noise Level Report

Monitoring Location:	Project Site	Date of Monitoring:	08/04/2024 & 09/04/2024
Weather/Wind:	Clear	Sound Level Meter Model	SWAN-308
Monitored By:	Mr.Dilip Kr. Deka	Sl.No.	573002

Measurement Results (Night Time)

Sl. No.	Location	Sound Parameters (dBA)		
		Leq	Lmin	Lmax
1	Location No.1 (Admin Block) N:26°25'21", E:92°00'59"	47.3	41.4	53.5
2	Location No 2 N:26°25'28", E:92°00'56"	42.3	39.2	51.6
3	Location No 3 N:26°25'28", E:92°00'55"	37.6	35.4	43.8
4	Location No 4 N:26°25'28", E:92°00'55"	39.7	37.3	41.6

Remark: Noise level CPCB Limit Day Time Leq < 75 dBA. Night time Leq < 70

Checked by
Dr. Belinda Lahon
Quality Manager

Reviewed by
Pranjal Buragohain
Authorised Signatory

The results relate only to the item tested.
The test report shall not be reproduced except in full, without written approval of the laboratory.
The test report cannot be used as an evidence in a court of law without prior written approval of the laboratory.

"End of Report"

Page 02/02

গ্রীনটেক্ এনভাইৰনমেন্টল ইঞ্জিনিয়াৰ এণ্ড কন্সালটেন্টছ্
GREEN TECH ENVIRONMENTAL ENGINEER & CONSULTANTS
House No-11, Champaknagar, Narayan Path, Bhetapara, Guwahati-781028, www.greentecheec.in
Telefax -0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in
TC-5991

Format No.: GEEC/FM/48

TEST REPORT

ULR Number: TC599124000000297F				
Test Report No.:	GEEC/FL/22/2024/04/01	Date:	24/04/2024	
Customer Name & Address :	PCPL & BIL (JV) 4th Floor, Royal Arcade, B. Baruah Road Ulubari, Guwahati, Assam-781007	Lab. ID No.:	GEEC/AA/2024/04/01	
		Name of the Project:	Assam Skill University, Bidyanagar, Mangaldoi Darrang, Assam 784125	
Sampling Location:	Near Site Office N:26°25'29", E:92°00'55"	Date of Sampling:	08/04/2024-09/04/2024	
Weather Condition	Clear & Sunny	Ambient Temperature:	Max.	Min.
			33.5°C	23.6°C
Sampling Condition:	In GF/A, PTFE Filter Paper & Plastic Bottle	Date of Sample Receipt:	09/04/2024	
Monitored By:	Mr.Dilip Kr. Deka	Test Start Date:	09/04/2024	
Equipments Details:	RDS & ADS Sampler	Test End Date:	11/04/2024	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Particulate Matter (PM_{10})	$\mu g/m^3$	50	100	IS 5182(23)
2	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	25	60	GEEC/SOP/01 USEPA FRM 40 CFR
3	Sulphur Dioxide (SO_2)	$\mu g/m^3$	< 5	80	IS 5182(2)
4	Nitrogen Dioxide (NO_2)	$\mu g/m^3$	11	80	IS 5182(6)

Remark: .The parameters tested on the specific date are found to be within the NATIONAL AMBIENT AIR QUALITY STANDARDS, CPCB NOTIFICATION DATED 18TH NOVEMBER, 2009

Checked by:
Dr. Belinda Lahon
Quality Manager

Reviewed by:
Pranjal Buragohain
Authorised Signatory

* The results relate only to the item tested.
* The test report shall not be reproduced except in full, without written approval of the laboratory.
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********** End of Report**********

Page1 of 1

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Telefax -0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in

Format No.: GEEC/FM/48

TEST REPORT

Test Report No.:	GEEC/FL/22/2024/04/01	Date:	24/04/2024	
Customer Name & Address :	PCPL & BIL (JV) 4th Floor, Royal Arcade, B. Baruah Road Ulubari, Guwahati, Assam-781007	Lab. ID No.:	GEEC/AA/2024/04/01	
		Name of the Project:	Assam Skill University, Bidyanagar, Mangaldoi Darrang, Assam 784125	
Sampling Location:	Near Site Office N:26°25'29", E:92°00'55"	Date of Sampling:	08/04/2024-09/04/2024	
Weather Condition	Clear & Sunny	Ambient Temperature:	Max.	Min.
			33.5°C	23.6°C
Sampling Condition:	GASTEC TUBES	Date of Sample Receipt:	09/04/2024	
Monitored By:	Mr.Dilip Kr. Deka	Test Start Date:	09/04/2024	
Equipments Details:	Sampling Pump	Test End Date:	09/04/2024	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Carbon Monoxide (CO)	mg/m^3	< 1.15	2	GASTEC TUBES

