Initial Environmental Examination (Draft)

June 2018

Sri Lanka: Science and Technology Human Resource Development Project —Proposed Faculty of Technology Building Complex, Rajarata University of Sri Lanka

Prepared by Rajarata University of Sri Lanka, Sri Lanka for the Asian Development Bank.

INITIAL ENVIRONMENTAL EXAMINATION

PROPOSED FACULTY OF TECHNOLOGY BUILDING COMPLEX IN RAJARATA UNIVERSITY OF SRI LANKA

PART I: IEE

SRI LANKA- PROPOSED FACULTY OF TECHNOLOGY BUILDING COMPLEX IN RAJARATA UNIVERSITY OF SRI LANKA

Project Number:

JUNE 2018

Vocational Training Authority, Sri Lanka

Prepared by TMS for RUSL

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ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected Person
BO	Built operate
BIQ	Basic Information Questioner
BOQ	Bill of Quantities
BD	Building Department
CAP	Corrective Action Plan
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
COC	Certificate of Conformity
DBO	Design-built-operate
DMC	Developing Member Country
DOF	Forest Department
DPC	Damp-proof couse
DSD	Divisional Secretariat Division
DM	Disaster Management
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EPL	Environmental Protection Licenses
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMP	Environmental Monitoring Plan
ESMP	Environmental Social Monitoring Plan
FTP	Faculty of Technology Project
FT	Faculty of Technology
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GND	Grama Niladari Division
HSE	Health, Safety and Environment
IEE	Initial Environmental Examination
IP	Indigenous Peoples
IR	Involuntary Resettlement

ILO	International Labor Organization
LFS	Labour force survey
M&E	Monitoring & Evaluation
MOFP	Ministry of Finance and Planning
MOHEH	Ministry of Higher Education and Highway
MMDE	Ministry of Mahaweli Development and Environment
MSL	Mean sea level
NEA	National Environmental Act
NIRP	National Involuntary Resettlement Project
NWRB	National Water Resources Board
NWSDB	National Water Supply and Drainage Board
PAA	Project Approving Authority/Agency
PBC	Performance Based Contracts
PIU	Project Implementation Unit
PMC	Project Management Consultant
PMU	Project Management Unit
PP	Project Proponent
REA	Rapid Environmental Assessment
RUSL	Rajarata University of Sri Lanka
SLEC	State Level Empowerment Committee
SLLRDC	Sri Lanka Land Reclamation and Development Cooperation
SPS	Safeguard Policy Statement
STHRDP	Technology and Human Resource Development Project
TA	Technical Assistance
TDP	Technology Stream Degree Programmes
TMS	Total Management Solutions
UDA	Urban Development Authority
UGC	University Grant Commission
VEC	Valued Environment Component
WRB	Water Resource Board

Executive Summary

A. Introduction

1. Government of Sri Lanka with loan funding from the Asian Development Bank (ADB) has proposed to implement Science and Technology and Human Resource Development Project (STHRDP). The Ministry of Higher Education and Highway (MOHE) shall be the Implementing Agency and the University Grant Commission shall be the executing agency for the Project. This project aims to increase the technology oriented work force to transform Sri Lankans growing economy. Under this Project the Rajarata University of Sri Lanka (RUSL) will build a new Faculty of Technology (FT). This will be referred to as the "project" in this report.

2. In pursuance of the above, the Total Management Solutions Company (Pvt.) Ltd (TMS) has been appointed as the Consultant by ADB to carry out the environmental safeguards services.

B. Objectives of the IEE

Following are the objectives of the Environmental Study:

- Determine the category of the project depending on improvement proposal, environmental sensitivity and magnitude of impacts, i.e. screening as per Government of Sri Lanka's regulations and ADB's Safeguard Policy Statement 2009;
- Determine the appropriate extent and type of EA required (IEE or EIA), i.e. scoping;
- Determine the requirement of statutory clearances;
- Baseline environmental monitoring and survey;
- Prediction of impacts on relevant environmental attributes and mitigation measures to minimize the impacts; and
- Preparation of IEE Report including ESMP

C. Description of the Project

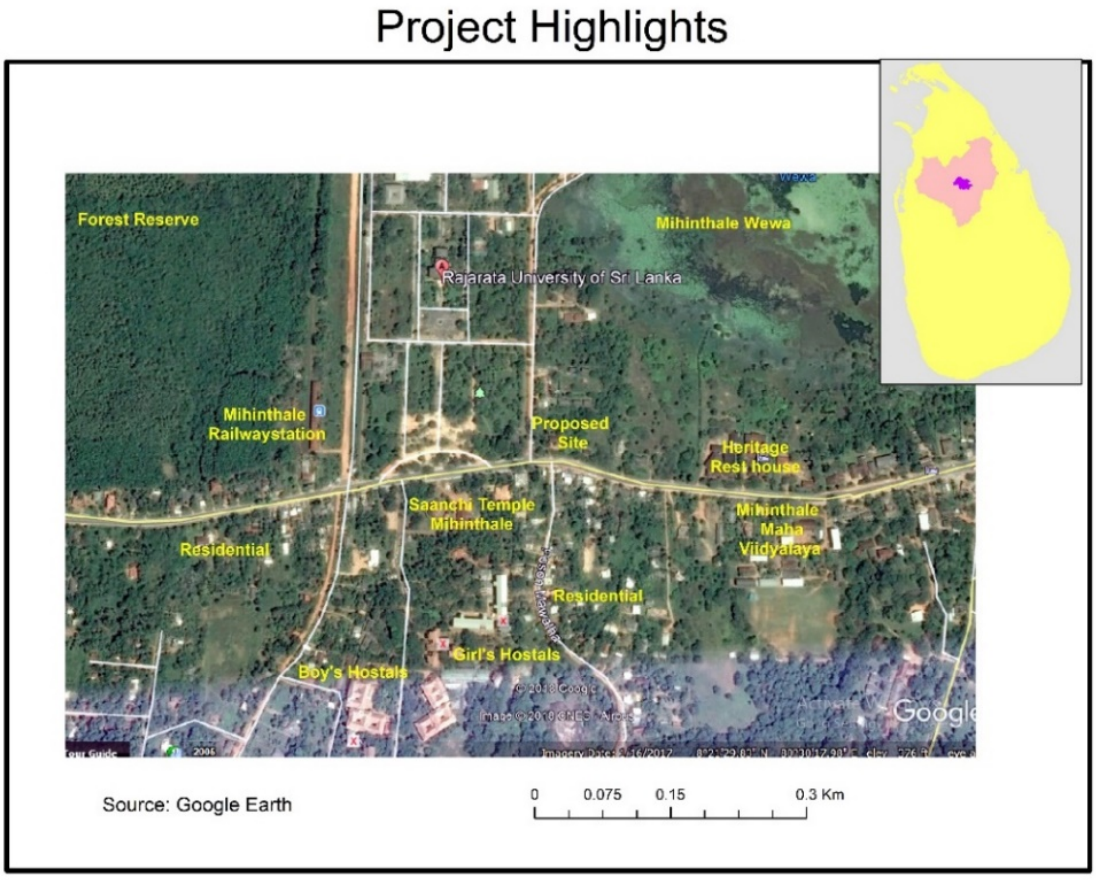
3. The proposed Technology Faculty development project is located in Mihinthale in Anuradhapura District, North Central Province, Sri Lanka. The project site is located along the Puttalam- Anuradhapura- Trincomalee highway. The proposed project site is located adjacent to the existing Rajarata University of Sri Lanka premises. The location coordinates are $8^0 21' 38.74''$ N latitude and $80^0 30' 12.18''$ E longitude.

4. Establishment of such a faculty will generate new employment opportunities for the local community as well as improve skills and training in the bio process technology, food technology, electrical and electronic technology, Materials Technology, and Information and communication technology. Thus it will simultaneously contribute to improvement of education in whole country while improving opportunities for employment in bio systems technology, engineering technology, materials technology, and information and communication technology which are being identified as key sectors of the economy. There is bound to be increased interest in these professions and it will attract young people. The faculty will facilitate infrastructure to conduct lectures and engage in activates that will promote technology subjects.

5. The FT will be composed of XXX stories from ground floor to

D. Projects Highlights

Figure 1: Projects highlights

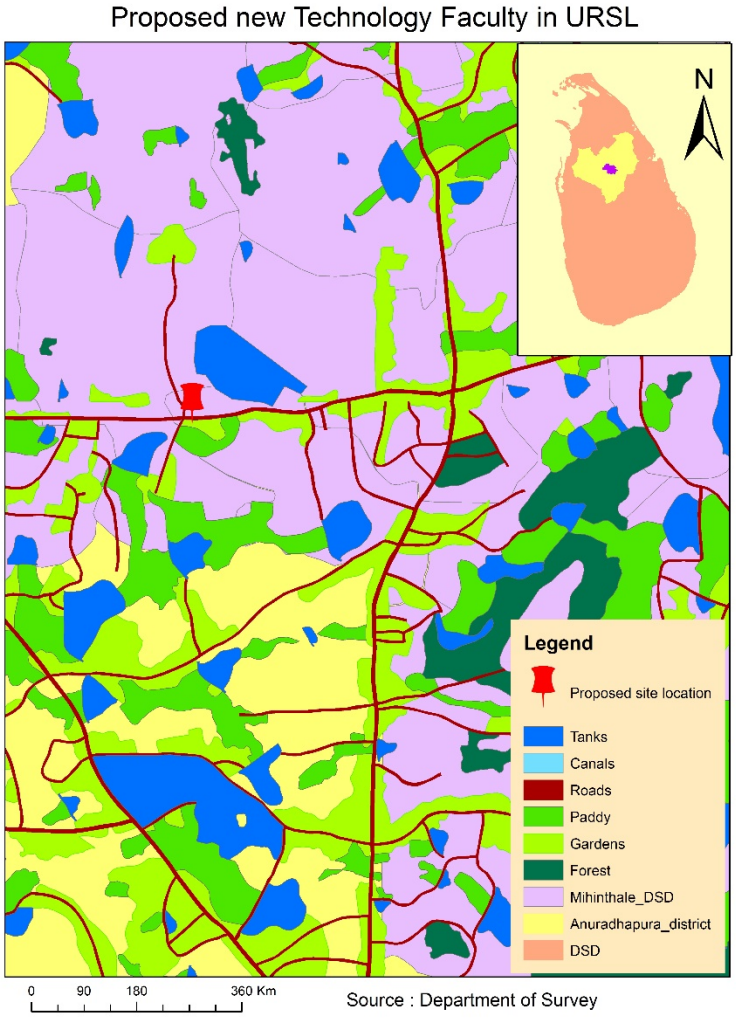


Source: Prepared by TMS

Figure 2: Plates of project site

Source: Captured by TMS

Figure 3:"FCT project location:



Source: Prepared by TMS

1. Project Information

Table D 1: Salient Existing Features of the Project

Funding	Rs 2930 million
Approximate student capacity	1576
Faculty board room	2500 sq. ft
Six Academic departments	15000 sq. ft
Academic staff rooms	10000 sq. ft
Auditorium	10000 sq. ft

Lecture halls	12600 sq. ft
Seminar room	2500 sq. ft
Drawing room	3000 sq. ft
Physical laboratory	3500 sq. ft
Chemistry laboratory	3500 sq. ft
Biological Laboratory	3500 sq. ft
2 General Labs	2500 sq. ft
Labs for bio system technology	Biosystem technology Molecular biology lab Micro Biology Laboratory Tissue Culture Laboratory Immunology Laboratory Cell Culture Laboratory Bio technology lab Bio processing lab
Labs for food technology	Accredited laboratory Food Microbiology Research Laboratory
Electrical and Electronic Technology	Electronics Lab 1800 sq ft Electrical Power Lab 3000 sq ft Robotic & Automation lab 1800sq ft Telecommunication lab 1800 sq ft Computer Lab 2000 sq ft Advanced Research lab 1000 sq ft Students common area 2000 sq ft Library 1000 sq ft project lab 2000 sq ft demonstrator room 500 sq ft Report room & Submission area 900 sq ft
ICT	Network and security lab Hardware Technician Laboratory Robotics Laboratory Virtual Reality Laboratory IOTA laboratory
Faculty library	1500 sq. ft
Student common area	10000 sq. ft
Industrial park three rooms	(DATA NOT RECEIVED TO DATE)
Land Use	Bare land adjacent to the University of Rajarata. Already developed land with Divisional Secretariats quarters (subsequently demolished).
Cafeteria two	10000
Total extent of the building	(DATA NOT RECEIVED TO DATE)

2. Annual Students Enrollment to the Faculty

6. The project implementing agency (IA) is the Ministry of Higher Education (MOHE). For this project, a management unit will be established under the MOHE. The Project Implementation Unit (PIU) is the Rajarata University of Sri Lanka. The Faculty will be developed on a 2 acre 14.9 perch land. Facilities to be provided within the faculty will include areas for training, lecture halls and teaching and research laboratories, student and staff canteen, and admin block. Current year will only enroll 245 students however within the span of five years, the FT at RUSL will enroll 1570 student per academic year. Table E 2 provides information on the student enrolment for next five years

Table D 2: Information on the student enrollment for next five years

Year	New Intake (No. of Student/Year)
Year 1	245
Year 2	275
Year 3	300
Year 4	350
Year 5	400
Total	1570

3. FT Graduate Employment Prospect

7. The degree programs offered at RUSL are currently in demand and matches the country's socio-economic needs. Therefore RUSL graduates can easily secure jobs. Graduates of the Faculty of Technology will be technological innovation in local and international industries, while contributing towards economic development of the country through the invention of hi-tech exports.

8. The technology stream degree program at the university was developed with the private and public sector industrial partnership. The degree programs under RUSL involves student industrial placements with industrial research projects for exposure to industrial processes and systems. Therefore graduates at RUSL are trained to face the challenges

of industrial growth both locally and globally. These highly skilled graduates will have a competitive edge over others in the technology field.

E. Policy, Legal and Administrative Framework

9. As per the ADB's Safeguards Policy Statement of 2009 and based on the REA Checklist of ADB classification, the FT is categorized as Environment Category B. According to the BIQ and IEE/EIA environmental guidelines of Central Environmental Authority of Sri Lanka (CEA), the proposed project falls in to the "non-prescribed" category. Therefore environmental assessment (EIA or IEE) will not be required from the government of Sri Lanka to proceed. The IEE was carried out as a requirement of ADB under its safeguards policy to be eligible for their financing.

10. The main objective of this IEE report is to prepare a comprehensive account of the current environment condition of the selected site for the construction of the FT in Mihinthale Divisional Secretariat, Anuradhapura District. It also aims to identify any potential negative environmental or social impacts in the immediate vicinity or surrounding areas that maybe short term or long term. Accordingly a single consolidated IEE report is submitted for ADB to facilitate their decision making.

11. Field observation of the project site within Mihinthale Divisional Secretariat was carried out on 31st of October 2017. During the site visit, the REA, IP and IR checklists were filled and the findings incorporated in the IEE. During the inspection, activities such as assessment of the existing location and the surrounding environment identification of sensitive areas, consultation with the local officers, key informant interviews were carried out. Other reliable information was collected from villagers and respective authorities during public consultation meetings. A stakeholder meeting was further conducted on 19th April 2018. Secondary information for the report was gathered from printed materials and other sources of Government Departments, Authorities, Divisional Secretariat and relevant websites.

12. However, CEAs consent for the projects under non-prescribed category has not been obtained yet, the process has been initiated. A summary of the statuary clearances required for the FTP is presented in **Table- E 3.**

Table E 3: Statutory Clearances required for the Project

Type of Clearance	Activity	Authority	Timeframe
Environment Clearance Environmental Protection Licensing) Regulation No. 1533/16of 2008	Implementation of the project and waste water treatment guidelines.	CEA	Before construction
Archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188) Antiquities (Amendment) Act No. 24 of 1998	Consent to build the FT at the selected site.	Department of Archeology	Before construction
Permission for storm water drainage and infilling	Implementation of the project. On regulations pertaining reservation of Mihintale Wewa	Irrigation Department	Before construction
Clearance for development activities Green building certificate (Annex 01)	Implementation of the project and construction of the building. They will direct to relevant authorities.	UDA	Before construction
Local Government Authorities building approval	The Municipal Councils, Mihintale Urban Council share the powers regarding the approval of buildings plans, control of solid waste disposal, sewerage and other public utilities. Adhere to building regulation	Local Authority (Mihintale Pradeshiya Saba)	Before construction
Approval for removal of trees on site	Site clearance to have space for the building and to provide access and material storage.	DS	Before construction
Consent from relevant government agencies	Construction of building and culverts and other drainage systems etc.	UDA, Irrigation Department, RDA, CEA	Before construction
Consent from Ceylon Electricity board	Obtaining the electricity supply for the FT complex Relocation of high-tension lines to obtain maximum space for building design.	Ceylon Electricity Board	Before completion of the building
Water Supply	Supply of potable water for the facility and supply during the construction	NWSDB	After completion of the building

Source: Compiled by TMS

13. Apart from the clearances for the overall project work, the contractor, before starting the construction work, has to obtain required clearances listed in Table- E.4. for operating his/her equipment and carrying out construction work.

Table E 4: Clearance required to be obtained by the Contractor

No	Construction Activity & Type of Clearance Required	Statutory Authority	Statute Under which Clearance is Required
1	Consent for establishment of Stone Crushers and Cement Mixing Batching Plant	CEA	National Environmental Act No. 47 of 1980
2	Permission for withdrawal of groundwater for construction	NWRB/	National Water Supply & Drainage Board Law, No. 2 of 1974
3	Permission for extraction of sand, metal from soil	Geological Survey and Mines Bureau (GSMB)	Geological Survey and Mines Bureau (GSMB) Act No. 33 of 1992
4	Location and layout of workers camp, & equipment and storage yards	Mihintale Pradeshiya Saba	Local Government Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29of 1947, Act 18 of 1979, and Act 13 of 1979
5	Discharges from labour camp	Central Environmental Authority (CEA)	National Environmental Act Act No. 47 of 1980 National Environmental (Protection & Quality) Regulations, No. 01 of 1990
6	Disposal of solid and liquid waste	Central Environmental Authority (CEA)	National Environmental Act No. 47 of 1980
7	Noise and dust pollution during construction activities	CEA	Air (Prevention and Control of Pollution) Act, 1981 National Environmental (Noise Control)Regulations No. 01 of 1996
8	Disposal of spoil material garneted during building and construction and demolition of already existing building	Mihintale Pradeshiya Saba CEA (North western province)	National Environmental Act Act No. 47 of 1980
9	Revenue license for the heavy machinery and other vehicles at the work site	Office of provincial Commissioner for Motor Traffic the vehicle is being registered	Motor traffic Statute of Western Province No 7 of 1991.

10	Engagement of Labour - Labour License	Labour Commissioner	Shop and office Employees Act 1934 Employees' Trust Fund Act No 15 of 1980 established the Employees' Trust Fund (ETF). Employees' Provident Fund Act of 1958 Municipal Council Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29 of 1947, Act 18 of 1979,
11	Engagement of Labour- • Social Security- • Labour Welfare- • Wages	Labour Commissioner (Ministry of Labour and Employment	The Employees' Provident Fund Act, 1958 & Miscellaneous Provisions 1975 Workmen's Compensation Ordinance of 1935 and subsequent Amendments hop and Office Employees (Regulation of Employment and Remuneration) Act, 1954 Factories Ordinance, 1942 2010 on fair treatment

Source: Compiled by TMS

14. In addition to the above, Contractor has to obtain;

i. Change of land use certificate from the Divisional Secretariat of Mihinthale

ii. If any archeological items or structures are uncovered during site preparation work should stop immediately and the Department be informed. If any object of archeological interest is found take measure to ensure they are protected and conserved.

F. Description of the Environment

15. FT development project is located in Mihinthale in Anuradhapura District. This Division has a land extent of 0.8470 hectares. The site is located within the Pradeshiya sabha limits of Mihinthale. The proposed project site is adjacent to the current University of Rajarata Campus on western boundary. The land frontage is to the main A 12 There are several crucial environmental challenges facing the Mihinthale DSD including human elephant conflict, deforestation and non-demarcation of wildlife management areas, improper land use planning, water pollution due to agricultural activities etc.

1. **Seismicity**

16. The project is located in the North Central Province of Sri Lanka which is not an active seismic region. The area does not have any potential risk of damage due to earthquakes.

2. **Land Use**

17. The land use pattern in and around the project site is rural with predominately agricultural lands. Project surrounding land can be categorized into residential, commercial and agricultural (63%), forest area (18.05%) and steams (8.32%), Land use of the immediate project area mainly consist of state land, residential land, and several natural habitats including wetland (Mihintale Wewa).

3. **Soil Quality**

18. The topography of the selected land is relatively flat terrain. The soil found in Mihinthale DSD is reddish brown earth.

4. **Climate and Meteorology.**

19. Mihinthale division lies within the dry zone in the country and due to the plain train it shows a uniform rainfall pattern. The area receives rainfall from the north east monsoon and south east monsoon. Maximum rainfall of 463.1mm was recorded in May, 2016. The average temperature is 26.2^{o}C and is characteristic of dry zone regions. Annual rainfall within area is about 1034.6mm.

Table F 5: summarizes the metrological data for the site

Parameters	**Amount**
Maximum Temperature(^{0}C)	29 ^{0}C
Minimum Temperature (^{0}C)	26.6 ^{0}C
Maximum Relative Humidity (%)	95%
Minimum Relative Humidity (%)	5%
Total Rainfall (mm)	1034.6 mm
Average Wind Speed [CK1]	10 mph
Predominant wind direction	From the West
Dry hours (%)	More than 90%

5. Wind

20. In Mihintale the wind is most often from the *west* for *6.6 months*, from *April* to *November*, with a peak percentage of *94%* in *June.* Tornados are common to this region during the month of September.

6. Ambient Air Quality

21. To draw up a baseline status of the ambient air quality, the RUSL will take the measurements prior to the development project.

7. Ambient Noise Level

22. To assess the base line value background noise level, ambient noise monitoring will be conducted by the RUSL prior to the construction activities at the site.

8. Surface and Groundwater Quality

23. The baseline data on water quality will be collected at two locations within the project area by the RUSL and will be monitored, analyzed and assessed. The water quality results will indicate quality of the adjoining Mihintale Tank and the ground water. Water quality parameters will include Coliform Count, BOD, COD.

24. There are several reservoirs and streams in Mihinthale DS. These are mainly used for the purpose of agricultural activities. The main reservoirs within the division are tanks such as Mihinthale, Thammanwa, Palu, Siyabalagas, and Kirimatyawa. RUSL rain water is currently the main sources of water available in project area.

9. Ecology and Biodiversity

25. Mihinthale sanctuary is located in 3.15Km away from the University and Mihintale Forest Reserve is located in 1.77Km. Both these habitats are rich in faunal and floral diversity, however at the moment the Mihintale Tank has been degraded due to human activity. Herpetofauna, Avifauna, terrestrial mollusk spices of endemicity are common to the region.