Remark: .The parameters tested on the specific date are found to be within the NATIONAL AMBIENT AIR QUALITY STANDARDS, CPCB NOTIFICATION DATED 18TH NOVEMBER, 2009

Checked by:
Dr. Belinda Lahon
Quality Manager

Reviewed by:
Pranjal Buragohain
Authorised Signatory

* The results relate only to the item tested.
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********** End of Report**********

Page1 of 1

গ্রীনটেক্ এনভাইৰনমেন্টল ইঞ্জিনিয়াৰ এণ্ড কন্সালটেন্টছ্
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Telefax -0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in
TC-5991

Format No.: GEEC/FM/50

TEST REPORT

ULR Number: TC599124000000300F			
Ref. No.: GEEC/FL/23/2024/04/01		Date of Reporting:	26/04/2024
Customer Name:	PCPL & BIL	Lab. ID No.:	GEEC/WS/2024/04/01
Customer Address:	PCPL & BIL Assam Skill University Mangaldoi	Date of Sampling:	09/04/2024
Sampling Location:	Kitchen Purifier	Sample Receipt Date:	09/04/2024
Sample Description:	Ground Water	Test Start Date:	10/04/2024
Sample Drawn By:	Mr. Dilip Deka	Test Completion Date:	24/04/2024
Sample Condition:	Sealed	Sampling Method:	GEEC/SOP/02

SL. NO.	DESCRIPTION	METHOD	UNIT	RESULTS	IS-10500:2012	
					Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	pH	IS 3025 Part 11 2022	–	6.59	6.5 - 8.5	No relaxation
2	Conductivity	IS 3025 Part 14 1984 (RA:2019)	ms	0.36	–	–
3	Colour	IS 3025 Part 4 2021	Hazen	Colourless	5	15
4	Total Dissolved Solids	IS 3025 Part 16 1984 (RA:2017)	mg/l	204	500	2000
5	Total Suspended Solids	IS 3025 Part 17 1984 (RA:2017)	mg/l	< 10	–	–
6	Turbidity	IS 3025 Part 10 1984 (RA:2017)	NTU	< 1	1	5
7	Dissolved Oxygen	IS 3025 Part 38 1989(RA 2019)	mg/l	4.7	–	–
8	BOD	IS 3025 Part 44 1993(RA:2019)	mg/l	2.4	–	–
9	COD	IS 3025 Part 58 2006(RA:2017)	mg/l	<5	–	–
10	Alkalinity (Total)	IS 3025 Part 23 1986 (RA:2019)	mg/l	180	200	600
11	Chlorides	IS 3025 Part 32 1988 (RA:2019)	mg/l	20.8	250	1000
12	Fluoride	IS 3025 Part 60 2008 (RA:2019)	mg/l	< 0.5	1	1.5
13	Hardness	IS 3025 Part 21 2009 (RA:2019)	mg/l	164	200	600
14	Calcium	IS 3025 Part 40 1991 (RA:2019)	mg/l	26.4	75	200
15	Iron	IS 3025 Part 53 2003 (RA:2019)	mg/l	0.22	0.30	No relaxation
16	Copper	IS 3025 Part 42 1992 (RA:2019)	mg/l	< 0.05	0.05	1.5
17	Lead	IS 3025 Part 47 1994 (RA:2019)	mg/l	< 0.01	0.01	No relaxation
18	Zinc	IS 3025 Part 49 1994 (RA:2019)	mg/l	< 0.1	5	15
19	Odour	IS 3025 Part 5 1983 (RA:2017)	–	Agreeable	Agreeable	Agreeable
20	Sulphates	IS 3025 Part 24 1986 (RA:2019)	mg/l	7.8	200	400

********** End of Report**********

Checked by:
Dr. Belinda Lahon
Quality Manager

Authorised by:
Mr. Pranjal Buragohain
Authorised Signatory

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গ্ৰীনটেক্ এনভাইৰনমেন্টল ইঞ্জিনিয়াৰ এণ্ড কন্সালটেন্টছ্
GREEN TECH ENVIRONMENTAL ENGINEER & CONSULTANTS
House No-11, Champaknagar, Narayan Path, Bhetapara, Guwahati-781028, www.greentecheec.in
Telefax -0361 3501950 Mobile: 9435046677, 9954089052, E-mail: green_pranjal@hotmail.com, info@greentecheec.in

Format No.: GEEC/FM/50

TEST REPORT

Ref. No.: GEEC/FL/23/2024/04/01		Date of Reporting:	26/04/2024
Customer Name:	PCPL & BIL	Lab. ID No.:	GEEC/WS/2024/04/01
Customer Address:	PCPL & BIL Assam Skill University Mangaldoi	Date of Sampling:	09/04/2024
Sampling Location:	Kitchen Purifier	Sample Receipt Date:	09/04/2024
Sample Description:	Ground Water	Test Start Date:	10/04/2024
Sample Drawn By:	Mr. Dilip Deka	Test Completion Date:	24/04/2024
Sample Condition:	Sealed	Sampling Method:	GEEC/SOP/02

SL. NO.	DESCRIPTION	METHOD	UNIT	RESULTS	IS-10500:2012	
					Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	Alkalinity as $Na_2 CO_3$	IS 3025 Part 23 1986 (RA:2019)	mg/l	26	--	--
2	Arsenic	IS 3025 Part 37 1988 (RA:2019)	mg/l	<0.01	0.01	0.05
3	Cadmium	IS 3025 Part 41 1992 (RA:2019)	mg/l	< 0.003	0.003	No relaxation
4	Chromium	IS 3025 Part 52 2003 (RA:2019)	mg/l	< 0.05	0.05	No relaxation
5	Mercury	IS 3025 Part 48 1994 (RA:2019)	mg/l	<0.001	0.001	No relaxation
6	Magnesium	IS 3025 Part 46 1994 (RA:2019)	mg/l	6	30	100
7	Nitrate	IS 3025 Part 34 1988 (RA:2019)	mg/l	< 5	45	No relaxation
8	Potassium	IS 3025 Part 45 1993 (RA:2019)	mg/l	8	--	--
9	Sodium	IS 3025 Part 45 1993 (RA:2019)	mg/l	10	--	--
10	Taste	IS 3025 (Part 8) 1984	mg/l	Agreeable	Agreeable	Agreeable
11	Temperature	IS 3025 (Part 9) – 2023	mg/l	26.9	--	--
12	Faecal coliform	APHA 23rd Edition 2017	MPN/ 100ml	Absent	Absent	Absent
13	Total coliform	APHA 23rd Edition 2017	Present/ Absent	Absent	Absent	Absent

********** End of Report**********

Checked by:
Blahon
Dr. Belinda Lahon
Quality Manager

Authorised by:
Mr. Pranjal Buragohain
Authorised Signatory

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TC-5991

Format No.: GEEC/FM/50

TEST REPORT

ULR Number: TC599124000000302F			
Ref. No.: GEEC/FL/23/2024/04/03		Date of Reporting:	26/04/2024
Customer Name:	PCPL & BIL	Lab. ID No.:	GEEC/WS/2024/04/03
Customer Address:	PCPL & BIL Assam Skill University Mangaldoi	Date of Sampling:	09/04/2024
Sampling Location:	Pond Near Project Site	Sample Receipt Date:	09/04/2024
Sample Description:	Surface Water	Test Start Date:	10/04/2024
Sample Drawn By:	Mr. Dilip Deka	Test Completion Date:	24/04/2024
Sample Condition:	Sealed	Sampling Method:	GEEC/SOP/02