26. Herpetafauna Avifauna study from 2010 to 2014 showed that a total of 68 species belonging to 34 families were recorded in the disturbed habitat within the university premises. The Shannon Diversity Index (H') for disturbed and grass patch habitat were 2.48[1] thereby making the area a moderately diverse habitat. A biodiversity assessment

[1] Diversity, Abundance and Habitat Utilisation of Birds in Periphery of the Mihintale Sanctuary; De Zoysa H.K.S., Sandunika I.A.I., Rathnayake D.G.R.M.M. and Wickramasinghe S. *Forestry and Environment Symposium 2013*

was not recommended for the current land as it was an already developed land that had been cleared. However, if the land were to be extended beyond the currently selected area, it is recommended that a rapid biodiversity assessment be carried out as the adjoining land now a successional grassland leading towards the Tank.

10. Educational, Medical and Religious Properties

27. Health facilities in this area include divisional hospital, peripheral units, central dispensaries, maternity homes and dispensaries. Generally the education level was fairly good with literacy rate being around 94% in 2016[2]. There are two temples, one Catholic Church and a Islamic place of worship in the DSD.

11. Archaeological Sites

28. Cultural, Archaeological and Historical Significance sites in Mihinthale DSD include historic Mihinthale Temple and Kaludiya Pokuna, Mihinthale Pond and other ruins. These are located in close proximity to the site. From the proposed FT distance to the protected monument is provided in Table 6 below.

Table 6: Distance from archeological sites

Description	**Dist. between center line of the project and boundary wall of the monument**	**Protection Status**
Mihinthale temple	1.05 Km	Protected by Sri Lankan State under Department of Archaeology
Kaludiya pokuna	1.40 Km	Protected by Sri Lankan State Department of Archaeology
Mihinthale tanks	0.26 Km	Protected by Sri Lankan State Department of Archaeology
Doramadalawa temple	5.67 Km	Protected by Sri Lankan State Department of Archaeology
Kanthaka Chethiya	1,14km	Protected by Sri Lankan State Department of Archaeology
Mihintale ancient hospital complex	0.82	Protected by Sri Lankan State Department of Archaeology

[2] Mihintale DSD Resource Profile 2016

12. Demographic Details of Affected Population

29. The population and community in this area are predominantly Sinhala (94.51% Sinhala, 0.11% Tamil, 5.06% Muslim, 0.01%burgher, and 0.28% others). When considering the ethnicity within the DSD, 93.99% of the population is Buddhist, 0.12% is Hindu, 5.06 % is Islam, 0.10% is Catholic, and 0.37% is Christian.

30. The agriculture sector provides employment for 21.24%, industrial sector 4.3% and service sector 4.4%. Out of the total labor force in the Anuradhapura District, 4.4% are engaged in the trade sector. Population in Mihinthale engages in agriculture, industry and fishing with some employed in the government sector. Villagers in the project area are predominantly engage in agriculture and are daily waged earners.

G. Analysis of Alternatives

31. Although the proposed Technology Faculty Development project is located in close proximity to a wetland (tank), impacts associated with the construction stage are temporary, short term. Any longer term impacts can be managed by adhering to the ESMP. The current project location was provided as an alternative to the initially selected site which included a rock outcrop and an undulating landscape unsuitable for development. There is no other existing land in the vicinity that can be developed as an alternative to the proposed project. Therefore, examination of alternatives to the project‘s location, design, technology, and components show that it is compliant with the building guidelines at the current location.

32. The selected site is strategically located close to the Mihintale tank in the Mihintale DSD North Central Province and within close proximity to the Lakshauyana Industrial Zone in Polonnarwa, Mawathagama Export Processing Zones (EPZ) in Kandy. It is closely located to mineral resources such as Eppawella mineral deposit, Pulmudai Mineral (Zircon, Ilmanite, and Rutite), deposits, Kaikawala Feldspar and Quartz deposits, NamalUyana Rose Quartz deposit, Yan Oya, Red Clay deposit which provides ideal research opportunities for RUSL students in material sciences. It is easily accessible to the student community to carry out research and their educational activities. Thus, the development of the land into a training facility will be the better option under the existing condition.

H. Anticipated Impacts and Mitigation Measures

33. An Environmental and Social Management Plan (ESMP) has been developed to provide mitigation measures to reduce/mitigate the negative impacts. Locations and siting of the proposed infrastructure were considered to further reduce impacts. These include (i) locating FTP on government-owned land to avoid the need for land acquisition and relocation of people.

34. The ESMP includes design measures such as (i) selection of construction methodology on soil that is prone to monsoonal flooding, (ii) wash water recovery for the WTP to reduce effluent to be discharged; (iii) beneficial use of treated sludge; and (iv) quick leak detection and rectification to save the resources, etc. during construction and operation.

35. Other mitigation measures include (i) management of noise and air quality (ii) stakeholder consultations to raise awareness and to inform residents and businesses of potential disturbances (ii) use of dust-suppression methods such as watering and/or covering of stockpiles; and (iii) finding beneficial use of excavated materials and spoil material. As for the O&M phase, facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent. During operation solid waste management and waste water treatment are important to be considered in the design and implementation. The design of the waste water treatment plant includes dewatering and drying areas as part of sludge management. The ESMP includes mitigation measures and monitoring plan to ensure compliance to environmental standards during O&M phase.

36. A summary of the potential environmental impacts during construction and operation phase along with recommended mitigation measures is summarized in a Table-7.

Table 7: Summary of Anticipated Impacts and Recommended Mitigation Measures

Issues of concern	Anticipated Impacts	Proposed mitigation Measures
Pre-Construction and Construction Stage		
Clearance for the project	Unless Local Authority building approval is obtained for new building it may lead to environmental and social impacts. It will not be in compliance with national environmental and social regulations. Unless the high-tension wires are relocated would result in safety issue and limitation to design the buildings	Obtain approval from Mihintale Pradehsiya Saba and UDA before commencement of construction. Site is in close proximity to Mihitale Tank should follow CEA and Irrigation Department guidelines. Liaise with CEB to relocate the high tension wires
Social and cultural resource	Impact on Archeological monuments	Consult Department of Archaeological of Sri Lanka or Anuradhapura Divisional Archaeology Department to obtain an expert assessment of the archaeological potential of the site Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders Develop a protocol for use by the construction contractor in conducting any excavation work, to ensure that any chance finds are recognized and conserved
	Lack of sufficient planning to assure long-term sustainability of the improvements and ensure protection of the FT	Design has to include provisions for ensuring effective maintenance and protection of the FT in the long-term. The long-term sustainability has been ensured by consideration of relevant authorities for Standards Codes for design (such as UDA), appropriate wind load factor, and detailed design after carrying geotechnical investigations. The initial designs of FT academic building should consider that net allowable

		carrying capacity of XXXMN/m^2. Should be in accordance to ICTAD recommended guidelines and propose the design. Refer the geotechnical soil assessment recommendation. (To be filled once the geotechnical report is available)
Risk of temporary floods	Lack of drainage within the project site will submerge the land during heavy monsoonal rains In the absence of a proper storm water drainage system, there will be a risk of water logged conditions around the site. Temporary ponding pools formed during the monsoonal period which will increase the incidence of vector born disease	a) Will need to fill land by about 3 feet to reach the road level. b) Identify and develop drain plan to carry rain water towards the tank. c) Sloping of terrain to ensure natural drainage.
Integration of energy efficiency and energy conservation programs in design of project components. Non compliance of green building guidelines	Unsustainable, energy inefficient, and un-economical unviable building that will negatively impact the environment In the absence of water conservation and energy efficiency of the building structure, it may lead to resource constrains and increase the running cost.	The detailed designs for the project should ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.: - Usage of recyclable materials like wood substitutes. - Installation of sustainable energy efficiency certified equipment - Usage of energy efficient lighting fixtures (LED) - Provision of photovoltaic cells on roofs for solar power - Rain water harvesting structures planned for ground water recharge and rain water collection.
Solid and liquid waste	Lack of properly designed disposal mechanisms for solid and liquid waste may lead to contamination of surface and ground water resources	Design a waste water treatment plant. Incorporate solid waste storage area in the plan. Need to discuss with Local Authority for immediate solution to garbage disposal.

Establishment of baseline environmental conditions prior to start of civil works	Non availability of a method to audit the impact. Obtaining a suitable and representative baseline data set will be critical to the whole monitoring and audit process because it forms the standard against which environmental impacts are assessed. Impact of vibration noise, ground water pollution due to solid and waste water disposal etc.	Conduct documentation of areas for construction zone (camp, staging, storage stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates. Conduct base line monitoring in respect of ambient air quality, water quality, and noise levels as per monitoring plan. Thus, baseline monitoring for water quality, noise, vibration will be audited prior to the start of construction and in site supervision.
Utilities	Unless the high-tension pylon in the middle of the site is relocated it can cause a health hazard and safety risk to the university community. All utilities such as water and electricity are in place so no disruptions expected regarding those.	Re-locate high-tension pylon. -Contractor should prepare a contingency plan to include actions to be done in case of unintentional interruption of services occurs due to electrical work at the site.
Resources mobilization and allocation of space	Allocation of space for storage yard for construction material, labour camp, project office may require addition amount of space. Use of additional land for resource mobilization during construction may lead to conflicts.	Adequate provision should be made on site to mobilize the construction equipment. Selection of land for construction material storage should be done carefully avoiding conflict with Mihinthale Pradeshiya Saba approval. Selection of lands such purposes should be undertaken by the contractors carefully Sitting of the construction camp shall be as per the guidelines below and details of layout to be approved by PMU. Potential sites, within the FT plot, for the labor camp will be lined up to be visited by the environmental expert of PMU. The one having least impacts on the environment will be approved by the PMU and Safeguards Cell. The storage location of construction materials shall be at

		the any building close to the FT site. Construction camp sanitation facilities shall be adequately planned. Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labour camps. Use local materials as much as possible to reduce the need for storage space.
Disaster management	Extreme climate events such as intense rainfall during the (flooding), cyclone, tornado etc. and fire may cause damages to lives and property.	Adoption of appropriate disaster risk reduction strategy, emergency preparedness and recovery, training/orientation program for lecturers and students and construction worker, etc. Identify an emergency evacuation point in the building. An emergency alarm system has to be in placed..
Safety of students and academic staff	Lack of safety measures within the design will lead to fire and increase occupational safety hazards	Plan for fire extinguishers, fire alarms and a stair case for emergency evacuations. Fire safety management and mock drill. Install lighting resisters since the project building will be located near a high tension wire.
Occupational Health and Safety	Unless worker safety is complied with, it can lead to injury and other health risks.	Contactor to comply with ADB Environmental, Health, and Safety Guidelines, ILO, Factory Ordinance to the extent that are applicable to workers contract. Develop and implement comprehensive site-specific health and safety plan y A management strategy and applying practices to eliminate, or minimise, fatalities injuries, and illnesses for workers performing activities and tasks associated with the project.

		Include in the health and safety plan measures Provide medical insurance coverage and indemnity for workers. The construction site will be properly barricaded by appropriate material
Public consultations	Unless regular consultations are carried out with the stakeholders including community, issues that crop up during the project will go un addressed leading to problems later on.	Continue information dissemination, consultations, and involvement or participation of stakeholders during project implementation.
Site Clarence and cut and fill operations	Construction activities such as cut and fill operation etc. may lead soil erosion, sedimentation and siltation. Decrease of infiltration of rain water, acceleration of surface runoff, are the main impacts.	Only ground cover or shrubs and trees that directly affect the permanent works or necessary temporary works shall be removed with prior approval from the environmental expert of the PIU as listed in the the ESMP Construction activities including earth work and construction of cross drainages should be conducted during the dry season
Land preparation	Activities such as site clearing, construction of culverts, removal of trees and green cover vegetation and etc., will potentially impact the ecological resources. Noise generated from construction will potentially disturb breeding, foraging, and migrating behavior of wild species in the Mihintale tank	(a) Awareness programs should be organized for the workforce about the importance of flora, fauna and ecology of the wetland. (b) Contractor shall adhere to the guidelines and recommendation made by CEA and DS regarding removal of trees Contractor should especially be aware not to introduce any alien species during construction related activities. Saplings for tree planting program should comprise of native or endemic species.

Drinking water availability at construction camp and construction site	No availability of drinking water for labours will result in dehydration and health risk. (This is especially relevant during the period of water scarcity experienced in the project area).	(a) Sufficient supply of potable water to be provided and maintained at the site for the workers. The drinking water will be obtained from the market or any alternative source. The drinking water will be stored in a suitable size storage tank to ensure uninterrupted availability. (b) In the event Pipe borne water supply which is to be obtained before construction Contractor will submit his plan on ensuring water availability at the site for drinking sanitation and construction.
		(c)
Use and transport of natural resources	Impact on the natural ecosystem by means of exploitation. Extraction, transportation and storage of construction materials may give negative impact such as noise, air, water, soil pollution, reduction of scenic beauty	(a) Extraction of construction materials should be undertaken only from mines and quarries approved by GS&MB (b) Environmental requirements and guidelines issued by the CEA, and LAs should be followed with respect of locating material extraction sites. (c) Sand, rubble, metal bitumen and cement should be covered to ensure protection from dust to avoid emissions.
On Site housekeeping	Lack of solid waste and sanitation management on site can lead to lack of general cleanliness and impact on ecology, public health and scenic beauty.	(a) Pre identified waste disposal site by the contractor should exclude areas which are close to public and sensitive environment (including Mihinthale Tank). (b) A solid waste management plan will be prepared by the contractor in consultation with local authorities (c) Make arrangements with the local authority on disposal of

		solid waste generated during construction. (d) Under no circumstances should the solid waste be burned on site. Additionally under no circumstances will any construction waste will be disposed of around the project site. (e) Garbage bins should be provided to all workers based camps, and construction sites
Stockpiling of construction materials	Obstruction of drainage	(a) -Stockpiling of construction materials will be done in such a way that it does not impact and obstruct the drainage. (b) -Stockpiles will be covered to protect from duct and erosion.
Air pollution, Noise pollution water pollution	Environmental pollution	(a) All vehicles, equipment, and machinery used for construction shall conform to the Sri Lankan government vehicle emission test. For equipment emission norms as specified in air emission gazetted under NEA (b) The Contractor shall maintain a record of pollution under control for all vehicles and machinery used during the contract period, which shall be produced for verification whenever required Contactor to carry out a monitoring plan on water , air and noise . Refer ESMP for details.
Onsite emergency plan for minor accidents and mishaps.	Absence of plan will lead to death to the worker and economic cost to the project	Onsite emergency management plan will be prepared by the contactor with the consultation of the PIU.

Disaster Management Plan	Life and property damage. Economic cost for the project	For natural calamities, disaster management plan prepared by the PIU under the provisions of Disaster Management Act. Refer disaster management under "planning"
Clearing of construction camp and restoration	Unless site is cleared it will not be visually pleasing and would lead to health risk.	Contractor to prepare site restoration plans for approval by the engineer (PIU). The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, at the contractor's expense, to the entire satisfaction of PIU.
Landscaping	In the absence of proper landscape, it will not be aesthetically pleasing. Landscaping should blend in with the surrounding ecosystem.	(a) Project landscape activities have to be done as per either detailed design or typical design guidelines. (b) Plant floral species that are native to the area. (c) Carry out a resonance survey of floral species native to the area or contact Agriculture Department to identify the recommended species and plant
Operational Period		
Environmental conditions and parameters	Unless regular monitoring is conducted, it may lead to environmental pollution issues during the operation of the Campus.	Periodic monitoring of the ambient air quality, noise level, surface water quality, soil quality in the subproject area as suggested in the monitoring ng plan through an approved monitoring authority.

Drainage Congestions	Stagnation or blocking the water flows may occur due to sediments, improper disposal of debris during maintenance activities or ignorance. This will provide suitable habitats for vectors like mosquitoes etc. In the absence of a proper storm water drainage system there will be a risk of water logged conditions around the site.	(a) University needs to undertake regular maintenance of the drainage system to avoid drainage congestions. (b) Employ staff to clean the drains and make sure that outfall is not blocked.
Solid waste management	At the moment solid waste collection is done twice a week , there is risk of solid waste piling up on site and obscure the environment	Adopt an agreement with the LA and a waste management plan in place.
Domestic liquid waste disposal	Lack of proper disposal of domestic waste water will result in environmental pollution	Establishment of a treatment plant and ensure that the treated waste water conform to the standards under CEA.
Health and safety of the students	Activities such as Laboratory work may result in accidents injury among students due to faulty connection in the electricity and wiring Social conflict with the surrounding residents and worker in other establishment due to unacceptable behavior of students	Train the students and teachers on managing risk and emergencies. Provide emergency switches to prevent fire hazards Place rules and regulations and code of social conduct that is required to be maintained by the student
Onsite emergency plan for minor accidents mishaps and disaster management plan.	Damage to the property and life in event of a disaster event.	(a) The FT of RUSL should prepare an onsite emergency plan in event of minor accidents. (b) A in house plan in event of a natural disaster should be developed to address floods tornados and cyclones.

Maintenance of plantation and landscaped area in the FT project site	In the absence of maintained landscape FT grounds will not be pleasing to the eye	The faculty head with the appropriate support staff allocated for the purpose will be responsible for the maintenance of shrubs, tree and land scape of the area. Minimum of 90% survival of plans will be maintained. Any short fall will be replaced during the monsoonal period.
Food safety	Unhygienic food preparation conditions may lead to health issues in the cafeteria.	Adopt rules on personal hygiene. Adopt food safety regulation to the cafeteria which is imposed by the Ministry of Health.

37. The budgetary provision for the implementation of the environmental management plan of the FTP can be categorized in to two types and is presented below

i. Environmental Management Plan Works to be implemented by the contractor under civil works contracts
ii. Environmental Management Plan Works to be implemented by the FTP project management unit

38. A capital cost provision of about Rs. XXX has been kept towards implementation of environmental management plan. Summary of environmental budget is presented in

Table 8: Cost estimate

Component	Description	To be implemented by	Amount (Rs)
A	Mitigation / Enhancement	Contractor	
B	Environmental Monitoring		
Subtotal			
C	Training and mobilization	FTP project management unit	
D	Meeting		

39. In order to ensure effective implementation of safeguard related components in the project PIU at FOE will include a safeguard expert (an environmental cum social expert) /Assistant Environmental Officer in the team. This safeguard expert will ensure compliance with ESMP and IEE requirements, and implementation of environmental management plan of -project at site through contractor.

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I. Public Consultation (PCM)

41. The following are the major points of concern of the participants of PCM

- On obtaining the relevant approval from the concerning authorities such as irrigation department, UDA, Mihintale Pradeshiysa Saba
- Solid waste disposal associated with the project
- Waste water management of the project
- Issue of environmental pollution concerning solid and waste water waste disposal and how it will impact the water shed of the Mihintale Tank
- Issue of environmental pollution concerning solid and waste water waste disposal
- Improvement of the drainage in the canal system associated with the project
- Disturbance due to project work for the surrounding community
- Stakeholders are concerned about the increased noise level during construction. Placing the pedestrian crossing traffic light on the A12 highway, proper road signage and speed control measures are the most sought after road safety measures by the stakeholders.
- Accident involving wildlife and man-animal conflicts are reported to be University authorities and citizens at large are in favor of introducing speed restriction on the A12 highway near the FT.
- Establishment of a boundary wall acting as noise barriers along the FT premises was positive received by all of the participants. The stakeholders felt construction of boundary will also provide the security to the undergraduate and should be implemented before the commencement of construction activity to safeguard the worker and prevent noise and disturbance on the nearby residence

J. Conclusion and Recommendations

42. **Conclusion**: The IEE study did not find any incompatibility with the surrounding physical, biological, socio-economic or cultural environment and does not pose any significant longterm environmental threat if managed properly during constrction and during implementation. The most impacts likely during the construction phase are expected to be temporary in nature and could be mitigated with proper management and good practices. The GRM and ESMP provide appropriate guidance for suitable environmental and social safeguards. Accordingly, the proposed project can be recommended for implementation with strict adherence to ESMP and GRM provided in this IEE.

43. Most of the adverse impacts of FTP during construction period are short term and temporary in nature. These impacts can be minimized through specific engineering and management solutions. Environment friendly construction methodology has been incorporated into the project design and the ESMP has been prepared to minimize the overall impacts on the environment during the proposed project civil works. Since the proposed project is unlikely to cause any significant adverse environmental impacts, no further study is required.

44. **Recommendations:** The ESMP has been prepared incorporating various modern technologies and guidelines to reduce the environmental impacts of project constructions to make it a Green building. Therefore, it is recommended that the ESMP and associated Guidelines during construction and operation phases of the project are strictly adhered to. RUSL need to obtain the geotechnical report and engage with CEA and the UDA to incited the green building designs. The RUSL will request to fill in the BIQ and obtain and EPL for the canteen that will cater for more than 500 students. RUSL will be required to develop a flood water management plan, to clean and maintain the project associated drain system and to develop site by filling and rais the DPC level to 1.5m since it is lower than the road level. The detailed engineering design of the building should consider the geotechnical report and propose migratory measures that ensures strong foundation and flood resilience. FT of RUSL with consultation of the Mihintale Pradesha Saba should enter into an agreement until the solid waste management bio gas plant is installed. Consult CEB and relocated the high tension electricity wires to increase the available spaces for design of FT and improve the health

and safety of the students. Continued consultations with the Department of Archelogy and develop code of protocol of operation during excavation and site preparation activities on site. Carry out a rapid biodiversity assessment on site prior to construction since the project is 1.7km from the Mihintale sanctuary and there are record of moderate diversity in the surrounding area,

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1 INTRODUCTION

1.1 Project Background

45. In Sri Lanka, the service sector, financial activities, transportation and real estate activities have shown a significant year to year (YOY) growth together with activities such as IT/BPO and telecommunications. In the ICT services sector, IT programming consultancy and related activities has grown significantly by 21.1% YOY in 2015[1]. Successive governments in Sri Lanka have promoted the concept of a 'knowledge based economy', particularly during the past two decades[3,4] (Mahinda Chinthana, 2005, A Powerful Sri Lanka, 2016).

46. The International Labour Organisation publication titled 'The Skills gap in four industrial sectors in Sri Lanka' has identified major skills mismatches especially in the high-skill job categories in the ICT, tourism & hospitality, construction and light engineering industries[5].The Faculty of Technology (FT) of Rajarata University of Sri Lanka (RUSL) was established in 2016 to make a significant contribution to meet the human resource needs of Sri Lanka. The FT has introduced latest teaching and learning methodologies to its undergraduate students.

47. Government of Sri Lanka with loan funding from Asian Development Bank (ADB) has proposed to implement the Science and Technology and Human Resource Development Project (STHRDP). The Ministry of Higher Education and Highway (MOHE) shall be the Implementing Agency and the University Grant Commission shall be the executing agency for the Project. This project aims to increase the technology oriented work force which will contribute to transform Sri Lankans growing economy. Under this Project the RUSL will build a new Faculty of Technology (FT) in RUSL. This will be referred to as the project in this report.

48. The safeguards screening for RUSL has been completed by the consultants mobilized under TA8235 with recommendation for a biodiversity assessment if there are future expansion towards the Mihintale Tank.

[3] Mahinda Chinthana, 2005, Government of Sri Lanka
[4] An Empowered Sri Lanka, 2016, Government of Sri Lanka
[5] The skills gap in four industrial sectors in Sri Lanka, 2015, International Labour Organisation

49. The project proponent (PP) of this project is FT project implementation unit (PIU) at RUSL. The proposed feasibility study and the detailed designs of the FT at RUSL includes the following:

- Lecture Halls
- Laboratories for Physics, Chemistry, and biology, bio system technology, Electrical and Electronic technology, food technology, materials technology
- Staff rooms and faculty office rooms
- Faculty Libraries
- Cafeteria
- Reading area
- Sanitary facilities
- Parking areas
- Waste water treatment plants,
- Rain water harvesting system

50. The FT will train graduates who are ready for industries such as ICT, manufacturing, logistics and services. This will ensure that these graduates will have a competitive edge to secure jobs both locally and internationally.

51. Five Departments under the Technology Faculty include Bio-Process, Electrical & Electronic, Food, Information & Communication (ICT) and Materials Technology has been established at the RUSL. Already two batch intakes have been taken to the Faculty though they do not have the resources. At the end of five years, the Faculty will accommodate about 1400 students in total.

Table 9: Intake of students

Year	New Intake (No. of Student/Year)
Year 1	243 (already in 2nd year)
Year 2	272 (already 1st year)
Year 3	300
Year 4	300
Year 5	300
Total	1415

52. FT at RUSL aims at establishing industry-specific skills and soft skills among its graduates, improving and initiating liaisons with the industry and inculcating innovation

into the teaching and learning environment. The FT will train graduates who are ready for industries such as ICT, manufacturing, logistics and services. This will ensure that these graduates will have a competitive edge to secure jobs both locally and internationally

1.2 Objectives of the IEE

53. The objectives of the Environmental Study are to:

i. Determine the category of the project depending proposal, environmental sensitivity and magnitude of impacts, i.e. screening as per Government of Sri Lanka's regulations and ADB's Safeguard Policy Statement 2009;
ii. Determine the appropriate extent and type of EA required (IEE or EIA), i.e. scoping;
iii. Determine the requirement of statutory clearances;
iv. Provide a baseline environmental monitoring and survey; on biodiversity, biophysical resources
v. Predict impacts on relevant environmental attributes and mitigation measures to minimize the impacts; and
vi. Prepare IEE Report including ESMP

54. Recommendations will be provided for mitigating any negative impacts wherever possible through the ESMP. The ESMP will include the recommended institutional arrangements for monitoring activities for identified environmental issues. The IEE will address current physical, ecological, economic and social background of the project anticipated environmental impacts that will arise due to project activities, necessary measures that have to be adopted to mitigate them and public views and suggestions regarding the project.

55. Accordingly, a single consolidated IEE report will be submitted to ADB and also be made available to the PP to facilitate their decision making.

1.3 Approach and Methodology

56. The IEE has been carried out within the existing policy, legal and administrative framework considering the applicable environmental legislation, regulations & guidelines of ADB and MOMDE.

57. **Reconnaissance Survey:** A reconnaissance survey was carried out identify the value environmental components surrounding the project. Location of environmentally protected areas; surface water bodies; environmentally sensitive receptors (educational institutions, religious structures, medical facilities etc.) at the project site was identified during the survey. The Consultant conducted preliminary analysis of the nature, scale and magnitude of the impacts that the project is likely to cause on the environment, especially on the identified Valued Environment Component (VECs). REA, IP and IR checklists (refer annex 2) were filled out and the findings incorporated in the preparation of the IEE. Site inspection of proposed project was carried out on 31st of October 2017 (refer Annex 03 for details).

58. Another study will be carried out to analyze and identify the demand for technology graduates in the labor market to justify the public investment in the technology education and on proposed FT project. This will be carried out by ADB separately.

59. **Data Collection & Review:** Secondary data such as Survey of Sri Lanka Topo Sheets, District Planning Maps, SLLRDC Working Plans, etc. have been collected from various secondary sources. Further, secondary data, which are relevant to understand the baseline as pertaining to physical and biological environments has been collected and reviewed. Applicable environmental legislation, regulations & guidelines of ADB and Ministry of Mahaweli Development and Environment MOMDE.

60. **Environmental Screening & Scoping:** Screening has been conducted with specific consideration such as location of the projects with respect to flood risk and critical issues to be studied in detail as well as provide important feedback to the design / technical team. It will help to modify the designs at locations where impacts can be avoided and incorporate mitigation measures wherever the impacts were unavoidable due to other constraints.

61. **Baseline Environmental Monitoring:** To establish the baseline environmental status, it is recommended that monitoring would have to be carried out for various

environmental parameters such as meteorology, ambient air quality, ambient noise level, ground & surface water quality and soil quality at the project site. Secondary data was referred from numerous reports for current IEE. No rapid biodiversity assessment was carried out to assess the importance of the biodiversity surrounding the project site as it was an already developed land. However, secondary data such as scientific papers published for project associated at RUSL was reviewed. The project site is 1.5m lower than the road level and therefore infilling and land preparation will be important. It is recommended that a simple flood assessment on temporary flooding close to the project area be carried out prior to construction. At the time of this IEE there was no geotechnical report made available, therefore it is recommended recommendations in the geotechnical report be considered when finalizing the layout of the master plan. RUSL is in the process of developing their Master Plan (only rough diagram available).

62. **Stakeholder Consultation:** At the onset of designing the RUSL technology degree program, a consultative committee was formed which consists of senior academic members in the field and representatives from professional bodies. Stakeholders' workshop to analyze the technology degree program offered at RUSL was organized on the 02nd of December, 2016. Consultations on environmental issues have been carried out with relevant stakeholders identified through stakeholder analysis. Such consultations were done with the officials and staff of RUSL, Department of Archeology, Divisional Engineer Irrigation Department, Anuradhapura and immediate neighbors from the adjoining properties. A stakeholder consultation was held with representatives from government sector such as RUSL staff and students, Mihinthale Pradeshya Saba, the community surrounding the project site, on the 19th of April 2018 at board room of faculty of Applied Sciences (Refer annex 04 for details).

63. **Analysis of Alternatives:** The environmental analysis of alternatives mainly focuses on location, building design if any, sources of designs from an environmental management perspective to reduce impact on archeological, biodiversity, environmental pollution and monsoonal flooding.

64. **Prediction of Impacts & Mitigation Measures:** Based on the above study potential positive and negative impacts on land environment, air environment, noise

environment, water environment and biological environment has been assessed for both construction and operation phase. For each impact predicted, feasible and cost effective mitigation measures has been suggested to reduce potentially significant adverse environmental impacts to acceptable levels.

65. **Environment Management Plan:** The ESMP (Part III) has been prepared as per the requirements of ADB safeguard policy statement. The ESMP includes management of construction camps; impacts of construction such as dust and noise; rain water harvesting, storm water management practices; establishment of a waste water treatment plant & solid waste management plan; flood control; essential clearances; etc. At the same time, information was collected to prepare a Basic Information Questionnaire (BIQ) for environment clearance from CEA (refer Annex 05,).

1.4 Structure of IEE Report

66. In order to fully meet all requirements, the IEE report generally follows the ADB Safeguard Policy Statement 2009 and EA Guidelines 2003. Structure of the IEE report is organized as follows:

67. Part I. IEE Report

Executive Summary

Chapter 1- Introduction

Chapter 2-Policy, Legal, and Administrative Framework

Chapter 3-Description of the Project

Chapter 4-Description of the Environment (Baseline Data)

Chapter 5-Analysis of Alternatives

Chapter 6-Anticipated Environmental Impacts and Mitigation Measures

Chapter 7-Public Consultation

Chapter 8-Environmental Management Plan

Chapter 9-Conclusion and Recommendation

Part II. Annexes

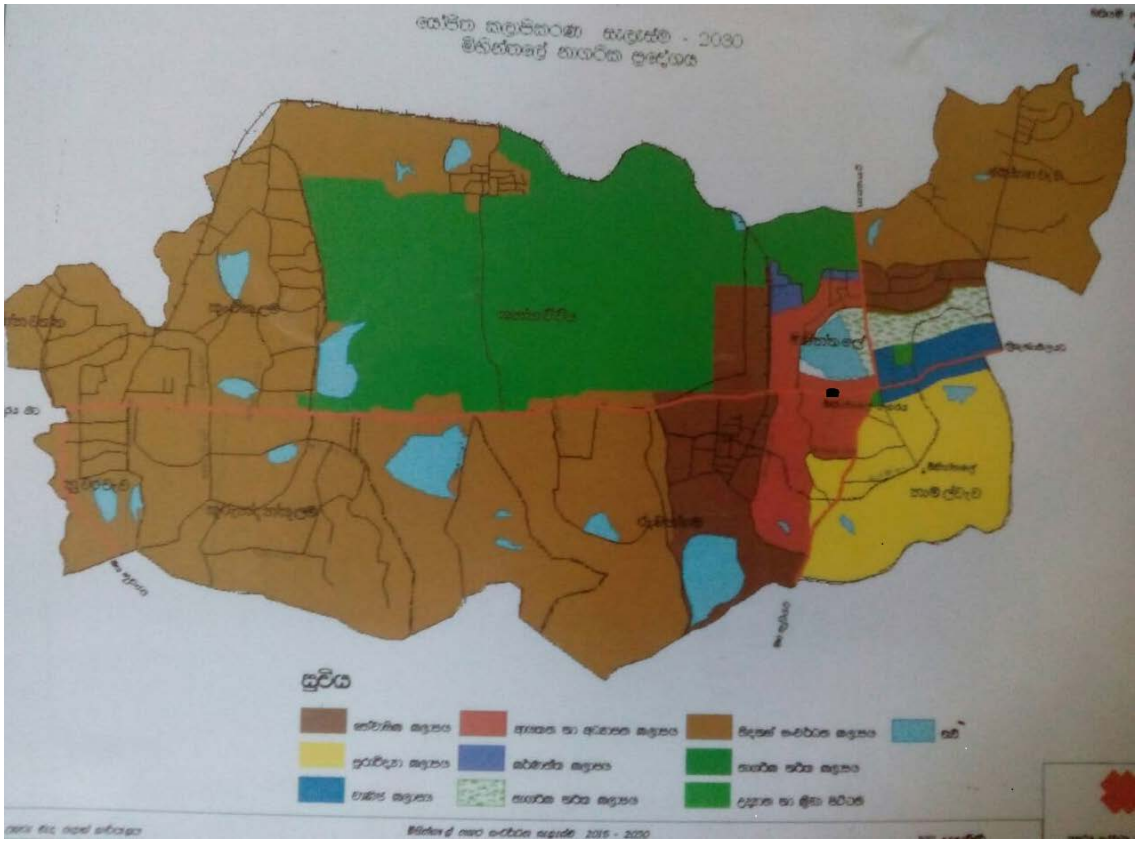
Part III. ESMP

2 DESCRIPTION OF THE PROJECT

2.1 Project Location

68. The proposed construction of the new FT is located in Mihinthale, Anuradhapura District, and North Central Province, Sri Lanka. The project site (i.e. land) is located alongside the A12 -Puttalama- Anuradhapura- Trincomalee highway, 794 m from the Mihintale town. The government granted the university with a 2 acre 14.9 perches land located in Rabawa, Anuradhapura villages within the Mihinthale Pradeshiya Saba. Adjoining properties are privately owned for residential and commercial purposes or government owned. The project side is in an institutional and educational zone according to the Mihintale provisional zonation plan for 2030 provided by UDA. The FT project location is marked in figure 04 in UDA map.

Figure 4: UDA zonation plan for Mihintale divisional secretariat



69. The proposed project site is located 100m from the existing campus of the University of Rajarata. The land location points are 8021′38.74″ N latitude & 80030′12.18″ E. The

land is rectangular in shape. Adjoining properties are currently developed. There are no permanent or temporary structures on the site. Since the site has been lying vacant and unused, small shrubs have grown over time. Some photos of the site are shown in Figure 5. The land which was under state ownership was transferred by the Mihintale Divisional Secretary to the University. Letter of transfer is provided in Annex 6).

70. The land is composed of two plots that are marked as 1 and 2 in the survey plan. On the eastern boundary lies Lots 3 and southern boundary the A12 road (Puttalum Anuradapura road) and, while the western boundary adjoins the Lot 1 and the Pradeshiya saba road that adjoins RUSL. These details are shown in the attached site survey plan (Annex 07). The land is 794 m from the Mihintale town. Anubudu Mihindu Maha Seya which is 190m from the site and is one of the closely located archeological sites. Other sites include Mihintale temple (1.5km), Naga pokuna (1.37km), Sinha pokuna (1.26km), Kaludiya pokuna (1.37km). The Mihintale Tank is 190m from the site. The site map with the respective distance are shown in Figure 6.

71. The site is composed of scrub vegetation and has few large trees such as Mee (02), Kohomba (02), coconut tree (1) and Kiriya tree (2). Some of these trees would have to be removed during the site preparation as per the requirement of building designing and construction. On the eastern section of the land water logged condition was observed. To bring the site to the road level nearly 2-3 feet soil should be compacted and filled during the site preparation stage. On the south west boundary lies a well that was used to supply water for the Divisional Secretary's house which is now vacated. (Figure 5). Alternative housing was provided for the Mihintale Divisional Secretary.

72. The project land is government owned and was previously occupied by the District Secretary's bungalow. The university took custody of the property with the condition that they would build new quarters for the DS in another property. The RUSL is in the process of obtaining approval from the Department of Irrigation/ CEA since the project area is 190m from the Mihintale tank.

Figure 5: Plates of project site

Figure 2 Mihintale tank adjacent to the site

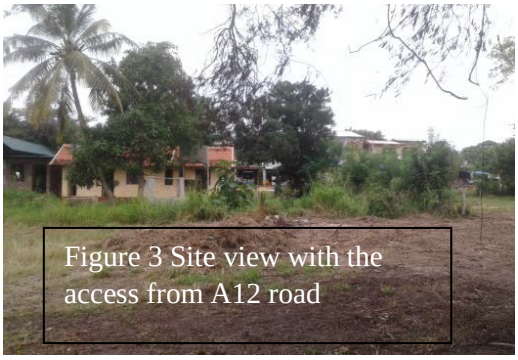


Figure 3 Site view with the access from A12 road

Figure 4 Site view on the eastern boundary

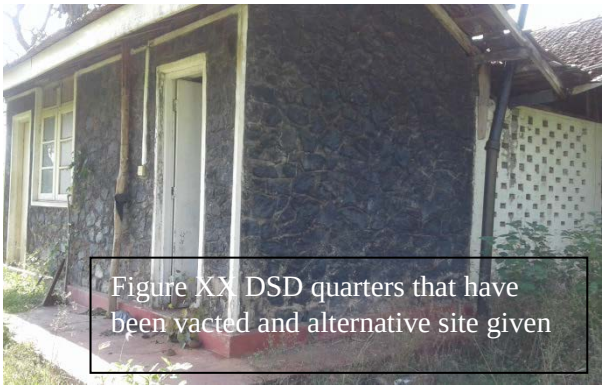
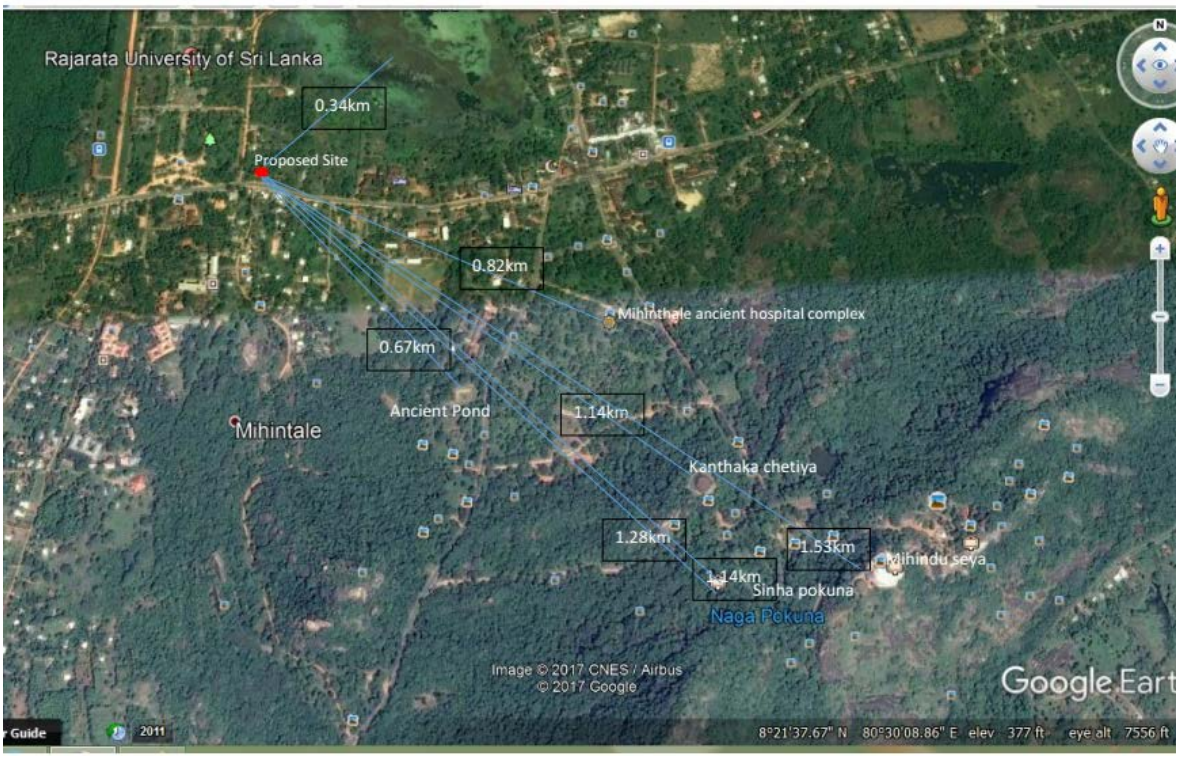


Figure XX DSD quarters that have been vacted and alternative site given

Site seen from the A12 road

Figure 6: *Project location seen as plantation area with 80% green cover with respective distances to the archeological sites*



2.2 Description of the Project

73. The proposed FT project will involve construction of a new faculty with facilities to conduct lectures for technology students. The FT will consist of three buildings (excluding auditorium identified for additional land) and exact number of stories is yet to be determined based on the requirement provided by RUSL. It will include laboratory facilities for chemistry, physics, electronics, two labs for bio chemistry, research lab, bio technology, engineering technology, industry technology lab and a product design lab. It will also include computer labs that will train 50 students at a time. The details design and the lay out plan for the FT (Refer Council Layout Map Annex 08)

74. The project will be constructed as three buildings and they are as follows.

i. Proposed academic and laboratory building
ii. Library building
iii. Auditorium

The details of the requirement proposed by RUSL for the FT are given in Table 10

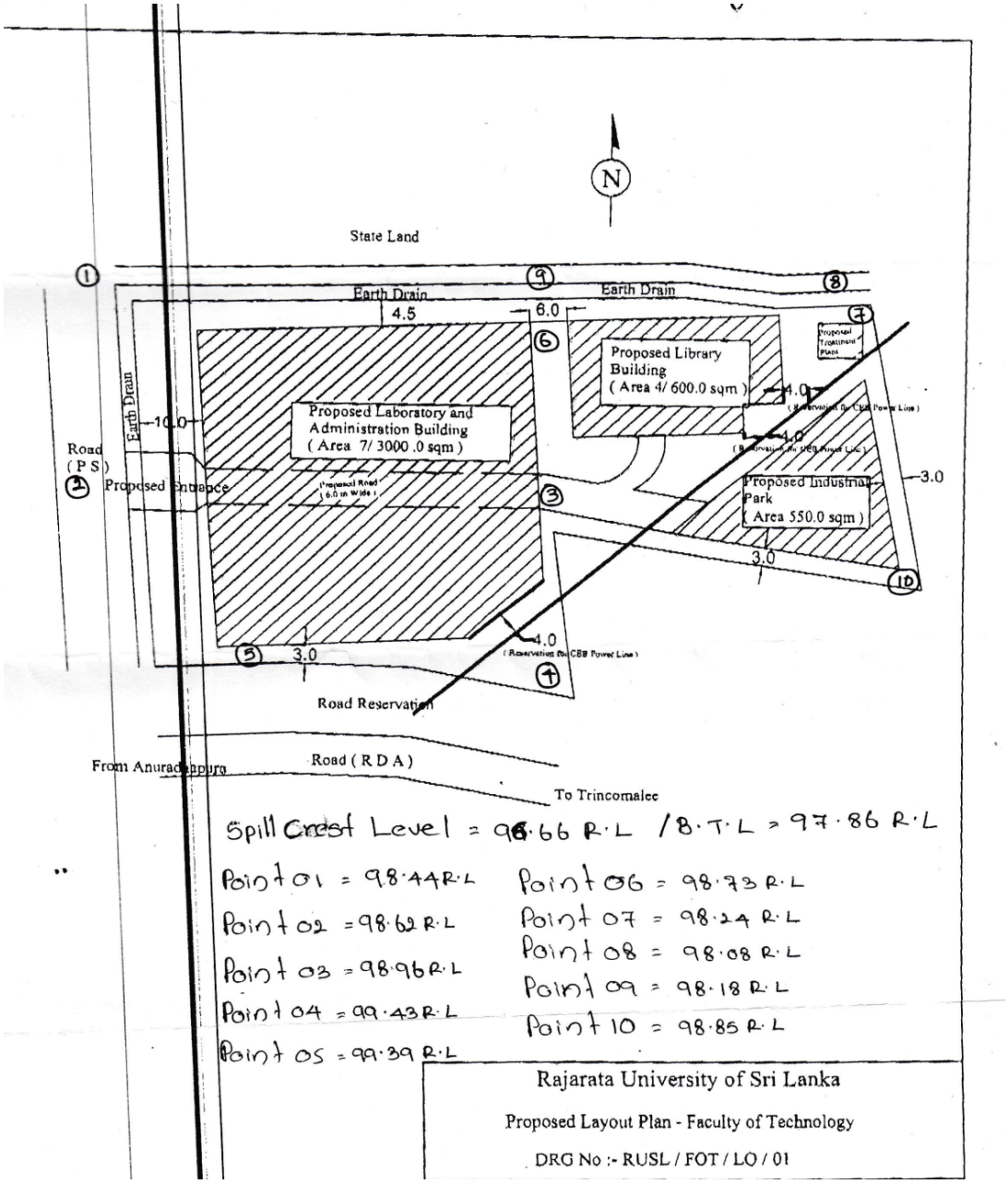
Table 10: provided detail specification of some of the laboratories that have been proposed in the academic building.