SL. NO.	DESCRIPTION	METHOD	UNIT	RESULTS	IS-10500:2012	
					Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	pH	IS 3025 Part 11 2022	–	6.53	6.5 - 8.5	No relaxation
2	Conductivity	IS 3025 Part 14 1984 (RA:2019)	ms	0.2	–	–
3	Colour	IS 3025 Part 4 2021	Hazen	Colourless	5	15
4	Total Dissolved Solids	IS 3025 Part 16 1984 (RA:2017)	mg/l	112	500	2000
5	Total Suspended Solids	IS 3025 Part 17 1984 (RA:2017)	mg/l	< 10	–	–
6	Turbidity	IS 3025 Part 10 1984 (RA:2017)	NTU	2	1	5
7	Dissolved Oxygen	IS 3025 Part 38 1989(RA 2019)	mg/l	4.9	–	–
8	BOD	IS 3025 Part 44 1993(RA:2019)	mg/l	2.8	–	–
9	COD	IS 3025 Part 58 2006(RA:2017)	mg/l	6	–	–
10	Alkalinity (Total)	IS 3025 Part 23 1986 (RA:2019)	mg/l	75	200	600
11	Chlorides	IS 3025 Part 32 1988 (RA:2019)	mg/l	18.9	250	1000
12	Fluoride	IS 3025 Part 60 2008 (RA:2019)	mg/l	< 0.5	1	1.5
13	Hardness	IS 3025 Part 21 2009 (RA:2019)	mg/l	96	200	600
14	Calcium	IS 3025 Part 40 1991 (RA:2019)	mg/l	15.2	75	200
15	Iron	IS 3025 Part 53 2003 (RA:2019)	mg/l	0.14	0.30	No relaxation
16	Copper	IS 3025 Part 42 1992 (RA:2019)	mg/l	< 0.05	0.05	1.5
17	Lead	IS 3025 Part 47 1994 (RA:2019)	mg/l	< 0.01	0.01	No relaxation
18	Zinc	IS 3025 Part 49 1994 (RA:2019)	mg/l	< 0.1	5	15
19	Odour	IS 3025 Part 5 1983 (RA:2017)	–	Agreeable	Agreeable	Agreeable
20	Sulphates	IS 3025 Part 24 1986 (RA:2019)	mg/l	5.4	200	400

********** End of Report**********

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Quality Manager

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Format No.: GEEC/FM/50

TEST REPORT

Ref. No.: GEEC/FL/23/2024/04/03A		Date of Reporting:	26/04/2024
Customer Name:	PCPL & BIL	Lab. ID No.:	GEEC/WS/2024/04/03
Customer Address:	PCPL & BIL Assam Skill University Mangaldoi	Date of Sampling:	09/04/2024
Sampling Location:	Pond Near Project Site	Sample Receipt Date:	09/04/2024
Sample Description:	Surface Water	Test Start Date:	10/04/2024
Sample Drawn By:	Mr. Dilip Deka	Test Completion Date:	24/04/2024
Sample Condition:	Sealed	Sampling Method:	GEEC/SOP/02

SL. NO.	DESCRIPTION	METHOD	UNIT	RESULTS	IS-10500:2012	
					Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	Alkalinity as $Na_2 CO_3$	IS 3025 Part 23 1986 (RA:2019)	mg/l	<2	--	--
2	Arsenic	IS 3025 Part 37 1988 (RA:2019)	mg/l	<0.01	0.01	0.05
3	Cadmium	IS 3025 Part 41 1992 (RA:2019)	mg/l	< 0.003	0.003	No relaxation
4	Chromium	IS 3025 Part 52 2003 (RA:2019)	mg/l	< 0.05	0.05	No relaxation
5	Mercury	IS 3025 Part 48 1994 (RA:2019)	mg/l	<0.001	0.001	No relaxation
6	Magnesium	IS 3025 Part 46 1994 (RA:2019)	mg/l	10	30	100
7	Nitrate	IS 3025 Part 34 1988 (RA:2019)	mg/l	< 5	45	No relaxation
8	Potassium	IS 3025 Part 45 1993 (RA:2019)	mg/l	10	--	--
9	Sodium	IS 3025 Part 45 1993 (RA:2019)	mg/l	12	--	--
10	Taste	IS 3025 (Part 8) 1984	mg/l	Agreeable	Agreeable	Agreeable
11	Temperature	IS 3025 (Part 9) 2023	mg/l	25.8	--	--
12	Faecal coliform	APHA 23rd Edition 2017	MPN/ 100ml	Absent	Absent	Absent
13	Total coliform	APHA 23rd Edition 2017	Present/ Absent	Absent	Absent	Absent

********** End of Report**********

Checked by:
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Quality Manager

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