Facility	Area sq ft
Faculty board room	2500
Six Academic departments	15000
Academic staff rooms	10000
General Administration	3000
Auditorium	10000
Lecture halls	12600
Seminar room	2500
Drawing room	3000
Physical laboratory	3500
Chemistry laboratory	3500
Biological Laboratory	3500
General computer lab	2500
Labs for bio system technology	Biosystem technology Molecular biology lab Micro Biology Laboratory Tissue Culture Laboratory Immunology Laboratory Cell Culture Laboratory Bio technology lab Bio processing lab
Labs for food technology	Food Microbiology Accredited Laboratory Research Laboratory
Electrical and Electronic Technology	Electronics Lab 1800 sq ft Electrical Power Lab 3000 sq ft Robotic & Automation lab 1800sq ft Telecommunication lab 1800 sq ft Computer Lab 2000 sq ft Advanced Research lab 1000 sq ft Students common area 2000 sq ft Library 1000 sq ft project lab 2000 sq ft demonstrator room 500 sq ft Report room & Submission area 900 sq ft

Materials Technology	Network and security lab Hardware Technician Laboratory Robotics Laboratory Virtual Reality Laboratory IOTA laboratory
Faculty library	1500
Student common area	10000
Industrial park- three rooms	(DATA NOT RECEIVED TO DATE)
Land Use	Bare land adjacent to the University of Rajarata. Already developed land with Divisoinal Secretariats quarters (subsequently demolished).
Cafeteria two	1,000
Total extent of the building	(DATA NOT RECEIVED TO DATE)

75. At the moment the RUSL has not appointed any architect for the detail engineering designs. Only available information is the estimated details prepared by the faculty staff Faculty of technology at RUSL.

Figure 7:Layout Plan



76. The rough layout plan for FCT of RUSL is shown above in Figure 07. The site plans and 3D views will be developed later. At the time of this IEE preparation the detailed layout plan was not available. INFORMATION NOT AVAIBLE TODATE

Figure8:3D diagram of the faculty of technology RUSL

77. The FT is designed based on the green building concept that includes energy saving systems such as inverter type air conditioning, LED lighting and rain water harvesting. The wastewater that is generated from the facility will be directed to a treatment plant and then released for irrigation within the premises. The building structure will be designed on a slab and beam with Alume Zinc roofing (marine quality). All doors and windows will be powder coated aluminum. Other design considerations include fire safety, air conditioning, septic tank for collection of waste water and sewage, and landscaping the layout plan of FT of RUSL is shown below in Annex 8.

a. **Culvert:** There is a culvert across the access road leading to the project site. Considering the hydrological requirement, some additional culverts and replacement of some culverts would have to be proposed for the project.

b. **Road side drain**: Roadside drains shall generally be provided on both sides of the embankment to safely carry the discharge from the embankment without eroding the pavements.

c. **Utilities**: To facilitate utilities to the FTP which may include electric lines and poles, fiber optics, waterlines, etc., sufficient space should be provided on both sides of the access road. The size of pipes to carry utilities will be based on FT occupancy size and utilities needed.

d. **Land Acquisition**: RUSL has secured adequate land to build the faculty. Project will be built on 2 acre 14.9 perches land which is owned by RUSL. The land was given by the District Secretariat, Mihinthale to the University. The strategic location of this faculty will enhance the opportunity for students to carry out their academic and practical assignments while accessing other facilities of the main University.

e. **Demand analysis study**: Detailed analysis on demand for graduate students will be carried out to justify the public investment for the FT project will be carried out as a separate assignment by ADB. It will analyze and identify the demand for technology graduates in the labor market to justify the public investment in the technology education and on proposed FT project.

f. **FT improvement proposal:** The primary objective of the proposed Faculty of Technology at the RUSL is to exploit the Technology Stream Degree Programmes

(TDPs) for training graduates who have the capacity to contribute to the country's technological advancements and initiatives.

g. There will be more reforms within the FT university system such as:

- Implementation of modern teaching practices; rather than the conventional practices. students will be placed in industrial training and research projects.
- Establishment of expedient collaborations with the industry: this will help the students to receive continuous mentoring from the industry that will provide them the competency to enter the job market.
- To facilitate interaction with the industrial sector and academia and industrial consultative committee is formed to identify the industrial and economic needs of the country.
- Formation of the industrial cell that will help the private sector industries to find solutions for their problems and work with the academia.
- The FT at RUSL has developed collaborations with foreign universities such as Chalmers University of Technology and Gothenburg University both in Sweden. Over the years the faculty members of these two institutes have been contributing to establish new syllabi in the technology stream. There are student faculty exchange program established with Gothenburg University. These mechanisms have assisted in capacity building and continuously supporting and improving the quality of the technology programs offered at the RUSL.
    - Establishment of the proposed TDPs and curricula.
    - Engagement of active learning for curriculum delivery and changing the learning process from fundamental to hands-on.
    - Inculcating innovation into the teaching and learning environment of the Faculty.
    - Revitalizing the efficiency and effectiveness of library and laboratory facilities.
    - Establishing industry-specific skills and soft skills among graduates through in-plant training and establishment of incubators.
    - Strengthening interactions between the University and its surrounding communities.

- Revision of academic regulations and administrative policies.

77 **Development of infrastructure**: Under the FT teaching and research buildings will be established at the site. The FT at the RUSL has pioneered new teaching and learning approaches with practical assessments and industrial placement. Therefore the laboratory and the academic building at the FT will be developed with educational equipment that caters for these specific requirements.

78 **Building safety design and devices**: The building must have built-in alternative emergency evacuation routes for speedy evacuation of occupants during an emergency. In case of a major fire, the building components should withstand the fire for a nominated time period without a catastrophic failure occurring until all occupants safely vacate the building. Fire Precautions for Buildings: During the building design the Code of Fire Precautions for Buildings would have to be applied i.e. ICTAD Publication No. ICTAD/DEV/14 that deals with the regulations on fire prevention in a building. There are many more periodic maintenance requirements to be fulfilled to ensure structural integrity, user safety and internal hygienic environment of the building. Apart from the above the manual on 'Energy Savings in Buildings' developed by Sri Lanka Sustainable Energy Authority and the Construction Material Specifications developed by the former Institute for Construction and Development should be referred.

79 The building should have fire safety mechanisms installed to ensure fire compartmentation, separation and fire suppression. The portable and built-in fire-fighting equipment and apparatus must be in place at correct locations and at optimal operational levels for the fire brigade to control the fire.

80 **Sources of Construction Materials**: Soil and material investigation for a FCTP is very essential to assess the availability of suitable construction material in the vicinity of the project. This includes investigation of suitable borrow area for borrowing earth and quarries for stone /aggregate material and also for the other construction materials like cement, steel, sand, soil etc. ICTAD/DEV/17R specification will provide the guidance on site investigation for building and civil engineering works.

- **Borrow Areas:** Potential sources of earth for the construction of embankment and soil infilling needs to be identified by the consultant design engineers and the contractors for the project at RUSL. The suitability of borrow materials can be checked

by laboratory tests such as proctor compaction test, gradation test, liquid limit plastic limit etc.

- **Cement**: Local and imported cement in bag or bulk form is available for construction. Cement shall conform to SLS 107 for building. Normal Portland cement can be used for the construction however this should be based upon the recommendations of the geotechnical report.
- **Cement block & clay bricks**: These should be tested according to SLS 847 and SLS 39 for compressive strength, dimensions and water absorption.
- **Steel**: High strength deformed bars manufactured by various steel manufacturing companies conforming to SLS standards are available. Before incorporation into the work, steel should be approved by the Engineer.

81 **Quality Control of Earth Work**: This includes excavation, filling and leveling of the earth work. The failure of quality control of earth works in building construction sites would lead to ground subsidence, cracks and structural failure in a part of or whole building .To minimize the delay during progress of earth filling work, it is necessary to select borrow materials well in advance to the earth filling work because it will take a considerable time duration for selecting, testing, obtaining approval etc. of borrow materials.

82 According to the site condition, it is necessary to select suitable machines for spreading, leveling and compaction. The capacity of the machine and size of the blade are important factors for selection. After completion of each layer of compaction, dry density has to be checked as specified in the specifications. The failures of earth compaction compliance with the specifications may cause future settlements, erosions or subsidence.

83 **Cost of the Project** : The total cost estimated for major items associated with the proposed project (including earth work, pavement, drainage structures and construction of buildings) have been established by application of appropriate unit rates to the estimated work item quantities derived from the results of surveys, test results and design analysis for the project. The estimated cost is XXX million.

Table 11: Project cost as per the submission to National Planning Department

Item & Description	Estimated Cost (Rs.) Millions	Year 1	Year 2	Year 3	Year 4
Buildings and infrastructure	1600	700	600	200	100
Lab equipment	800	200	180	240	180
Lab furniture, IT and Office equipment	360	100	200	60	-
Books, journals and e-journals	90	40	20	20	10
Vehicles	50	30	10	10	-
Other	30	10	10	5	5

Table 12: Recurrent Expenditure

Year	Salary cost (Rs.) Millions	Other recurrent cost (Rs.) Million	Total Cost (Rs.) Million	New Intake (No. of Student/Year)	Average Recurrent Cost / Student (Rs.)
Year 1	45	20	65	245	265306
Year 2	96.42	20	116.42	275	221752
Year 3	158.94	30	188.94	300	230414
Year 4	220.14	30	250.14	350	213794

3 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

3.1 Applicable Measurable Environmental legislations

84. In Sri Lanka, there are over 70 laws that directly or indirectly relate to protecting and conserving the natural environment and human health. While most of these laws address specific issues pertaining to environment in the respective sector, it was the introduction and enactment of the National Environmental Act (NEA) that provided the overarching legal basis for regulation of pollution and protection of the environment in a comprehensive manner.

85. The following section outlines the broad legal and institutional framework in Sri Lanka for environmental management, relevant to the proposed project. The legislations relevant to the project are listed below. Further details are provided in Annex 09. This project comes under the purview of the following sector level Acts. The EPL procedure under the CEA is explained in Annex 09 along with the rest of the laws that are listed below

a) The Constitution of Sri Lanka (Articles 18, 27(14), Articles 154 (A), 9, 19 and (III) 17)
b) National Environmental Act No. 47 of 1980 (and its amendments of 1988) EIA is covered under this Act
c) Antiquities Ordinance (Chapter 188) any archaeological reserve, ancient or protected monument
d) Disaster Management Act No. 13 of 2005
e) Pradeshiya Sabha Act No. 15 of 1987
f) Flood Protection Ordinance, Act No. 22 of 1955
g) Irrigation Act No 23 of 1983
h) State Land Ordinance, Act No. 13 of 1949
i) Soil Conservation Act, No. 25 of 1951
j) Mines and Minerals Act No. 33 of 1992
k) Fauna and Flora Protection Ordinance, Act No. 49 of 1983
l) Forest Ordinance, No 17 of 1907 (and amendments)
m) National Water Supply and Drainage Board Law of No. 2 of 1974

n) National Policy for Rural Water Supply and Sanitation of 2001

o) Prevention of Mosquito Breeding, Act No. 11 of 2007

p) The Urban Development Authority, Law, No 41 of 1978

q) Municipal Council Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29 of 1947, Act 18 of 1979, and Act 13 of 1979

r) Land Acquisition Act No. 09 in 1950 and subsequent amendments in 1983 1nd 1986 Land Acquisition Regulations of 2008

s)National Environmental (Amendment) Act 47 of 1980 and its amendments

86. This is the law that incorporates and covers all aspects of the environment in Sri Lanka. The National Environmental Act (NEA) No. 47 of 1980 is the basic national decree for protection and management of the environment. The NEA has gone through several amendments in the past in a bid to continually improve and to respond to the challenging conditions. There are two main regulatory provisions under the NEA which is implemented by the Central Environmental Authority (CEA).

87. The Environmental Impact Assessment (EIA) procedure for major development projects has been published in 1993 and is available with the CEA. The EIA process is implemented through designated Project Approving Agencies (PAAs). The screening, scoping, formulation of initial environmental examination (IEE), environmental management plan (EMP) and procedures for IEE and EMP disclosure and public comments will be governed by NEA of 1980 and its subsequent amendments of 1988 and 2000, and by environmental regulations. Under the national regulations, the current development project of the FT does not require an IEE because it is not within a designated protected area.

88. The Environmental Protection License (EPL) is a procedure for the control of pollution. Regulations pertaining to this process have been published in 1990 and are available with the CEA EPL is issued on the regulations are gazette under Gazette Extraordinary No. 1533/16 dated January 25, 2008, for a variety of sectors involving in manufacturing, construction and services.

89. **Conclusion**: Under local legislation, an IEE is not required as the development is categorized in the “un - prescribed projects. However, CEAs consent for the projects

under non-prescribed category has not been obtained; the process would have to be initiated for an EPL. For this purpose the filled BIQ is in Annex 5.

90.

91. National laws and regulations that can be relevant to the project are briefly described in Table E4. Details on these applicable laws are covered in Annex 09.

92. **ADB Safeguard Policy Statement, 2009.**The Asian Development Bank has defined its Safeguard requirements under its 'Safeguard Policy Statement 2009 (SPS 2009). The prime objectives of safeguard policy are to: (i) avoid adverse impacts of projects on the environment and affected people, where possible; and (ii) minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible. This policy requires assessment, mitigation and commitment towards environmental protection. The extent of assessment depends on the category of the project. ADB's SPS 2009 classify a project depending on following three categories.

- **Category A:** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An Environmental Impact Assessment is required.
- **Category B:** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, none or very few of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An Initial Environmental Examination is required.
- **Category C**: A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

93. **Conclusion**: The proposed project cause environmental impacts which are less adverse in nature and few of them are reversible and mitigation measures can be designed more readily for the identified impacts. To assess the impact the REA, IP and IR Checklist

of ADB was followed as per the ADB's Safeguard Policy Statement the proposed FCT project of RUSL has been classified as Category 'B' project requiring Initial Environmental Examination (IEE).

a. It also aims to identify any potential negative environmental or social impacts in the immediate vicinity or surrounding areas that maybe short term or long term. Accordingly a single consolidated IEE report is submitted for ADB to facilitate their decision making Clearances required for the Project.

b. summary of the statuary clearances required for the FCTP is presented in Table- 13

Table 13: Statutory Clearances required for the Project

Type of Clearance	Activity	Authority	Timeframe
Environment Clearance Environmental Protection Licensing) Regulation No. 1533/16of 2008	Implementation of the project and waste water treatment guidelines.	CEA	Before construction
Archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188) Antiquities (Amendment) Act No. 24 of 1998	Consent to build the FT at the selected site.	Department of Archeology	Before construction
Permission for storm water drainage and infilling	Implementation of the project. On regulations pertaining reservation of Mihintale Tank.	Irrigation Department	Before construction
Clearance for development activities Green building certificate	Implementation of the project and construction of the building. They will direct to relevant authorities.	UDA	Before construction
Local Government Authorities building approval	The Municipal Councils, share the powers regarding the approval of buildings plans, control of solid waste disposal, sewerage and other public utilities. Adhere to building regulation.	Local Authority (Mihintale Pradeshiya Saba)	Before construction
Approval for removal of trees on site	Site clearance to have space for the building and to provide access and material storage.	DS	Before construction
Consent from relevant government agencies	Construction of building and culverts and other drainage systems etc.	UDA, Irrigation	Before construction

		Department, RDA, CEA	
Consent from Ceylon Electricity board	Obtaining the electricity supply for the FT complex Relocation of high tension lines to obtain maximum space for building design.	Ceylon Electricity Board	Before completion of the building
Water Supply	Supply of potable water for the facility and supply during the construction.	NWSDB	At commencement of project.

Source: Compiled by TMS

94. Apart from the clearances for the overall project work, the contractor, before starting the construction work, has to obtain required Clearances listed in Table-14. for operating his equipment and carrying out construction work

Table 14: Clearance required to be obtained by the Contractor

No	Construction Activity & Type of Clearance Required	Statutory Authority	Statute Under which Clearance is Required
1	Consent for establishment of Stone Crushers and Cement Mixing Batching Plant	CEA	National Environmental Act No. 47 of 1980
2	Permission for withdrawal of groundwater for construction	NWRB/	National Water Supply & Drainage Board Law, No. 2 of 1974
3	Permission for extraction of sand, metal from soil	Geological Survey and Mines Bureau (GSMB)	Geological Survey and Mines Bureau (GSMB) Act No. 33 of 1992
4	Location and layout of workers camp, & equipment and storage yards	Mihintale Pradeshiya Saba	Local Government Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29of 1947, Act 18 of 1979, and Act 13 of 1979
5	Discharges from labour camp	CEA	National Environmental Act Act No. 47 of 1980 National Environmental (Protection & Quality) Regulations, No. 01 of 1990
6	Disposal of solid and liquid waste	CEA	National Environmental Act No. 47 of 1980
7	Noise and dust pollution during construction activities	CEA	Air (Prevention and Control of Pollution) Act, 1981

			National Environmental (Noise Control)Regulations No. 01 of 1996
8	Disposal of spoil material garneted during building and construction and demolition of already existing building	Mihintale Pradeshiya Saba CEA	National Environmental Act Act No. 47 of 1980
9	Revenue license for the heavy machinery and other vehicles at the work site	Office of provincial Commissioner for Motor Traffic the vehicle is being registered	Motor traffic Statute of Western Province No 7 of 1991.
10	Engagement of Labour - Labour License	Labour Commissioner	Shop and office Employees Act 1934 Employees' Trust Fund Act No 15 of 1980 established the Employees' Trust Fund (ETF). Employees' Provident Fund Act of 1958 Municipal Council Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29 of 1947, Act 18 of 1979
11	Engagement of Labour- • Social Security- • Labour Welfare- • Wages	Labour Commissioner (Ministry of Labour and Employment	The Employees' Provident Fund Act, 1958 & Miscellaneous Provisions 1975 Workmen's Compensation Ordinance of 1935 and subsequent Amendments hop and Office Employees (Regulation of Employment and Remuneration) Act, 1954 Factories Ordinance, 1942 2010 on fair treatment

95. Construction and Demolition Waste: When obtaining permission for building construction, a plan should be made available as to how to dispose the waste that is generated on site.

96. Every waste generator shall be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated separately; deposit at collection centre so made by the local authority.

97. LA shall be responsible for proper management of construction and demolition waste within its jurisdiction including placing appropriate containers for collection of waste, removal at regular intervals, transportation to appropriate sites for processing and disposal **Table 15** Timeframe for Planning & Implementation.

Table 15: Timeframe for Planning & Implementation

Sl. No	Compliance Criteria	Duration
1	Identification of site for collection and processing facility	3 month
2	Commissioning and implementation	5 month
3	Monitoring by SPCBs	3 times a year

98. Present feasibility and cost for equipment and building of the FT at RUSL is not completed at the time of this report preparation. Bidding document will be prepared for FT in September 2018 and technical bids will be evaluated. The contracts for the civil works of this project are expected to be awarded by XXX. DATA NOT AVAILABLE AT THE TIME OF REPORTING.

3.2 Administrative Framework

99. **Central Environmental Authority**: The CEA basically designs the scheme, procedures and standards to control the water, air & noise pollution, land degradation and hazardous substances and waste management.

100. CEA advise the MOMDE on matters concerning prevention, control and abatement of water and air pollution; coordinate the activities of CEA & provide technical and research assistance; prepare manual, codes, guidelines & standards etc.

101. RUSL will be required to obtain an environmental recommendation letter or EPL from CEA. The NEA regulations stipulates that canteen facilities which provide seating capacity for about 500 student at a time will fall under EPL category B.

102. According to the BIQ, the proposed project falls in to the un-prescribed category. According to the BIQ and IEE/EIA Environmental Guidelines of CEA, the proposed project falls in to the non-prescribed category. Therefore environmental clearance for an IEE will not be required from government of Sri Lanka. CEA consent for the FT

development project under un-prescribed category has to be obtained through a letter. (Annex 05- BIQ has been filled out and ready to be submitted to CEA for environment clearance).

103. The domestic waste water that will be generated during the operation of the facility will be collected to a septic tank and disposed at regular intervals. Before discharge water quality should conform to regulations No. 1534/18 dated 01.02.2008.

104. Coordinate with the Department of Archeology, Anuradhapura Division during the land preparation activities and develop a conduct of protocol for the contactor in case any antiquities are found at the site.

105. Consult the Engineer Provincial Irrigation Office, Kahatagasdigiliya on the proposed detailed drain plan for the site. The provisional approval letter states that no effluent from the university premises should not be discharged to the Mihintale Tank and that under no circumstances should the RUSL block any drainage paths proposed in the survey plan.(refer annex 10)

106. Liaise with UDA and obtain and approval for the project. The area is already demarcated as an institutional and educational zone under UDA 2030 zonation plan for the Mihintale divisional secretariat. Consult the UDA to obtain the green building certificate.

107. Coordinate with the Mihintale Pradeshiysa Saba on the solid waste disposal until the composting and bio gas plants are established. Obtain the assurance or agreement to remove the sewage until the waste water treatment plant is re-commissioned. Without any treatment, waste water should not be disposed to any of the peripheral drainages at the new FT.

108. Since water is a limiting factor for the project area during the dry month before construction water supply should be obtain to the project site. Already the university is served with separate water supply line. Liaise with the NWSD and assess whether the existing connection could serve the demands of the new technology faculty at RUSL.

109. Consult the Anuradarapura Division CEB to obtain the required grid supply to operate the equipment at the new building. Before construction and design check the possibility of relocating the high tension wires located at the eastern boundary of the project site. Relocation of these would ensure the safety of the students and longer lifecycle of equipment and property at FT in Rajarata.

4 DESCRIPTION OF THE ENVIRONMENT

4.1 Methodology used for Baseline Study

110. Data collection and stakeholder consultations. Data for this study has been primarily collected through comprehensive literature survey, discussion with stakeholder agencies, and field visits to the proposed site.

111. The literature survey broadly covered the following;

i. Project details, reports, maps, and other documents prepared by technical experts of the ADB PPTA team and discussions with technical experts of the PIU of RUSL team, local authorities, relevant government agencies like UDA, Department of Archeology, CEA, Irrigation Department etc.

ii. Secondary data from previous project reports and published articles, and literature on land use, soil, geology, hydrology, climate, socioeconomic profiles, and other planning documents collected from government agencies (including the resource profile for the area) and websites.

iii. Several visits to the project sites were made during IEE preparation period between Oct 2017 to May 2018 to assess the existing environment (physical, biological) and gather information with regard to the proposed sites. No separate studies were done on the monsoonal floods or biodiversity at the selected site as it was not deemed necessary. However published scientific papers on avifaunal species diversity for the area were reviewed.

iv. During the site visit, the REA, IP and IR checklists were filled and the findings incorporated in the IEE. In addition activities such as assessment of the existing location and the surrounding environment identification of sensitive areas, consultation with the local officers in the department of archelogy, key informant interviews were carried out. Other reliable information was collected from villagers and respective authorities during public consultation meetings.

4.2 Location Area and Connectivity

112. Geographically, the project area is located at 8021′38.74″ N latitude & 80030′12.18″ E longitude in the Mihintale Pradeshiya Saba limits of Anuradhapua District, North Central Province. The Project is located in the Mihinthale Divisional Secretariat that

covers an area of 23,822 ha. Total population of the area is 35,898 and 10,686 housing units were recorded for the area. Mihintale Divisional Secretariat consists of 84 Grama Niladhari divisions. The project area connects to townships Mihintale, Anuradhapura and Rabawa. Project site is in the No 577 Mihintale GN division having a land extent of 880ha.

113. The proposed project site is adjacent to the current RUSL Campus on the western boundary. The land frontage is to the main A12 road. The project site is located closely to several archeological site and these have been demarcated in Figure 6 in Chapter 2.

114. Mihintale GN division is an urban area which is developing due to the influx of the student population of the RUSL. Mihintale GN divisions have archeological monuments that are crucial for the Sri Lankan Buddhist culture. The site is located close proximity to several important mineral resources such as Eppawella mineral deposit, Pulmudai Mineral (Zircon, Ilmanite, and Rutite), deposits, Kaikawala Feldspar and Quartz deposits, NamalUyana Rose Quartz deposit, Yan Oya. As one of the main highways are connect to the university Mawathagama Export Processing Zones (EPZ) in Kandy would be easily accessible. The site is located 16 km form the Anuradhapura town, 100km from Polonnaruwa and 134km to Kandy. Refer Index Map - Figure 2 for location.

115. There are several crucial environmental challenges facing the Mihinthale DSD including human elephant conflict, deforestation and non-demarcation of wildlife management areas, improper land use planning, improper waste disposal, water pollution due to agricultural activities etc.

4.3 Land Use

116. The land use system of the region is dominated by home gardens (848.67 ha) and forest. Total land use is dominated by agricultural lands which covers 12,000.15 ha. Agriculture is the main livelihood. People engage in extensive crops such as maize, kurahan, Undu, chili etc. About 17 ha of land is under shift cultivation and is rainfed[6]. Vegetables are

[6] Mihintale DSD Resource profile 2017

cultivated in a traditional slash-and-burn practice called Chena cultivation[7]. The communities surrounding the sanctuary depend on non-timber forest products such as honeybees, food sources, and medicinal plants.[8]

117. Vegetation such as green gram, black eye beans, maize, chili, soya beans, gingerly, undu, big onions, banana, passion fruit, and guava are grown in the home gardens and chenas. The proposed site is and already developed residential space.

118. Table 16 highlights the land use patterns in the DSD. Mihinthale tank located 190m from the project site covers an area of 49.3392ha.

Table 16: provides details on the land use pattern in the division

Lands (Goda)		Muddy Lands	
Cultivable lands (ha)	Cultivated lands (ha)	Cultivable lands (ha)	Cultivated lands (ha)
5382.95	4697.45	6618.3	4873.2

119. Livestock: Livestock practices in the Mihinthale DSD include cattle farms that produce 1,574 L of dairy production per day. Poultry farming is common to the region. Table 17 provides details on the Livestock farming practices in the DSD.

Table 17: Details on the Livestock farming practices in the DS

Cattle			**Buffalo**		**Goats**		**Pigs**	**Poultry**	
Local Cattle (no)	Daily Dairy Products (liters)	Hybrid cattle (no.)	Daily Dairy Products (liters)	Farms of Buffalos (no.)	Daily Dairy Products (liters)	Goat Farms (no.)	Farms (no)	Eggs (no)	Meat (no)
478	1574	445	741	632	907	414	15	1055	88

[7] Schütt, B.; Bebermeier, W.; Meister, J.; Withanachchi, C.R. Characterisation of the Rota Wewa tank cascade system in the vicinity of Anuradhapura, Sri Lanka

[8] Evaluating temporal changes of vegetation using tm data at Mihintale divisional secretariat in Sri Lanka: Madurapperuma,B. Kuruppuarachchi,J National Symposium on Livelihoods, Biodiversity and Ecosystem Services 2013

4.4 Seismicity

120. The project is located in the North Central province of Sri Lanka which is not an active seismic region. The area does not have any potential risk of damage due to earthquake. However the stability of the bedrock and peat soil should be considered during building design.

121. Mihinthale has a tropical climate and North East monsoon is the main rainfall period. It starts at the beginning of November and ends in January. The highest rainfall recorded in 2016 was 463.1mm per day.

4.5 Geology, Soil and Topography

122. The soil cover is composed of reddish brown earth. The bedrock is composed of metamorphic crystalline rocks, first of all charnockitic gneiss[9]. The DSD is composed of rain fed tank cascaded system.

123. At the time of this report preparation, the soil report was not available. Therefore, no recommendation on the building structure have been provided. INFORMATION NOT AVAIABLE TODATE

124. The initial designs of FT academic building and the faculty libaray should consider that net allowable carrying capacity of XXXMN/m^2. The carrying capacity in skin friction within the basement rock or the ultimate skin friction coefficient is XXX kN/m^2. It is recommended that ICTAD recommended guidelines and propose the design should be referred to when preparing the detailed engineering designs. Refer the geotechnical soil assessment recommendation. INFORMATION NOT AVAIABLE TODATE

4.6 Climate and Meteorology

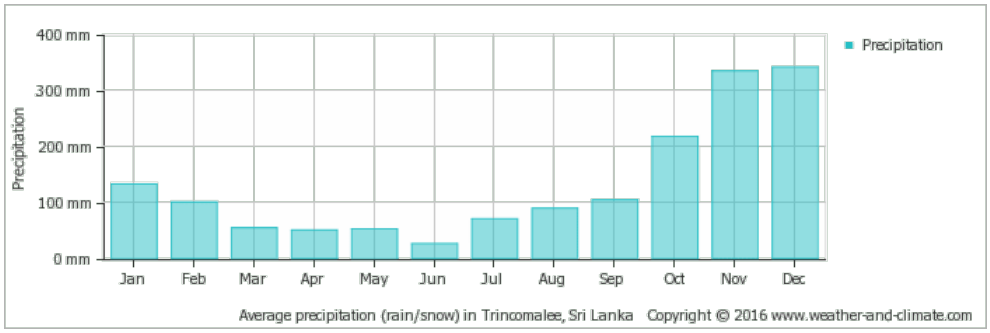
125. Climate conditions in the study area: Mihintale division lies within the dry zone and according to agro ecological classification, the project area comes under the category of Dry zone Low Country (DL1b)[10]. It experiences a non-uniform rainfall pattern and receives rainfall mainly from the North Eastern monsoon season and during inter-

[9] Somasekaram, T. *The National Atlas of Sri Lanka*; Sri Lanka Survey Department: Colombo, Sri Lanka, 1988;pp. 1–141
[10] Panabokke, 1996

monsoon periods. Due to the geographical specialty of being centrally located, Mihinthale DS, except a few months, has a dry climate.

126. **Rainfall** The region experiences roughly two main rainy seasons in January–April and September–December. The most rain falls during the 31 days centered around *November 8*, with an average total accumulation of 212 mm. Rainfall and Temperature details of the project area are given in Figure 09. The least rain falls around June 28, with an average total accumulation of 17 mm. High evapotranspiration rates foster water stress, especially during the period between May and September[11].

Figure 9: Average monthly precipitation over the year (rainfall) at the project site



127. Past meteorological data was collected from the nearest Anuradhapura air force station for the period of January 1, 1980 to December 31, 2016 establishes the baseline climatic conditions of the area. The key parameters of collected meteorological data have been summarized in Table 19.

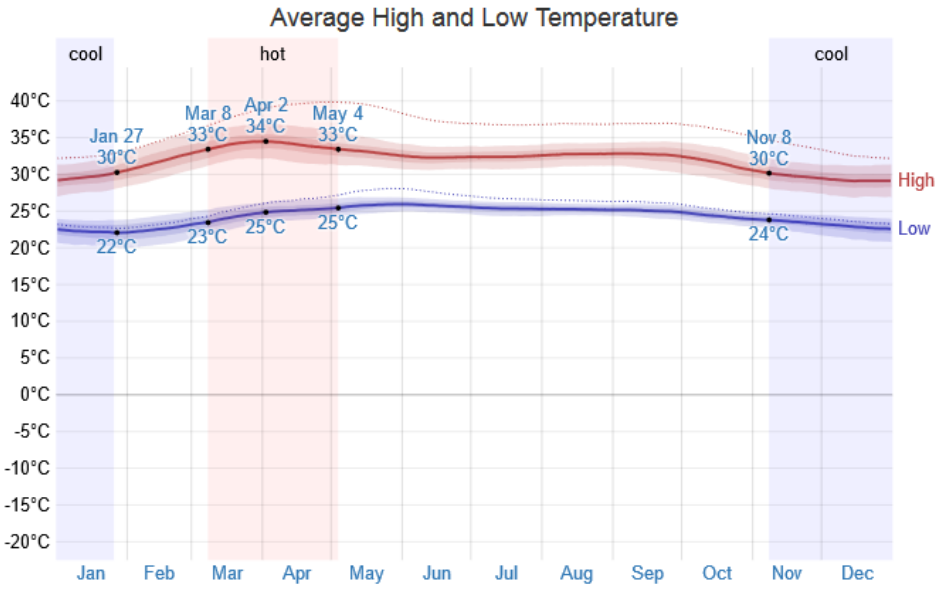
Table 18: Summaries of the Climatological Data

Parameters	**Amount**
Maximum Temperature(^{0}C)	29 ^{0}C
Minimum Temperature (^{0}C)	26.6 ^{0}C
Maximum Relative Humidity (%)	95%
Minimum Relative Humidity (%)	5%
Total Rainfall (mm)	1034.6 mm
Average Wind Speed [CK1]	10 mph
Predominant wind direction	From the West
Dry hours (%)	More than 90%

[11]Panabokke, C.R.; Sakthivadivel, R.; Weerasinghe, A.D. *Evolution, Present Status and Issues Concerning Small Tank Systems in Sri Lanka*; International Water Management Institute (IWMI): Colombo, Sri Lanka, 2008

128. **Temperatur**e The dry season is windy, hot, and oppressive. The hot season lasts for 2 months, from March 9 to May 10, with an average daily high temperature above *34°C*. The hottest day of the year is April 1, with an average high of *35°C* and low of 24°C. The cool season lasts for 2.6 months, from November 9 *to* January 27, with an average daily high temperature below 30°C. The coldest day of the year is January 27, with an average low of 22°C and high of 30°C. The monthly mean minimum and maximum daily temperature chart shown in centigrade is given in Figure 10.

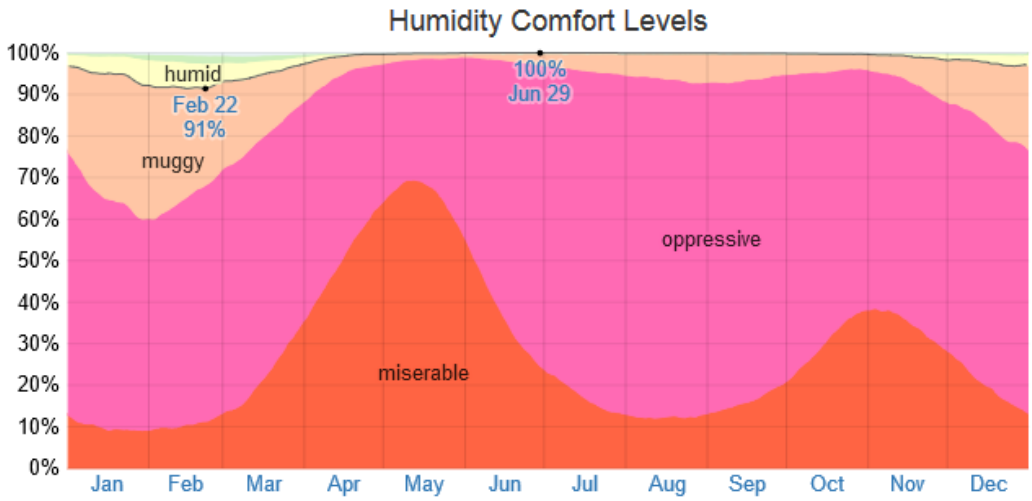
Figure 10: Variation of Temperature Average in the Project Area



The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.

129. **Humidity**. The perceived humidity level in Anuradhapura, as measured by the percentage of time in which the humidity comfort level is muggy and oppressive does not vary significantly over the course of the year, staying within 4% of 96% throughout (refer figure 11).

Figure 11: Humidity comfort level



The percentage of time spent at various humidity comfort levels, categorized by dew point: dry < 13°C < comfortable < 16°C < humid < 18°C < muggy < 21°C < oppressive < 24°C < miserable.

130. **Wind speed and direction:** In recent times Kannattiya and Ruwangama in the Mihintale Divisional Secretariat recorded a tornado[12]. The wind experienced at any given location is highly dependent on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages. The windier part of the year lasts for 4.9 months, from May 11 to October 7, with average wind speeds of more than 17.4 km per hour. The windiest day of the year is June 18, with an average hourly wind speed of 25.6 km per hour according to the annual records. The calmer time of year lasts for 7.1 months, from October 7 to May 11. The calmest day of the year is April 3, with an average hourly wind speed of 9.2 km per hour.

131. **Drainage and the River Systems:**

Since ancient times and to date the region is known to collect surface runoff and store in human-made reservoirs to provide water for irrigation. The two main rainy seasons in January–April and September–December, surface runoff is collected and stored in these reservoirs, the so-called tanks or wewas, and successively distributed during the

[12] "Tornado devastates Kannattiya, Ruwangama" 4.10/2017 : Daily News

dry periods to the paddy fields located downslope[13]. The tanks are arranged in a cascade-like fashion along shallow valley courses. They are connected by canals and spillways and build a complex system of floodwater harvesting, water storage and water distribution.

132. In Mihinthale DSD, there are 100 tanks and all these are rainfed. There are several tanks located near the University premises and these are Mihintale, Mahakandarawa, Pudukkulama and Ukkulan Kulama tanks. Table 19 provides information on the closest tanks to the project site.

Table 19: Tanks in a 10 km perimeter to the project site

No	Name of Tank	Distance from RUSL
01	Mihinthale Wawa	0.26Km
02	Mahakanadarawa Wawa	3.71Km
04	Mankadawala Wawa	6.73Km
07	Pudukkulama Wawa	4.15Km
08	Ukkulan Kulama Wawa	4.68Km
09	Sangilikulama Wawa	5.99Km
14	Mankadawala Tank	6.71Km
17	Kawarakkulama Wawa	6.45Km
21	Saliyapura Wawa	7.41Km
22	Nika Wawa	8.53Km
23	Mekicha Wawa	8.50Km

132. There are few agricultural wells which provide water for agriculture in the area. There are 1,040 agricultural wells out of which only 853 are being used. A list of agricultural wells in the GN divisions close to the project site is provides in Table 20.

Table 20: agricultural wells in the project associated GNs

Description GN	Total number of agricultural wells	Unused agricultural wells	Used agricultural wells
576 Kahapathwilagama	16	22	100.5
577 Mihintale	3	1	4.5
578 Ruwangama	38	0	22

[13] Tank Cascade Systems as a Sustainable Measure of Watershed Management in South Asia. Bebermeie, W.,Meister, J., Withanachchi, C.R., Middelhaufe,I and Schütt,B.Water 2017 (9) 231

579 Namalwewa	16	6	15
Total no of well in the DSD	**1040**	**238**	**853**

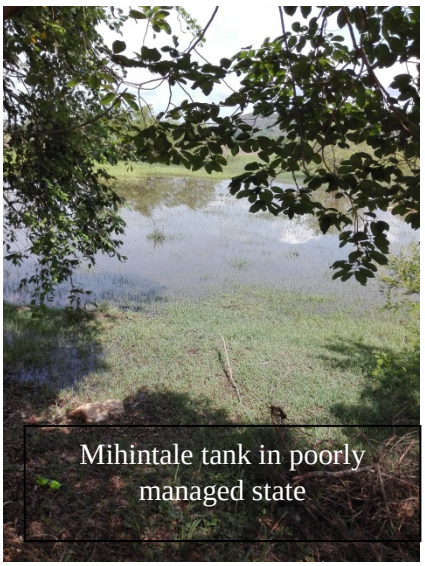
Source : Mihintale Division Resource Profile 2017

133. There is no proper assessment done for the possible risk of flooding due to monsoonal weather in October. The site should be developed in accordance to the drainage plan to avoid possible risk of water logging at the site. Mihintale tank is currently highly polluted due to release of waste and non-maintenance and neglect. Poorly manage Mihintale tank is visible in Figure 12)

134. **Conclusion**: On site observations show that currently project site is supported by a poor drainage system which is not regularly cleared nor maintained properly. Figure 20 show the drainage system surrounding the sit.

Figure 12: Plates of drainage system in surrounding the sit

A 12 road is in high grown and water is logged at the site during the monsoon



Mihintale tank in poorly managed state

135. The university is served by a special potable water connection from NWRDB. Water for the FT can be supplied through this connection. However NWRDB had not been contacted at the point of this report.

4.7 Ambient Air Quality and noise

136. To draw up a baseline status of the ambient air quality the RUSL will take the measurements prior to the commencement of the development project.

137. To assess the baseline value for the background noise level, ambient noise monitoring will be conducted by the RUSL prior to the construction activities at the site.

4.8 Surface and Ground Water Quality

138. The baseline data on water quality will be collected for two locations within the project area by the RUSL and will be monitored, analyzed and assessed during the construction and operational period. The water quality results will indicate quality of the adjoining surface water. An assessment of water quality will be done to check coliform count, BOD, COD to obtain the baseline value. Before the construction, it is recommended that the above test be carried out.

139. The geotechnical report should records the groundwater quality and its pH value. The pH values of selected agro-wells in Malwathu Oya cascade-I varied between 7.2 and 8.4 in pre monsoon period, which indicates the alkaline nature of groundwater in the study area[14] However, the groundwater potential in this region is limited due to low ground water storage capacity and transmissivity of the underlying crystalline basement hard rock[15].

140. The shallow regolith aquifer is mainly confined to the narrow belt along the inland valley systems of the undulating mantled plane landscape located within the agro-ecological region of DL-1. This landscape makes up the cascades of small tanks as well. The average thickness of the regolith is not more than 10 m in this region, and both agro-wells as well as domestic wells exploit this shallow phreatic water table, which is present within this regolith zone up to depths of between 6 to 8 m[16]. The project site runs a possible risk of flooding during the monsoonal rainy season. The main cause for flooding can be attributed to :

- Discharge from the A12 road and cascade tank systems and the adjoining Mihintale water tank
- Insufficient canal capacity to carry high runoff during the rain season

[14] Evaluation of Groundwater Quality for Irrigation in Malwathu Oya Cascade-I in Anuradhapura District of Sri Lanka Kumari et al Tropical Agricultural Research Vol. 27 (4): 310– 324 (2016)

[15] C.R. Panabokke 2002.Nature of occurrence of the regolith aquifer in the hard rock region of the North Central dry zone, and its rational exploitation for agro-well development Proc. Sym. on the Use of Groundwater for Agriculture in Sri Lanka, 30 September 2002, Peradeniya, Sri Lanka

[16] Ibid

- During the monsoonal period water loss and evapotranspiration is poor therefore the surface and underground out-flows from a cascade may be blocked leading to flooding

a. However during the construction phase the groundwater can be extracted from the dug well located at the site after water quality test. The location of the dug well is shown in Figure 13 and the survey map annex 7.

Figure 13: Dug well located at the site

4.9 Ecology and Biodiversity

141. Mihinthale Sanctuary is located 3.15 km away from the university. The forest consists of dry mixed evergreen vegetation with good leaf litter. There are various kind of birds and animals living there. The Mihintale Sanctuary (as gazetted on 27/05/1938 in the Sri Lanka Government Gazette No.8370 (Department of Government Printing 1938)), is situated in Kanadara Korale of Nuwaragam Palatha and encompasses an area of 2,470 acres (999.6ha)[17]. and is managed by Department of Wildlife Conservation in Sri Lanka. Mihintale Sanctuary has some of the widely used medicinal plants in traditional ayuruwedha systems[18]. The Sanctuary has lately been used as a disposal ground for solid waste (Figure 14).

142. Mihinthale Sanctuary and Mihintale Forest Reserve (1.77 km) are both habitats rich in faunal and floral diversity. Herpetofauna, avifauna, terrestrial mollusk species of endemicity are common to the region. Endemic avifaunal species such as brown-capped

[17] Species diversity and conservation of avifauna in three different habitat types within the Mihintale Sanctuary, Sri Lanka; Wimalasekara C., Wickramasinghe,S. Journel of threatened taxa.(2014)
[18] The Status Of Vesicular Arbuscular Mycorrhizal Associations with Medicinal Plants In Mihintale Sanctuary *K.S.N. Silva, P.N. Yapa,* Interstation forestry and environmental symposium 2010

babbler (*Pellorneum fuscocapillum*) (Figure 14), grey horn bill (Ocyceros gingalensis). *Loriculuc beryllinus*(Figure 14), orange headed thrush *(Loothera citrina)* (Figure 14). Etc are found here. Herpitfauna such Polonnaruwa shrub frog (*Pseudophilautus regius)*[19] (Figure 15) and other endemic frogs (*Euphlyctis cyanophlyctis*, *Fejervaraya syhadrensis*, *Microhylarubra* are found in tank associated grass lands. There are lizards such as *Hemidactylus depressus*, *Hemidactylus leschenaultia* , *Calotes versicolor*, *Geckoella yakhuna* . The area is well known for endemic species of reptiles butterflies and other endemic insects and terrestrial snails found in the area.

Figure 14: Plates of endemic species

Garbage accumulation in Mihintale Sanctuarv

Inside forest: Dry mixed evergreen vegetation with good leaf litte

Grey hornbill Ocyceros gingalensis

Sri Lanka hanging parrot *Loriculuc beryllinus*

[19] IUCN red list 2012

Brown-capped Babbler (*Pellorneum fuscocapillum*)

Orange headed thrush *(Loothera citrina)*

View of Grassland Habitat (GLH)

Endemic shrub frog Pseudophilautus regius

143. Herpetafauna Avifauna study from 2010 to 2014 showed that a total of 68 species belonging to 34 families were recorded in the disturbed habitat within the university premises. Among them 64 (94.2%) breeding residents and 4 (5.8%) winter visitors recorded in disturbed habitat while 87 (87.8%) breeding residents and 12 (12.2%) winter visitors recorded in grass patch in the university. Shannon Diversity Index (H') for disturbed and grass patch habitat were 2.48[20] thereby making the area a moderately diverse habitat. A comparative study on Herpetafauna in the Mihintale Sanctuary and the disturbed grass land exhibit that Shannon Diversity Index is higher in the Sanctuary[21].

144. **Mihinthale Forest Reserve:** Located 1.77 km away from the project site and is 2,462ha in extent. There are 21 woody plant families in this forest belonging to 36 Genera

[20] Diversity, Abundance and Habitat Utilisation of Birds in Periphery of the Mihintale Sanctuary; De Zoysa H.K.S., Sandunika I.A.I., Rathnayake D.G.R.M.M. and Wickramasinghe S. *Forestry and Environment Symposium 2013*

[21] Dissanayake, D.M.D.B.S., Wellappuliachchi and S.M. Wichramasingha.2011.Diversity and Abundance Distribution of Amphibians in Mihintale Sanctuary. : Proceedings from the international forest symposium 2011.

recorded in the forest reserve. Out of 41 species recorded 6 were endemic plants and one is a nationally threatened species (also globally threatened). Faunal diversity in Mihinthale Forest Reserve is provided in Table 21.

Table 21: Mihintale forest faunal diversity

	Families	Genera	Species	Endemic	Threatened Species	
					National	Global
Birds	12	14	17	1	1	0
Amphibians	0	0	0	0	0	0
Butterflies	4	6	7	0	0	0
Mollusks	2	2	2	1	0	0
Mammals	6	8	8	0	0	0
Reptiles	2	3	3	2	2	0

Source: Biodiversity baseline survey: Minneriya national park, Department od wild life conservation department, 2008

a. There are key environmental issues governing the DSD and these include
   i. Non demarcation of the Wildlife reserves and the forest reserves
   ii. Human elephant conflict
   iii. Unregulated solid waste and waste water disposal

b. Over the years the unregulated disposal of waste to the Mihintale tank has seriously impacted the biodiversity in this unique wetland.

c. **Conclusion:** The Mihintale tank associated habitat needs to be conserved. A biodiversity assessment was not recommended for the current land as it was an already developed land that had been cleared. As land was left undisturbed for 12 months a grassland habitat associated with the tank can be observed[22]. There are many drivers of change operating in the wetland associated ecosystems such as spreading of invasive species, unregulated waste disposal. With these environmental pressures, it would be difficult to maintain the ecological balance in and around the project site unless there is a well thought out holistic management plan for the broader area.

[22] Site observation on 19th April 2018 at the stakeholder meeting university of Rajarata

d. If the land were to be extended beyond the currently selected area, it is recommended that a rapid biodiversity assessment be carried out on the adjoining land which is a successional grassland that is associated with the tank prior to construction.

4.10 Educational, Medical and Health Facilities

145. Within Mihintale DSD there are 18 provincial schools. Health facilities in this area include Mihinthale and Thammannawa Divisional Hospitals, 1 Ayuruvedic hospital, peripheral central dispensaries, and dispensaries. Additionally, the health sector cadre for the region includes 15 registered Ayurvedic doctors, 03 health inspectors and 08 midwifes.

4.11 Cultural Archaeological and Historical Significance

146. Dating back to B.C. 236 Mihinthalaya is connected with the Sinhala Buddhist culture. It is believed that Mahinda Thera and four other theras started out from India to visit Lanka to "Missaka Pavva". (Mihintale rock which is190m from the site) Figure 16. It is believed by Sri Lankans to be the site of a meeting between the Buddhist monk Mahinda and King Devanampiyatissa which inaugurated the presence of Buddhism in Sri Lanka. It is now a pilgrimage site, and the site of several religious monuments and abandoned structures. At the foot of the mountain are the ruins of a hospital, medical bath (or stone canoe in which patients were immersed in medicinal oil) a stone inscription and urns belonging to the ancient period have been unearthed.

147. **Conclusion**: Anubudu Mihindu Maha Seya seen in Figure 16 is 190m from the site and is one of the closely located archeological sites. There are several archeologically significant sites located in close proximity to the site these include Mihintale temple (1.5km) Figure 16 , Naga pokuna (1.37km) Figure 06, Sinha pokuna (1.26km), Kaludiya pokuna (1.37km) Figure 16.

148. The site is archeologically sensitive hence the required provision approval was obtained from Department of Archeology Sri Lanka (see Annex 11).

Figure 16: Plates of archeological sites

Mihintale temple

Anubudu Mihindu Maha Seya ihintle temple

Kalu Diya Pokuna

Mihintale rock

4.12 Communication facilities and CBO

149. Central post office is located in the Mihinthale DSD. There is a sub post office at RUSL. There are several registered community organizations such as sport clubs, elder's society, three wheeler society, village development society inland fisheries society within the DSD. For the purpose of the project, the RUSL will require good telecommunication system.

4.13 Demographic details of affected population

150. **Population and Community:** Total population of Mihinthale DSD is 35,898 of which 48.67 % is male and 51.35% is female. Mihinthale population is predominantly Sinhala (94.51%). Tamil, 5.06 %, Muslim, 0.01%, Burgher, and 0.28% others. When considering the ethnicity within the DSD 93.99% of the population is Buddhist, 0.12% Hindu, 5.06 % Islam, 0.10% Catholic, and 0.37% is Christian. % are represent other region

151. **Industry and Economy:** Kidney disease is prevalent in the region due to high levels of fluoride found in the ground water it is not suitable for drinking. Local industry is manly on bottling water apart from other industries such as clothing, textile and leather, wood, wooden based. A detail list of industries available locally is provided in Table 14.

Table 22: Detail list of industries available locally

Mining and digging	Food, beverages and tobacco	Clothing, textile and leather	Wood, Wooden Goods and furniture	Paper production, printing	Chemicals, Petroleum, Rubber and Plastic	Basic Metal Industrial Machinery and Tools	Water related activities and water supply	Other manufacturing industries
7	6	15	13	2	1	1	18	4

4.14 Analysis of alternatives

152. The proposed FT project location is the alternative location identified as the previous location was deemed unsuitable for the development. Impacts associated with construction stage are temporary and short term. Any long term impacts can be managed by adhering to the ESMP. Also, there is no existing facility in the vicinity that can be developed as an alternative to the proposed project. Therefore, examination of alternatives to the project‘s location, design, technology, and components show that it is compliant.

153. By looking at the Table 23 below it can be concluded that “With” project scenario, with positive/beneficial impacts will greatly enhance social & economic development of the region and improve the environment, when compared to the “Without” project scenario, which will further deteriorate the existing environment and quality of life. Hence the “With” project scenario with some reversible impacts is an acceptable option rather than the “Without” project scenario. The implementation of the project therefore will contribute positively to improve the environmental quality in the area and the associated surroundings. It will result in holistic development of the economy and improve the region and the country.

154. There will not be considerable increase in the pollution levels during construction. Dust and particulate matter during construction will affect the air quality on a short-term

basis. It will improve the access road to project site. It will provide mitigation not only for air, noise, vegetative cover, wildlife and soil erosion but will also provide other appropriate mitigation measures such as maintaining reservation on the banks of the Mihnitale tank and landscaping. It has brought awareness to the solid waste disposal in the area degrading the environment. Alternatives are being sought for this reducing the negative impact on the environment. As the geotectonic report is not available to date the IEE cannot comment on any design feature suitable for the project.

155. The FT Project of RUSL forms an important training center for the technology students and since accessible to major EPZ such as, Lakshauyana Industrial Zone in Polonnarwa, 103.59 km Mawathagama Export Processing Zones (EPZ) in Kandy Sri Lanka. It is closely located mineral resources such as Eppawella mineral deposit, Pulmudai Mineral (Zircon, Ilmanite, and Rutite), deposits, Kaikawala Feldspar and Quartz deposits, NamalUyana Rose Quartz deposit, Yan OyaRed Clay deposit which provides ideal research opportunities for RUSL students in material sciences. It is easily accessible to the student community to carry out research and their educational activities. Thus, the development of the land into a training facility will be the better option under the existing condition. Keeping this in view, the site conditions and the scope of development of the area, the 'With' and 'without' project scenarios have been compared as shown in Table 23.

Table 23: Project scenario

With Project		**Without Project**	
Impacts		**Impacts**	
Positive	**Negative**	**Positive**	**Negative**
Provision of facility to train graduates that are geared to job market and economic and best use of the available space	Water retention surrounding area reduced	Nil	Unemployed graduates who cannot secure jobs are trained which become a social problem of unrest.
Use of the land that could not be used for other purpose except as residential purpose is being used to improve the regional	May contribute to increased flooding in the area.	Land widely available for flood water retention. Reduced the threat of flooding for	Nil

economy and education.		surrounding community	
Land preparation and improvement activities will increase the chance off unearthing ancient monuments	Impact on archeologically sensitive site	No impact on the archeologically sensitive site	No discovery of archeological monument will not be unearthed
Improvement in ecology through maintenance of the drains other seasonal flood retention work	Impact on the fauna that was foraging in the fresh water tank	Nil	Increased flooding in the adjoining area and the project site
Improved drainage in project site and the surrounding area	Loss of new habits for the fish species and other fauna and floral species in the area.	Nil	Flooding conditions during rainy season will be increased
Enhanced trade and commerce	Increase of noise during the construction phase	Nil	Microlevel trade in the area will be limited
The dust associated with vehicles movement on access earth roads will also be eliminated	Short term increase in dust due to earth work	Nil	Further deterioration of the project access road
Increased access to job markets	Nil	Nil	Reduced employment/ economic opportunities
Employment to local workers during the execution of the project	Outsourcing people from other parts of the country will increase traffic congestion and demand for logistics	Nil	
Better access to other social services such as communication centers, and food cafes	More social networking facilities will create social unrest	Nil	Arrest of possible significant enhancement and economic development of the region
Strengthening of local economies and local industries	Nil	Nil	In absence of the project, it will be difficult for the Sri Lankan government to finance such a technology education

			development facility for RUSL from its own resources

156. Since there is no free land space that is not archeological significant or constructional viable in close proximity that can be developed this will be the most suitable site that is economically feasible to the university at this point.

5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Introduction

157. The proposed work under FT Development Project will impact on the environment to some degree. During the construction phase which may be regarded as temporary or short-term; the other during the operation stage which will have long term effects. The negative impacts can be reduced or minimized only if proper safeguards are put in place during the design and construction stage itself. These can include reducing pollutant discharge from waste at FT, by enhancing the landscape to support the nearby wetlands, etc. An effective mitigation strategy will utilize a combination of both options to arrive at practically implementable measures. Efforts will be worked out to minimize any adverse impacts on the various environmental and social components. Where the impacts on various environmental components are unavoidable, mitigation measures will be worked out to minimize the impacts. The mitigation measures recommended during the construction phase should be included in the contract agreement with the contractor and discussed with them to ensure smooth implementation from the beginning.

5.2 Land and Environment

a) Topography and Geology

158. **Construction Phase**: The impacts on existing topographical setting originate primarily from opening up borrow pits to fulfill the requirement of huge quantity of earth material to raise the DPC level of the proposed building to 2.0 m MSL since the A12 road is higher that the project site. Aggregate and sand will be procured from the authorized

suppliers and prevalent rules will be followed for borrowing of soil. Hence the impact on geology of the region is considered insignificant. About XXX m^3 of borrow materials (Total compacted quantity of gravel) is to be used if the site is to be filled. This has to be obtained from earth generated through cutting of the existing borrow areas. The details of proposed borrow areas investigated with their respective locations would have to be given by the PIU and the site engineer concerned.

Impacts:

i. Alteration of current land use & change in existing profile of the land due to proposed project location.
ii. Changes of topography due to indiscriminate digging of borrow pits.
iii. Un-managed digging of borrow pits resulting in water accumulation & breeding of vectors.

Mitigation Measures: Contractor needs to prepare / follow several mitigation / management plan / guidelines for various construction activities. These guidelines are listed below and detailed out in "Part-III ESMP".

- ICTAD Guidelines for Siting and Layout of Construction Camp Guidelines for Siting,

Storage of construction materials should be located sufficiently away from the road frontage. Sand, rubble, metal bitumen and cement should be covered. All cement, bitumen (barrels), oil and other chemicals should be stored and handled on an impervious surface above ground level (e.g. concrete slab) and should be enclosed ensuring that no storm water flows in to the structures. There should be adequate ventilation to avoid accumulation of fumes and offensive odour that could be harmful

- ICTAD Operation and Re-Development of Borrow Areas Guidelines for Siting,

Extraction of construction materials should be undertaken only from mines and quarries approved by Geological Survey and Mines Bureau (GSMB).

Gravel for the compaction and filling is supplied from government authorized pits. If new material extraction sites need to be located, those should exclude areas which are public and environmentally sensitive.

Burrow areas shall not be opened without permission of the site engineer.

Environmental requirements and guidelines issued by the CEA, GSMB and LAs should be followed with respect of locating material extraction sites, other operations and rehabilitation of extraction sites at the end of use.

Transport, loading and unloading of construction materials should not cause a nuisance to surroundings by way of noise, vibration and dust. All drivers should have valid license for the category of vehicles they drive and follow the speed limits of roads. Construction materials should not exceed the carrying capacity of trucks and the local road.

- .ICTAD Operation and Re-development of Quarrying and Stone Crushing Operations
- ICTAD Guidelines for Siting and Management of Debris Disposal Site
- ICTAD Guidelines for Preparing Comprehensive Waste Management Plan

159. **Operational Phase**: In the operation phase, the temporarily modified land use pattern such as temporary construction camps / tents would be dismantled. The FT project, after completion of its construction, would consist of neat landscape pleasing environment.

Impact:

i. Likely change of land use due to squatter / encroachment within project land area and the surroundings.
ii. Likely change of land use due to site preparation including earthfilling of the site and building in the project area.
iii. Likely change due to construction of the earth drains on the northern and the western part of the boundary of the project site.

Mitigation Measures:

i. Immediately after the construction phase, it is necessary to ensure that no further deterioration or major land use changes such as ribbon development takes place in a manner that will jeopardize the interests of the RUSL.

ii. Squatter development along the project shall be strictly avoided by proper regulation and vigilance.

iii. Land use control measures will be prepared & administered to avoid occurrence of induced development as far as possible.

iv. All debris, piles of unwanted earth, spoil materials and temporary structures should be cleared away from the project site and disposed at locations designated or acceptable to the Department of Irrigation, LA and CEA. Project landscape activities have to be done as per either detailed design or typical design guidelines given as part of the bid documents.

5.3 Social and Cultural Resource

160. There are heritage sites notified by Department of Archaeology of Sri Lanka near the project area. Similarly, common property resources such as Mihintale tank will be affected by the proposed project unless managed accordingly.

161. **Construction phase**: Vibration and site preparation activities with the machinery may impact the archeological site that are is located close by (Anubudu Mihidu Maha Saya). In cases where heavy loads are imposed, sediment deformation may be accompanied by damage to fragile artifacts[23]. Biological and geochemical effects impact most dramatically upon the preservation of archaeological materials. It will impact on the archeological monuments.

Mitigation Measures:

- Consult Department of Archaeological of Sri Lanka or Anuradhapura Divisional Archaeology Department to obtain an expert assessment of the archaeological

[23] SHILSTON D.T. and FLETCHER S.L., 'Geotechnical engineering for the in-situ preservation of archaeological re- mains', in Preserving archaeological remains in situ. Pro- ceedings of the conference of 1st–3rd April 1996, ed. M. CORFIELD, P. HINTON, T. NIXON and M. POLLARD, Mu- seum of London Archaeological Service, London, 8–15, 1998

potential of the site Obtain a provisional clearance letter from Department of Archaeological of Sri Lanka. Letter was obtained prior to construction and designing of the project (already obtained – Annex 11)

- In the event any archeological monument is discovered stop any development at the site immediately and contact the Department of Archaeological of Sri Lanka.
- Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders.
- Develop a protocol for use by the construction contractor in conducting any excavation work, to ensure that any chance finds are recognized and conserved.

5.4 Water and Environment

i. Since the project site is near the wetland and no proper storm water drainage systems are in place, there will be a risk of flooding during heavy rains especially during the monsoonal season.
ii. Poor or non-availability of drainage facilities on the A12 road is and issue and the project boundaries is another one of the factor that contribute may contribute.
iii. Increased incidence and duration of floods due to obstruction of natural drainage courses by the FT building construction.
iv. Chances of filling of existing drainage courses during earth filling and site preparation activities will increase the problem.
v. Earth filling and site preparation with the ground level up to 2m from the existing will induce flooding in the project influential area.

162. **Drainage and Hydrological Flow**: The FT project site is 190 from the nearby tank. Mihintale tank is a wetland that is protected by Irrigation department and the department of agrarian services. There has not been an assessment of the seasonal flooding experienced at the site. It is recommended that such an assessment be done prior to construction.

i. Construction activities will also create temporary floods during the monsoonal season.
ii. Increase of mosquitoes and other vectors increasing health risk.

iii. Based on the visual observation records taken in the vicinity during the monsoonal period it is evident that irrigation department does not satisfactorily carry out its responsibilities on maintenance the mhintale tank. There are no drainage channel system surrounding the project site at the moment.

iv. The Mihintale tank is polluted and neglected due to the unregulated disposal of gully bowsers The adjacent settlements dispose the untreated water to the tank. If this is not properly mitigated it would be a continuous health risk which will result in unpleasant odor and sight. It will gradually impact the biodiversity that is surrounding this tank flood plain.

Mitigation Measures: As the existing drain will be suitably augmented and properly reinforced & additional drainage structures will be constructed, it will not obstruct the water flow in the Mihntale tank. Construction activities will not aggravate flooding condition in the area if mitigation measures are followed by the contractor.

i. Adequate building and roadside drains will be provided along property to facilitate its better maintenance. Details are provided in section 2.1 Figure 6

ii. Detailed drainage plan and seasonal flood risk assessment investigations need to be carried out and accordingly capacity of existing drainage works & cross drainage (CD) structures have to be duly augmented wherever necessary, to accommodate high discharges to avoid flooding & formation of water pool at the project site.

iii. Construction works of culverts will be taken up during the lean flow periods to minimize the impacts on drainage.

iv. Maintain design features such as drainage structures.

v. Construction work near natural drainage channels of Mihntale tank will be carried out in such a way that flow of water is not blocked and even if it has to be blocked mitigation to be adopted.

vi. Suitable drainage at construction site & camp will be provided to eliminate the chances of formation of stagnant water pools that leads to soil erosion & breeding of mosquitoes.

vii. Propose a storm water drainage system around the FT complex to capture flood waters during heavy rain and reduce runoff.

viii. Reduce the inflow locations adjacent to the site, i.e. the side drains of the road need to be constructed by the relevant authorities (Mihintale Pradeshiya Saba RDA).

ix. Drains, of the project site and Mihintale tank should be cleaned regularly to ensure smooth flow of water. This includes the regular maintenance of the downstream main peripheral drain. RUSL will have to keep close connections with the relevant authorities in ensuring the water drains are cleaned especially prior to the commencement of the rainy season.

x. Temporary earth drains should be provided until required line or earth drains are provided after excavation or during other construction activities.

163. Design and maintenance of the suitable sewerage system during floods for the FT so that it will not impact the ground water table . Avoid construction of sanitation or other facilities that will use and store harmful materials.

5.5 Water Use

164. During the construction period water is required for compaction of earth fill, dust suppression, concrete mixing and domestic use in the construction camp. The estimated tentative water requirement during construction stage will be calculated by the site engineers before the commencement of the project. See Table 24

165. During this period water is required for compaction of earth fill and road construction, dust suppression, concrete making and domestic use in construction camp. The estimated tentative water requirement during construction stage will be calculated by the site engineers. The estimates for tentative water requirement to be developed by the RUSL (see Table 24)

Table 24: Breakup of fresh water requirement during construction

SN	Purpose	Quantity (KL)
1	For of project road construction a) Construction related to earthwork c) Construction of WMM d) Bridges, culverts, retaining walls & other structures	
2	Dust suppression and wheel washes	
3	Ready mixed concrete wagons Site / general cleaning Specialist / high pressure cleaning	
4	For drinking & other household purpose	
5	Labour camps/Temporary Accommodation Toilets, catering, washing (personnel)	
6	General Site Activities Tool washing Rinsing	
7	Wet Trades • Brick/blockwork • Screening • Concreting • Plastering • Core Boring • Lightweight Roofing • Ceramic Tile • Bentonite Mixing • Rendering	
8	Groundworks • Grouting • Drilling/Pilin	
9	Cleaning • Cleaning Tools and Small Equipment • Plant and Equipment • Paintbrush Washing	
SN	**Purpose**	**Quantity (KL)**
1	For road construction and the building a) Construction related to earthwork b) Construction of GSB	

	c) Construction of overhead bridge to connect to the university d) culverts, retaining walls & other structures	
2	Dust suppression	
3	For drinking & other household purpose	

166. **Operation Phase**: the water will be a limiting resource unless a proper water supply system is established. Ground water should not be used for construction since it may be unsuitable at the project site. Before use conduct a water quality test. Water would have to be supplied from outside for the construction purposes in bowsers. .

Mitigation:

- Obtain the water supply connection to the site from the NWSDB and calculate the requirements of water when the FT is in operation and during construction activities in order to avoid likely impacts on other users.
- The contractor will arrange water required for construction in such a way that the water supply to nearby communities remain unaffected.
- If tube-wells are to be bored to supply the water required for construction or use the dug well that is there already at the site. A prior approval of the NWRB has to be obtained by the Contractor. Without permission from NWRB, contractor will not be allowed to extract ground water.
- Wastage of water during the construction should be minimized.

167. **Water Quality Monitoring**: Apart from provision of the mitigation measures, water quality shall be monitored to understand the effectiveness and further improvement in designs in reducing the concentration of pollutants. The monitoring plan shall be functional in construction as well as in operation stages. Once the detail plans are available monitoring points and the intervals will be decide by the Environmental Officer. Refer the environmental monitoring plan given with the ESMP

168. **Silt Fencing**: Silt fencing should be provided to prevent sediments from the construction site entering into the nearby water channels. The silt fencing consists of geo textile with extremely small size supported by a wire mesh mounted on a panel made up of angle / wooden frame and post. The frame will should be installed at the

edge of the water body along when construction is in progress. It is proposed to install silt trap at the edge of Mihintale tank and the drains located along the project site location.

169. **Ground Water Recharge Pit/ Rainwater Harvesting Structures:** Unlined drain in the project may also be connected with the ground water recharge pit to facilitate the recharge of runoff water in to the ground, augmenting the water table of the project area. Ground water recharge pits shall be constructed to facilitate the infiltration of runoff water into the ground. Paved surface of the FT project will reduce the percolation of runoff water and decreases the ground water recharge. Location of proposed ground water recharge pits will be reviewed by the Sr. Environmental Specialist of the Independent Engineer and finalized in consultation with PIU. These locations should be permanent which shall be handed over to the university maintenance engineering body at the end of the project so that the water shortages can be reduced to a certain extent.

170. **Adopt flood control measures:** Engineers should adopt seasonal flood control measures which will be utilized to manage the outlined flood hazard to the proposed development. These measures include any flood defenses that the proposed development site may benefit from, design and layout of the development and how the flood hazard to the site will be managed i.e. raising finished floor levels, Sustainable Drainage Systems and waste water management, sewerage system etc.

171. Insert flood mitigation measures, such as flood resistant and resilient construction techniques, subscription to the Environment Agency flood warning service, reference to a “Site Flood Plan” for the development. Outline recommendations for surface water management and sustainable urban drainage system (SuDS) - this will be important to manage the site from future flooding scenarios.

172. The study area has a monsoonal flood problem. Building side drains to receive discharge from embankment surface and surrounding area runoff and carry it safely to the nearest outfall point ensuring safety to the drains.

173**.** **Functional Sanitary facilities**: The ground water at the site may be unsuitable for consumption due to high fluoride content and therefore would have to depend on securing the water connection. The water connection needs to be secured through

NWSDB for use during construction and operation. It is important that functional sanitary facilities are maintained in the university to avoid health risks and spread of disease.

174. Regular sanitary facility checks and maintenance to be carried out by university. The design lay out of the building should propose a maintenance space in the detail engineering design. Maintenance staff should be employed for running of these sanitary facilities

175. Water storage facilities such as provision of a water storage tanks should be in place so that there will not be any shortage experienced during project implementation.

5.5 Air Environment

176. **Construction Phase:** Particulate matter would be the predominant pollutant affecting the air quality during the construction phase as it is likely to generate considerable quantities of dust, especially during dry condition. Dust will be generated mainly during excavation, backfilling, hauling & transportation activities to the site, loading/ unloading, spilling of material during transportation, and open storage of fine construction materials.

177. Undesirable gaseous pollutants will be generated mostly by the construction machineries. However, suspended dust particles may be coarse and will be settled within a short distance of construction area. Therefore, impact will be temporary and restricted within the closed vicinity of the FT and the access road only.

178. **Air quality monitoring** Apart from provision of the mitigation measures, air quality shall be monitored. The monitoring plan shall be functional during the construction period.

179. The maximum desirable limits as per the National Ambient Air Quality Standards are given in Annex-12 and the monitored values should correspond with the table. All deviated results shall be reported for remedial measures.

5.6 Noise Environment

180. **Construction Phase:** During the construction phase, noise will be generated due to movement of operation of light & heavy construction machineries (i.e., dozer, tipper,

loader, excavator, grader, scraper, roller, concrete mixer, generator, pump, vibrator, Drilling machines, crane, compressor etc.) that are known to emit sounds with moderate to high decibel value.

181. Noise generated from sources mentioned above will be intermittent and mostly during daytime. Moreover, RUSL and the settlements around the project will have an impact. Vibration should be limited since it may impact archeological monuments on site. However, the workers are likely to be exposed to high noise levels that may affect them.

Impact: Increase in noise level due to construction activities like operation of construction equipment.

182. Between 80-95 dB (A). The magnitude of impact from noise will depend upon types of equipment to be used, construction methods and also on work scheduling. Typical noise level of various activities associated with the projects is presented below Table 25 and 26 Operation of construction machinery will lead to rise in noise level to the range

Table 25: Noise Level of Road Construction Activities

Sl. No.	Construction Activity	Noise Level dB(A)
1.	Grading & Clearing	84
2.	Excavation	89
3.	Foundations	88
4.	Erection	79
5.	Finishing	84

Note: Measured at Leq assuming 70 dB(A) ambient noise level

183. General conclusion can be based on the types of construction work anticipated, the likely equipment required and their associated range of noise levels. Typical noise level of principal construction equipment is presented below

Table 26: Typical Noise Level of Construction Equipment

Clearing		Structure Construction	
Equipment	**Noise Level dB(A)**	**Equipment**	**Noise Level dB(A)**
Bulldozer	80	Crane	75-77
Front end loader	72-84	Welding generator	71-82

Jack hammer	81-98	Concrete mixer	74-88
Crane with ball	75-87	Concrete pump	81-84
Concrete vibrator	76		
Excavation & Earth Moving	Air compressor	74-87	
Bulldozer	80	Pneumatic tools	81-98
Backhoe	72-93	Bulldozer	80
Front end loader	72-84	Cement & dump trucks	83-94
Dump truck	83-94	Front end loader	72-84
Jack hammer	81-98	Dump truck	83-94
Scraper	80-93	Paver	86-88
Grading & Compaction	**Landscaping and Cleanup**		
Grader	80-93	Bulldozer	80
Roller	73-75	Backhoe	72-93
Paving	Truck	83-94	
Paver	86-88	Front end loader	72-84
Truck	83-94	Dump truck	83-94
Tamper	74-77	Paver	86-88

U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations. Building Equipment and Home Appliance. NJID.300.1. December 31, 1971

184. The construction noise is generally intermittent and depends on the type of operations location and function of the equipment and the equipment usage cycle, it attenuates quickly with increases in distance.

Mitigation: All machinery, equipment and vehicles should be maintained in a good condition by engaging skilled mechanics and regularly maintained in compliance with National Emission Standards (1994). Noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinance, No 924/12) should strictly be implemented for crushers, construction vehicles and equipment. The maximum permissible noise levels at boundaries of the land in which the sources of noise is located for construction activities are 75dB (A) L eq and 50 dB (A) Leq during day time and night time

respectively (Day time: 6.00 am - 7.00pm, night time: from 7.00 pm - 6.00 am). However Contractor should limit working time for activities that create noise from 6.00 am to 6.00 pm. Note: LAeq'T' means the equivalent continuous, A- weighted sound pressure determined over a time interval T (in dB)

5.7 Impact on the Fauna and Flora

185. **Construction Phase:** The species richness presently in the project area and the surroundings are moderate. Activities such as site clearing, construction of drains, mining of boulders, removal of trees and green cover vegetation and etc., will potentially impact on the ecological resources of the area by means of disturbing habitat, increasing soil erosion and surface runoff, creating noise and vibration at the project site, etc.

ii. Construction machinery may bring in more invasive species in to the area. Overall impacts will be insignificant on the fauna and flora as it is already a disturber habitat.

iii. Egrets that were observed feeding at the grass land associated wetland will be disturbed with the construction work. Construction activities would increase the level of fumes and the noise at the site.

iv. Effect on aquatic fauna can occur in case of accidental oil spill & toxic chemical release find its way into the tanks body during construction and operation of the FT.

Mitigation: Adoption of certain practices of mitigation will ensure that the project land and its surrounding habitat will be enriched without further degradation.

i Project landscape activities have to be done as per either detailed design or typical design guidelines.

ii Saplings for tree planting program should comprise of native or endemic species which is suitable to the existing climatic condition of the project areas. Carry out a resonance survey of floral species native to the area or contact Agriculture Department to identify the recommended species and plant native plant species listed in the Table 27. These have been suggested for tree planting programs to enrich the habitat.

iii Actions should be taken for speedy cleaning up of oil spills, fuel and toxic chemicals in the event of accidents.

iv All the construction workers and staff of the project unit should be made aware and educated about the presence of the flora and fauna in the area. Environmental awareness program should be provided to the Contractor, labours and all staff deployed at the site.

v All staff / workers should be instructed not to harm or disturb any fauna seen near the project area.

vi Noise has to be kept under control by regular maintenance of equipment and vehicles. “No honking” board shall be placed near the boundaries. Noisy activity shall be prohibited during night time.

vii Construction debris should not be dispose in the wetland area.

viii Implementing sediment and erosion controls during construction will minimize adverse Impacts on the water bodies. Construction activity will be avoided near water bodies during rainy season.

Table 27: list of species suggest for habitat enrichment

Agroforestry tree Species	
Common Name	**Scientific Name**
Kos	*Artocarpus heterophyllus*
Kohomba	*Azadhirachta indica*
Siyambala	*Tamarindus indica*
Bulu	*Terminalia bellerica*
Nelli	*Phyllanthus emlica*
Beli	*Aegle marmelos*
Ma dan	*Syzygium cumini*
Pini mara	*Samanea saman*
Mai Mara	*Delonix regia*
Murutha	*Lagerstroemia speciose*
Ritigala Mee	*Madhuca flava*
Other woody tree spices proposed	
Burutha	Chloroxylon swietenia
Kolong	Adina Cordifolia
Helamba	Nauclea orientalis
Helamba	Mitragyna tubulosa
Pihimbiya	Felicium decipiens

5.8 Induced and Cumulative impacts

186. According to the ADB Environment Safeguards Sourcebook cumulative impact is described as: "The combination of multiple impacts from existing projects, the proposed project and anticipated future projects that may result in significant adverse and / or beneficial impacts that cannot be expected in the case of a stand-alone project." The sourcebook also describes induced impacts as: "Adverse and / or beneficial impacts on areas and communities from unintended but predictable developments caused by a project, which may occur at later or at a different location.

187. Economic activities supporting FT like lodging and restaurants are expected to increase with new student population and induce development in the project area. The project area has good infrastructure for training of highly skilled graduates in the IT field. Hence the project will trained these students in the technology field to be involved in the industrial activities.

188. Location of the project in Mihntale supports non academic staff requirement from the North Central province. Preference will be given to local community over other during recruitment for these positions. This will be especially true for janitorial services and security services.

189. The construction of the FT will provide better technologically trained graduates to meet the future demands of the industry. This will lead to (i) Reduction in travel time to access well-resourced laboratories that are located in different places in the district (ii) state-of-the-art material science, micro biology, food science, electric and electronic labs and research labs to carry out education and research (iii) access to new teaching and learning methods (iv) competitive edge to secure quality job that ensures personnel security (v) Being connected to proposed industrial areas, increased opportunities to collaborate with local and overseas companies engaged in logistics and supply chain management activities.

190. In terms of environment safeguard issues, the project is expected to enhance the disturbed surroundings with habitat enriched green building on site. However, during the operation phase, the solid waste and waste water treatment will generate issues if not properly managed. Improvement in local economic conditions can also result in unorganized and illegal establishment of settlements and businesses adjacent o the

project that may pose new problems of social issues. To address these potential problems, relevant local authorities will have to monitor developments and strictly enforce rules.

5.9 Climate Change Impact and Risk

191. Changes in the atmosphere have been detected that could drastically alter the climate system and the balance of ecosystems. Rising CO_2 concentrations increase the energy retention of Earth's atmosphere, leading to a gradual rise of average temperatures and global warming. This leads to unprecedented changes in the weather patterns including precipitation levels, intensities and frequencies.

192. **High Precipitation Impacting Channel /Embankment**: Heavy rains can cause disruption of the water ways surrounding the project site and embankments, surface water drainage problems, among others. Increased channel flow will result from precipitation and storminess may result in damages pavements, and other building structures (such as down pipes etc). If culvert capacities are reduced or exceeded it can cause flooding to occur.

193. **Flood:** The study area has a seasonal flood problem. A Flood Risk Assessment has not been done due to its seasonality in occurrence but flooding patterns should be considered in the development plan.

194. **Tornados and Lightening**: Due climatic condition of high wind tornados and precipitation lighting strike could be experienced. There is a risk of fire or property damage as the high tension electrical wires are located in close proximity to proposed industrial center at the FT.

Mitigation: Several mitigation measures can be adopted and these include adoption of flood risk reduction strategy. This would include:

i. Ensure the adoption of key engineering measures taken to address flood risks in the design of the building. Required inputs should be sought from architects and engineers regarding this.

ii. A drainage management plan should be developed for the site to ensure that the canal embankments do not become eroded, which would destroy the marginal vegetation and increase the flooding risk.

iii. Adopt measures suggested by CEA, Irrigation Department on construction near a wetland. Obtain their approval and clearances prior to construction.

iv. Design and construction must be adequate to resist the anticipated monsoonal flood.

v. Make sure that the waterway of the Mihintale tank are cleaned regularly - obtain the assistance of the Mihintale Pradeshiya Saba for this purpose. Faculty has to carry out regular maintenance of culverts and drains adjoining the site to make sure that there are no local flooding conditions. Allocate fund by the PIU for this purpose.

vi. Ensure that the building and the equipment is properly insured for claims of natural disaster and lightning resistors installed. The building design be designed and material used should withstand tornadoes and high wind speeds.

5.10 Design of FCT buildings under the green building

195. FT building design and layout will follow the guidelines of the Green Building SL certification systems so that it is designed for higher performance, lower environmental impact. Under this system a building would be evaluated under eight categories and these include Management (MN), Sustainable Sites (SS), Water Efficiency (WE) , Energy & Atmosphere (EA) , Material & Resources (MR) , Indoor Environment Quality (EQ) , Innovation & Design Process (ID) and Social & Cultural Awareness (SC) This includes incorporating engineering design which would consider the following:

a. Usage of recyclable materials like wood substitutes
b. Installation of sustainable energy efficiency certified equipment
c. Usage of energy efficient lighting fixtures (LED)
d. Provision of photovoltaic cells on roofs for solar power
e. Rain water harvesting structures planned for ground water recharge and rain water collection

196. **Impact:** Flaws in the FT design may lead several negative impacts that may influence the students' wellbeing and function of the university complex. Lack of thermal circulation and lighting condition within the school complex will increase the electricity requirement and cause occupational safety issues for the students and staff. In the absence of a properly designed waste water and solid waste disposal system in the university complex, it may lead to health and environmental degradation of the immediate surroundings. In the absence of a disability access such as elevators or stair ways in the building design will prevent disable students from enrolling for the training program. Therefore these aspects will be required to be thought of at the design stage of the project Lack of provision of adequate sanitary facilities for the maximum capacity of students and staff can lead to sanitation issues. This may lead to outbreaks of illnesses among the student population.

Mitigation: Overall building design should incorporate design features that improve the energy efficiency and water saving devices. In whole the green building designs principles should be applied wherever possible. Ensure maximization of natural lighting and thermal circulation in the building. Employ passive design strategies, including building shape and orientation, passive solar design, and the use of natural lighting, to dramatically impact building energy performance.

197. Including safety and health measures with due regard to future maintenance and repairs. The labs and cafeteria kitchen should be equipped with fire alarms and fire extinguishers. Fire and emergency evacuation routes should be incorporated sufficiently. Gas storage areas should be built in to the designed and should be placed in a place that is ventilated. Demarcate an area within the building design for storage of cleaning equipment and garbage storage until disposal. Though a general room has been identified in the lay out plans there is no garbage collection area that is being demarcated.

198. To avoid overcrowding of the sanitary facilities it is important that in the design the toilets should be constructed based on the ratio 1:25 within the hostels.. Design a waste water sewage tank that has a low operation cost and requires minimal maintenance. It should be properly designed to separate the sewage and the bathing water so that it does

not exceed the limits of the occupancy level of the building. The choice of technology will depend on volume of wastewater and sewage generated; economy of scale; regulatory requirements, etc. (layout plan details are in Annex 08). The project management unit of RUSL has initiated the process reevaluating the building designs.

5.11 Risk of Fire and Emergency Preparedness

199. **Operational Phase**: Once the FT building is in operation, there could be incidents of student unrest or technical errors in the laboratories that may trigger off fire**.** .

Impact: This may cause damage to property and risk lives.

Mitigation: Several mitigation measures can be adopted and these include adoption of disaster risk reduction strategy and preparedness. This would include: Identification of an emergency evacuation point in the building and placing emergency alarm system in the building to warn the student population of any such situations. Emergency evacuation points and plan should be designed and practiced.

5.12 Occupational Health and Safety and General Public

200. **Construction Phase**: Both within and outside of project affected areas could create accidental harm to general public and work force. Construction of culvert on the access road, excavation on site, removal of trees, working on building at heights processing and transportation of construction materials are the main causes associated with accidental risk.

Impact: Majority of skilled and unskilled workers should be selected from the project influence area to avoid generation of waste and sanitation problems from labour camps. About XXXX workers under the categories of supper skill, semi-skilled and unskilled will be engaged by the contractor. This may result in conflict situations among the workers and settlers near worker camps. Spreading of communal diseases is also possible due to migrant laborers.

Mitigation measures: ADB guidelines for contracted should be included in the contract issued to the contractor with any necessary modifications.

i. Contractor should organize awareness programs about personal safety for workers. This should provide briefing and training on safety precautions, their responsibilities towards safety, etc.
ii. Contractor shall comply with requirements for the safety of the workmen as per the International Labour Organization (ILO) convention No. 62, Safety and Health regulations of the Factory Ordinance of Sri Lanka to the extent that is applicable to his contract. Other than that, the contractor has to comply with regulations regarding safe scaffoldings, ladders, working platforms, gangways, stairwells, excavations, trenches, safe means or entry.
iii. Use of licensed and trained vehicle operators, provision of protective footwear, helmets, goggles, eye-shields and clothes to workers depending on their duty (mixing asphalt, blasting, handling equipment) should be adopted.
iv. The construction labour camp should be equipped with first aid facilities and a trained personnel onsite in case of an injury.
v. Ample lighting around the construction site should be provided during the night.
vi. Excavated areas for construction should be barricaded using barricading tapes, sign board should be placed. Quarry operations, land excavations and blasting should be carried out and supervised by trained personnel.
vii. Regular safety checks for vehicles and equipment‘s, allocation of responsibility to relevant personnel, prohibition of alcoholic drinks and other substances which may impair judgment of workers engaged in construction activities, arrangement of proper first aid and transport facilities for injured people, installation of warning signs should be adopted.
viii. Onsite emergency plan for minor accidents and mishaps. will be prepared by the contactor with the consultation of the PIU.

5.13 Waste Disposal and Sanitation

201. Construction Phase: Impact

i. Solid waste associated with construction and other related works (construction debris, spoil, and waste generated from labour camps, officer‘s accommodations) may impose several negative environmental and social impacts to the project affected area including impact on ecology, public health and scenic beauty. A proper permanent disposal site for these spoil material should be identified early on so that is will not impact the environment.

ii. Presently at the RUSL colour coded bins are placed for disposal of waste. However the waste is not processed within the university premises.

Mitigation

i. Contactor and the engineers should consult the Mihntale Pardeshya Sabha at the onset of the project on waste collection and disposal.

ii. Labour camps, garbage disposal sites and material storage yards provide favorable habitats for vectors of diseases like mosquitoes and rats. Decaying wastes attract pests such as rats and flies which become unhealthy, dirty, and unsightly. Contamination of water bodies with wastewater, construction debris and spoil will create significant impact on aquatic lives and people inhabiting the area.

iii. Seek approval from the DS for storage and disposal of spoil material and other gravel.

iv. Selected disposal site by the contractor should exclude areas which are close to public and environmentally sensitive areas. Prior approval for the disposal site should be obtained from LAs via Grama Niladhari.

v. All debris and residual spoil materials (soil, sand, rock, and deadwoods) generated from construction activities shall be re-used wherever possible for site leveling, back - filling under instruction of Building Department Engineers & Construction Supervision Engineers from PIU. Dump materials should be placed without interference to the

irrigation canals, water bodies, agricultural lands or any other environmentally sensitive sites.

vi. Contractor should handle and manage waste generated from construction/labour camps without contaminating the environment or without risk to public/communities living near the sites. Proper solid waste disposal, sanitation and sewerage facilities (drinking water, urinals, toilets and wash rooms) should be provided to the site of construction/labour camps. Location of labour camps should be approved by the Building Department Engineer and comply with guidelines/recommendations issued by CEA and LAs.

vii. Practice cleanliness and good housekeeping practices on site. Provision of proper drainage facilities to minimize stagnation of water around worker based camps and keeping the drainage facilities clean at all times to prevent breeding of rats and other vectors such as flies. Garbage bins should be provided to all workers based camps, construction sites and should be dumped regularly in a hygienic manner under the inspection of Public Health Inspector (PHI) in the area.

viii. Clearing of construction camp and restoration. Contractor to prepare site restoration plans for approval by the engineer (PIU). The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, at the contractor's expense, to the entire satisfaction of PIU.

202. **Operational Phase**: Waste disposal and sanitation becomes an important consideration with the occupancy level of the FT buildings.

Impact: Domestic solid waste will be generated as a result of cooking activities and consumption of packed food brought in by the students. As solid waste would not be disposed daily and since Mihintale is already having a waste management problem, piling up of waste will obscure the environment and lead to hygienic and health risks.

Mitigation:

i. Enter into an agreement with the Mihintale Pradeshya Saba for waste collection and disposal on a daily basis until the composting and biogas

plants are installed. RUSL has received 10 million for composting project through the CEA PiliSaru Programme. They are also negotiating with a German University on developing a biogas plant.

ii. Train the students on importance of social responsibility and garbage disposal. Provide colour coded bins at several locations to encourage source separation.

iii. Establish a waste management plan for the institute. Ensure demarcated solid waste storage area with source separation for organic waste and other domestic non-organic waste. This storage facility should be able to accommodate solid waste up to 7 days until disposal.

iv. Establish a composting program and include a space provision in the design for this activity.

v. Prevent solid waste disposal to these canals, culverts and drains that will increase drainage congestion.

vi. Illegal garbage dumping & firing including asbestos dust will be a health issue to neighboring houses and it will be a health issue to students of the new faculty building.

5.14 Health and Safety of Trainees

203. **Impact:** There are no anticipated significant impacts during the operation and maintenance of the project. However, the students of the faculty may not be aware of occupational safety related issues and the impact associated with it. This may lead to injury and accidents during practical and training. When practical sessions are conducted in the labs, it may lead to emergencies and accidents.

Mitigation:

- First aid should be available on site in each of the labs.
- Fire extinguishers and alarm system to be provided. Fire escapes should also be provided for each building.
- Emergency switches should be properly covered and placed in each laboratory.

- A pedestrian crossing traffic light at the A12 highway should be provided so that it would be easier for the student and staff to cross over the road and this will ensure their safety.

5.15 Adopt food safety guidelines

204. **Impact:** Unless food and safety guideline are carefully adopted, there will be increased risk of health and hygiene of the food that is prepared within the kitchens. If students don't maintain personal hygiene, it could affect their studies as well as the university.

Mitigation:

205. Adopt food safety regulation imposed by the Ministry of health. (Refer the Annex 09 for food regulations details).

- Train the canteen operators and improve awareness on food and safety and the national guidelines. These include adoption of food safety handling measure.
- Ensure that the waiters and food service personnel practice regular hand washing during working hours especially when entering food handling area.
- Ensure that food service personnel maintain personal hygiene and inform the canteen operator in case there are sick or has an injury.

6 PUBLIC CONSULTATION

6.1 Approach to Public Consultation

206. Public Consultation Meeting (PCM) provides an opportunity for the general public, private and community bodies to know the environmental and social impacts as a result of project implementation. Thus, the meeting was held for residents around the project areas, public sector and private sector agencies who are concerned with the project during the initial stage. Major purpose of the public consultation is to identify the environmental issues in the IEE study and to appraise the stakeholders on potential environmental impacts. This will provide an opportunity to collect their feedback so that adequate safeguards can be considered during the planning phases.

6.2 Methodology

207. **Arrangement:** Venue for the meeting was fixed at the board room of Faculty of Applied Sciences building at the RUSL. Affected communities and potential stakeholders such as a residents from the adjoining land, Grama Niladaries from Mihintale village, Administrative Secretary to the Mihintale Divisional Secretariat, academic staff members of the RUSL FT, RUSL students in the applies science faculty etc. were invited to attend the meeting. Effort was made to make the gathering representative of the local population directly or indirectly affected by the potential impacts. About 25 participants were invited for the meeting however only 26 stakeholders came for the meeting. (Annex 04 provides the participant list).

208. **Discussions, Questions and Answers**: In the meeting, the participants were informed of the proposed project and potential environmental impacts due to the project. Thereafter, time was allowed for questions and answers to facilitate interaction with the stakeholders, exchange of information, collect their opinion on the environmental issues and any other issues that needed addressing. See Figure 17.

209. **Collection of Feedback**: A feedback questionnaire in local language (Sinhala) was presented at the common forum and then asked each of the stakeholder to express their views regarding the question. These questions were presented by the consultants conducting the meeting and answers sourced. (Annex 02 provides the list of questions presented). Participants were encouraged to provide their opinion through the feedback

questionnaire, however it was kept voluntary. Some of the participants could not fill the forms as they could not read or write. The issues broadly covered in questionnaire included the following topics.

210. **Record of the Meeting**: General information of the participants such as Name, gender, and name of the organization the participant belongs to along with their signature was recorded during the public consultation meetings and is attached in the report as Annex 04. Registration was kept voluntary. Almost all of the participants registered themselves.

6.3 Analysis of the collected feedback

211. A total of 26 stakeholders participated in public consultation meeting. Information was gather on following topics

- Perception on noise vibration and dust
- Perception on water quality in the Mihnitale tank adjacent to the site
- Perception on the water drainage and seasonal flood
- Perception on ecology and biodiversity issue
- Perception of building stability and the lay out plan
- Perception of the connectivity to the project site through the road network
- Perception of the education offered at the faculty
- Perception of the solid waste management by the Mihintale Pradeshiysa Saba
- Perception of the solid waste management at the university premises
- Perception of the waste water management at the university

212. **Outcome of the Public Consultative Meeting:**the following are the major points of concern of the participants of PCM. Detailed account of meeting is provided in Annex 04.

- Design and implement a drainage plan for the project.
- Manage the ecology in the surrounding habitat.
- Reservation limits to be maintained minimize the impact of the project on the Mihntale tank and the CEB high tension line.
- Managing noise, dust and vibration at the site.
- Importance of obtaining clearance form the department of irrigation, Department of archeology and UDA for the project

- Relocation of the CEB high tension wire
- Establish a funding mechanism as well as a schedule for maintenance and cleaning work of the drains and the Mihintale tank associated with the project.
- Contact Mihintale Pradeshiya Saba on the future plan concerning the solid waste management of the university. Enter into a temporary agreement on removal of solid waste until the composting site is established.
- Establishment of a waste water treatment plant to reduce water pollution and discharge. Need to allocate sufficient fund to clean the sand filters in the waste water treatment plant.
- Proper road signage and speed control measures with a traffic light for pedestrian road crossing at the A12 road is one of the most sought after road safety measures by the stakeholders.
- Importance of students maintaining communal harmony with the local villagers.

Figure 17: Plates of Stakeholder meeting

7 ENVIRONMENTAL SOCIAL MANAGEMENT PLAN

7.1 Environmental Social Management Plan

213. An environmental social management plan (ESMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels (refer Part III).

214. The EMP will guide the environmentally-sound construction of the project and ensure efficient lines of communication between MOHEH, project management unit (PMU), project implementing unit (PIU), consultants and contractors. The ESMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (i) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (ii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iii) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (iv) ensure that safety recommendations are complied with. The ESMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries.

215. The contractor will be required to submit to PIU, for review and approval, a site environmental plan (SEP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved ESMP; (iii) monitoring program as per SEP; and (iv) budget for SEP implementation. No work will commence prior to approval of SEP.

216. A copy of the ESMP/approved SEP will be kept at the site during the construction period at all times. The ESMP will be included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

217. For civil works, the contractor will be required to (i) carry out all of the mitigation and monitoring measures set forth in the approved SEP; and (ii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and SEP. The

contractor shall allocate budget for compliance with these SEP measures, requirements and actions.

7.2 Implementing Arrangement

218. MOHE of Government of Sri Lanka will be the Executing Agency for the Program, responsible for management, coordination and execution of all activities funded under the loan. A PMU attached to MOHE will be responsible for implementing the Technology and Human Resource Development Project. The PMU will be supported by the PIUs with flexibility to re-deploy depending upon the implementation requirements. The PMU and PIUs will be supported by several teams of Design Consultants in preparation of preliminary engineering designs.

219. Project Management Consultant (PMC) centrally located in PMU and with field teams located in PIUs shall be responsible for implementation of the Program. All infrastructure contract will be procured through performance-based contracts (PBCs) and include build operate (BO) framework. Based on the preliminary designs prepared by Design Consultants, the DBO (design-build-operate). The preparation, review, and approval of project design and due diligence studies including bidding process is centralized at the PMU. PIUs will provide necessary support to PMU in preparation, and will play main role in supervising the construction process.

220. **Safeguards Compliance Responsibilities:** PO will ensure that environmental assessment is conducted, and the compliance, and corrective actions, if any are reported as required At the PIU, a Project Manager will be given additional responsibilities of safeguard tasks and will be designated as Assistant Environmental Officer (ASO). ASO will oversee the safeguards implementation at PIU level and report to PO (Environment) at PMU. Specifically ASO will coordinate public consultation, information disclosure, regulatory clearances and approvals, ESMP implementation and grievance redress.

221. **Monitoring and reporting** Monitoring of quality of water, air and noise during construction stage is a responsibility of the contractor by the approved Government Monitoring Agency. All construction activities such as site supervision, removal of trees, material extraction, verification of permits etc. by contractor will be supervised

by consultant engineer of building department. The environmental monitoring report will be submitted to safeguards officer of PMU at the MOHE.

222. The budgetary provision for the implementation of the ESMP of the project can be categorized in to two types and is presented below..

i. Environmental and Social Management Plan to be implemented by the contractor under civil works contracts

ii. Environmental Social Management Plan Works to be implemented by the FCT

223. A capital cost provision of about Rs XXX has been kept towards implementation of environmental management plan. Summary of environmental budget is presented in Table 28.

Table 28: Monitoring Plan for FCT for Preconstruction, Construction, and Operation Phases

SI No	Field environment attribute	Phase	Parameters to be monitored	Location	Frequency a	Responsibility	Cost
	Air quality	During preconstruction phase	Nitrogen oxide, sulfur dioxide, carbon monoxide, particulate matter (both 10 micrometers and 2.5 micrometers or less in diameter)	FT construction at RUSL	Once in the preconstruction phase to establish baseline	Contractor through approved monitoring agency	
		During construction phase			Once in every 3 months (except monsoon season) during construction phase (24 months construction phase)		
		During operation phase			Once bi-annually except during monsoon season during first 2 years		
2	Water *quality*	During preconstruction phase	Eason Total dissolved solids, total suspended solids , pH, hardness, biochemical oxygen demand, fecal coliform	FT or RUSL groundwater	Once to establish the groundwater quality before construction	Contractor through approved monitoring agency	
		During construction phase			Once in every three month during construction phase		

		During operation phase			Once every year except during monsoon during two years		
	Noise levels	During preconstruction phase	Noise quality as per National Ambient Noise Standards on dB(A) scale	FT or RUSL construction siter	Once in the preconstruction phase to establish baseline	Contractor through approved monitoring agency	
		During construction phase			Once in every 3 months (except monsoon season) during construction phase		
		During operation phase			Once every season except monsoon season for first 2 year		

7.3 Environmental Monitoring and Reporting

224. The FT at RUSL will monitor and measure the progress of ESMP implementation while supervising civil construction activities. PIU will undertake site inspections and document review to verify compliance with the ESMP and progress toward the final outcome. PIU will submit quarterly ESMP monitoring and implementation reports to PMU of the MOHE, who will take follow-up actions, if necessary. The MOHE will review and consolidate the quarterly reports to prepare bi-annual monitoring reports to ADB.

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

7.3 Grievance Redress Mechanism

226. The affected person(s)/aggrieved party can give their grievance verbally or in written form to the local site office of FT project site at Mihintale in Rajarata University. Grievances of affected person will first be brought to the attention of the site in charge, 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 Grievance Redress Committee (GRC) constituted for the purpose in PIU. This GRC shall discuss the issue in its monthly meeting and resolve the issues within one month of time after receiving the grievance. If the matter is not resolved by GRC at PIU level within stipulated time, it shall be referred to GRC at PMU level by Project Manager of PIU.

227. **Registering complaints:** GRC at PMU shall discuss the issue and try to resolve it and inform the PIU accordingly. If the matter is not resolved by the GRC at PMU level within one month of time the matter will be referred to State Level Empowered Committee (SLEC), who will resolve the compliant within one month through mediation. The PIU and -project site office shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed

corrective actions and the date these were affected and final outcome. For this a complaint register will be maintained at each sub-project site. The complaint will be registered by the aggrieved party by duly filling the form provided,(refer Annex 13). The PIU will establish a public response centre (PRC) helpline specifically addresses the issues arising out of project implementation. Compliant can be registered via any of the following means:

Through Public Response Center Help Line

Land Line Number

Mobile No:

WhatsApp:

E-mail

228. The cost for functioning of GRM will be accounted for in project cost as part of PIU functional cost. Additionally, person(s) / aggrieved party who are, or may be, 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 resident mission.

229. The PIU Level Grievance Redress Committee (GRC- PIU) – This committee will comprise of Project Manager, Site In charge and one officer from contractor team. The GRC- PIU will be headed by Project Manager (PIU). It will meet at least once a month. The agenda of the meeting will be circulated to all the members and the affected persons/aggrieved party along with venue, date and time at least a week prior to the meeting.

230. The PIU Officer (SO) will have the overall responsibility for timely grievance redressal on environmental issues and for registration of grievances, related disclosure, and communication with the aggrieved party.

231. This GRC at PMU will be headed by the managing director, and senior representative of PIU and other implementing agencies as relevant. The aggrieved party / person(s) can approach court of law any time with or without filing complaints at PIU or PMU level. The following mechanism is adopted from the World Bank mechanism currently identified for MOHEH. The mechanism may need further review once the implementation sets in.

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8 INSTITUTIONAL IMPLEMENTING ARRANGEMENT

To be discussed and finalized between ADB and MOHE.

9 CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion:

232. The IEE study did not find an adverse incompatibility with the surrounding physical, biological, socio-economic or cultural environment and does not pose any significant long term environmental threat if all identified mitigation measures are carefully attended to. The only major concern that needs close attention to is the flood risk in the area. The most impacts likely during the construction phase are expected to be temporary in nature and could be mitigated with proper management and good practices. The GRM and ESMP provide appropriate guidance for suitable environmental and social safeguards. Accordingly, the proposed project can be recommended for implementation with strict adherence to ESMP and GRM provided in this IEE.

233. Based on this IEE, it is expected that the proposed FT project components have only minor, localized, temporary, and low significance environmental impacts. These can be easily mitigated through adequate mitigation measures and regular monitoring during the design, construction, and post construction phases of project. Negative impacts on water, air quality, and noise levels during civil works and operation phase, which will be appropriately monitored and adequately mitigated. This report has not identified any comprehensive, broad, diverse, or irreversible adverse impacts caused by the project. Based on the findings of the 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 the Safeguard Policy Statement, 2009 nor the national regulations of Sri Lanka.

234. Most of the adverse impacts of FT during construction period are short term and temporary in nature. These impacts can be minimized through specific engineering and management solutions. Environment friendly construction methodology has been incorporated into the project design and the ESMP has been prepared to minimize the overall impacts on the environment during the proposed project civil works. Since the proposed project is likely to battle with seasonal flood risk issues, it is recommended that careful observations be made during the current rainy season on further design improvements. Further studies may be needed to assess the impacts on the immediate surroundings if filling of the land is carried out to the recommended level.

235. As per the Government of Sri Lanka regulation, Environmental Clearance is not required for the proposed project under the National Environmental Act. However, EPL Clearance from CEA & Department of Archeology, Irrigation Department, Mihintale Pradeshiya Saba clearance, UDA green building certificate will be required before commencement of construction.

236. Geotechnical report is recommended for detail designing of the project which was not available at the time of this IEE report. In order to carry out the Geotechnical investigation the proposed master plan with details of the respective space allocations of the buildings and the expected load bearing of each building should be provided. (The data was not available todate) Therefore this report does not comment on recommendations on the building structure.

9.2 Recommendations:

237. The ESMP has been prepared incorporating various modern technologies and guidelines to reduce the environmental impacts of project constructions to make it a Green building. Therefore, it is recommended to follow the ESMP and associated Guidelines during construction and operation phases of the project.

9.3 Measures to be adopted to improve the habitat around the project site theh

238. **Solid waste transfer site**: Currently the Mihntale Pradeshiya Saba operated open waste disposal site is located in the Mhintale Sanctuary closer to Doramadalawa. At RUSL, currently there is no solid waste management plant. However they have received 10 million as a grant from CEA for composting. Until this is established it is recommended that RUSL seek an agreement with the Mihntale Pradeshiya Saba to receive solid waste and dispose since it will be a health hazard for the student population. On the northern border of the project site, develop a green belt as per the recommended list of flora provided.

239. **Seasonal Flood risk**: It is recommended that flood water drainage plan is developed for the site. This plan should include measures to improve the flood risk by taking in to account:

- Protection level of the proposed infrastructures
- Maintenance of the sewerage system during floods.

- Improving the surface drainage system within the project area

240. Provisional letter obtain from Department of Irrigation recommends that Mihintale tank reservations and the proposed drains at project site be maintained. It is also recommended that without the recommendation of the Department of Irrigation, treated waste water cannot be discharged to the Mihintale tank.

241. Project associated network of waterways need to be regularly cleaned and maintained For this purpose RUSL will be required to consult the Irrigation Department , RDA and the Mihintale Pradeshiya Saba. It is recommended to consult the above metioned agencies to established project associated drainage.

242. The project site should be filled at least up to 1.5 m MSL by keeping minimum freeboard during site preparation. DPC level of the proposed buildings should be generally 0.50 m above the recommended fill level. Hence a detailed review of this should be carried out and engineering designs should adopt flood management strategies. These could be flood drains that will capture the excess water during the monsoonal period.

243. The ESMP has been prepared incorporating various modern technologies and guidelines to reduce the environmental impacts of project constructions to make it a Green Building. Therefore, it is recommended that the ESMP and associated guidelines during construction and operation phases of the project are strictly adhered to.

244. RUSL need to obtain the geotechnical report and engage with CEA and the UDA to incited the green building process immediately. The RUSL will be required to fill in the BIQ and obtain and EPL for the canteens that will cater for more than 500 students.

245. **Stability of the foundation**: All building in the proposed FT should be solid building on column structures that will with stand tornados. The basement rock structure should be investigated with bore hole casting testing. Since there is no geo technical information currently available, no recommendation have been made on the structure. It is recommended that in the geo technical investigations the ultimate skin friction coefficient (fμ) should be found and it should be less than that recommended in the ICTAD guidelines (ICTAD/DEV/15)[24].

[24] Geotechnical investigation for proposed building for faculty of computing and technology, university of Kelaniya . April 2018

246. **Provision of water supply**: The ground water quality of the project site needs to be investigated. Previous studies on the ground water in the area exhibit that there is high fluoride and calcite deposits in the water making it unsuitable for drinking. Make sure the construction workers are provided with drinking water from the onset of the construction phase. It is also recommended that prior to construction, water quality of the dug well at the site is checked.

247. **Solid waste disposal** generated during the construction and operational phase will obscure the environment and lead to pollution problems. The best way of disposal of waste is to develop a waste management plan for the project as included in the ESMP. Degradable solid waste can be composted while spoil material and other debris should be disposed at approved identified dump site.

248. **Waste water disposal**: Waste water should be treated in a treatment facility that can handle the occupancy capacity of the designed buildings and there should be adequate funding allocated for the operation of the facility though out FT operation.

249. Mechanism should be adopted for removal of sludge that is collected in the treatment plant. Sewage should be regularly removed by a gully bowers to avoid soil contamination

250. **Disaster management plan:** During all stages of the project cycle monsoonal flood , tornado associated disaster action plan should be developed to minimize the economic cost of the project and risks on life and property. More detail account is given in the ESMP.

251. **Habitat enrichment**: A rapid biodiversity assessment on site should be carried out out in even of expansion towards the Mihintale Tank as it is an area of moderate biodiversity. Several measures should be adopted to improve the habitat around the project site. Planting of recommended species along the reservation of the Mihintale tank with adequate provision to clean it drains is important. Consider the detailed architectural designs and develop a green belt with trees and shrubs on the southern and northern borders of the land to minimize the impact of road.

252. **Relocation of the CEB high-tension line:** Consult CEB and relocated the high tension electricity wires to increase the available spaces for design of FT and improve the health and safety of the students.

253. **Archeological conservation**: Have continued consultations with the Department of Archeology and develop code of protocol of operation during excavation and site preparation activities on site. Follow instructions provided in the provisional letter of approval obtained from the North Central Province Department of Archeology (**Annex 09).**

PART II: ANNEXES

LIST OF ANNEXES

ANNEX 01:

GREEN BUILDING APPLICATION

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ANNEX 02:

CHECK LISTS

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 (RSES) 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: Rajarata University of Sri Lanka– New Technology Faculty Development Project

Sector Division: Faculty of Applied Science

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
☐Cultural heritage site	x		The site is located 1.5km from the Mihindu Mahaa Saya archeological site. Therefore it is necessary that clearance is obtained from the Department of Archeology (this has now been obtained)
☐Protected Area		x	
☐Wetland		x	
☐Mangrove		x	
☐Estuarine		x	

☐Buffer zone of protected area		x	But should be vigilant as it is close to the buffer zone of the Mihintale Tank (wewa) Before site preparation clearance should be sought out from the Department of Irrigation. The species diversity may be high towards the Mihintale Tank which is located 240m away from the site.
☐Special area for protecting biodiversity		x	
☐Bay		x	
B. Potential Environmental Impacts Will the Project cause…			
☐Ecological disturbances arising from the establishment of a plant or facility complex in or near sensitive habitats?	x		There may be some disturbance as it is close to the buffer area for Mihintale Tank but should not be significant as it is adjacent to the main road. However, this factor should be taken in to consideration during construction and operation.. Certain floral species such as native neem trees may have to be uprooted for the construction of the building. Replanting or root ball planting of these trees should be carried out for every tree that is removed.
☐Eventual degradation of water bodies due to discharge of wastes and other effluents from plant or facility complex?	x		At the moment there is no water pollution on site. However proper sanitary waste water disposal should be incorporated into the design since the site is closely located to a wetland.

Screening Questions	Yes	No	Remarks
☐Serious contamination of soil and groundwater?	x		This is possible unless necessary actions are taken. To avoid contamination of ground and surface waters, designing of waste water treatment system for the building is necessary. During the construction phase, place proper sanitary facilities for the workers.
☐Aggravation of solid waste problems in the area?		x	Solid waste collected by Municipality, and there are no solid waste problems. However anticipating the future student influx at the site after development and during construction, a solid waste management plan should be in place with a storage area.
☐Public health risks from discharge of wastes and poor air quality; noise and foul odor from plant emissions?	x		Section of the site is 3 feet lower than the elevated road. At the moment this section is water logged and posing a mosquito disease health risk to the student community. Urgent soil compaction measures need to be adopted in order to avoid water logging.
☐Short-term construction impacts (e.g. soil erosion, deterioration of water and air quality, noise and vibration from construction equipment?	x		Noise, vibration, air quality may occur due to construction activities and the welding machines in operation. In the absence of good housekeeping practices and appropriate occupational safety measures, it may pose a risk for the health and safety of the construction workers.
☐Dislocation or involuntary resettlement of people?		x	
☐disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		x	
☐Environmental degradation (e.g. erosion, soil and water contamination, loss of soil fertility, disruption of wildlife habitat) from intensification of agricultural land use to supply raw materials for plant operation; and modification of natural species diversity as a result of		x	

the transformation to monoculture practices?			
☐Water pollution from discharge of liquid effluents?	x		Sanitary facilities should be properly designed for the faculty in order to avoid such problems. During construction, contractor should provide proper sanitary facility to avoid contamination of the ground water table.
☐Air pollution from all plant operations?		x	
☐Gaseous and odor emissions to the atmosphere from processing operations?		x	
☐ Accidental release of potentially hazardous solvents, acidic and alkaline materials?	x		There is a possibility of accidental spills from chemicals etc used in labs during operation. There should be safety measures in place for such emergencies.
☐Uncontrolled in-migration with opening of roads to forest area and overloading of social infrastructure?		x	
☐Occupational health hazards due to fugitive dust, materials handling, noise, or other process operations?	x		During constructions vibrations and leveling and other operational process noise, dust and other health problems may occur. But it is not expected to have a high significance as the site is currently separated from the main campus.
☐Disruption of transit patterns, creation of noise and congestion, and pedestrian hazards aggravated by heavy trucks?		x	
☐Disease transmission from inadequate waste disposal?	x		Unless proper mechanism is laid down to dispose the spoil material and other waste during demolition of old building and construction, it may lead to health risks. Rubble from demolition should be disposed off in an acceptable manner (consult with local authority). During operation of the faculty, a proper waste

			management plan should be place within the premises.
☐Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	x		This is mainly expected during operation of labs. Safety protocols have to be developed and guidelines for emergencies identified.
☐Large population increase during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?		x	There is a dedicated pipe borne water connection for the university. This will supply the need of the proposed development also.
☐Social conflicts if workers from other regions or countries are hired?		x	

Screening Questions	Yes	No	Remarks
☐Community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards during construction, operation and decommissioning?	x		Spoil material from a decommissioned building onsite will lead to community health risk unless properly disposed.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: Sri Lanka/ Rajarata University New Technology Faculty Development Project

Sector :

Subsector:

Division/Department:

Screening Questions		Score	Remarks[1]
Location and Design of project	Is siting 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 is high possibility of drought conditions.
	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	
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 hydrometeorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	0	
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

[1] 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 siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

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

Other Comments:_____
____

Prepared by: Sithara Atapattu

INDIGENOUS PEOPLES IMPACT CATEGORIZATION

Date:31.10.2017

A. Instructions

(i) The project team completes and submits the form to the Environment and Safeguards Division (RSES) for endorsement by RSES Director, and for approval by the Chief Compliance Officer (CCO).

(ii) The classification of a project is a continuing process. If there is a change in the project components or/and site that may result in category change, the Sector Division submits a new form and requests for recategorization, and endorsement by RSES Director and by the CCO. The old form is attached for reference.

(iii) The project team indicates if the project requires broad community support (BCS) of Indigenous Peoples communities. BCS is required when project activities involve (a) commercial development of the cultural resources and knowledge of indigenous peoples, (b) physical displacement from traditional or customary lands; and (c) commercial development of natural resources within customary lands under use that would impact the livelihoods or the cultural, ceremonial, or spiritual use that define the identity and community of indigenous peoples.

(iv) In addition, the project team may propose in the comments section that the project is highly complex and sensitive (HCS), for approval by the CCO. HCS projects are a subset of category A projects that ADB deems to be highly risky or contentious or involve serious and multidimensional and generally interrelated potential social and/or environmental impacts.

B. Project Data

Country/Project No./Project Title : Rajarata University of Sri Lanka - Technology Faculty Development Project

Department/ Division : Faculty of Applied Science

Processing Stage : Preliminary stage

Modality :

[ ] Project Loan [ ] Program Loan [ ] Financial Intermediary [✓] General Corporate Finance [ ] Sector Loan [ ] MFF [ ] Emergency Assistance [ ] Grant

[ ] Other financing modalities:

C. Indigenous Peoples Category

[X] New [ ] Recategorization — Previous Category [ ]

( ) Category A	**( )** Category B	**( )**Category C	**( )** Category FI

D. Project requires the broad community support of [ ] Yes ✓ [ ] No affected Indigenous Peoples communities.

E. Comments

Project Team Comments:	RSES Comments:
There are no inhabitants currently occupying this land. Land is state owned and previously occupied by the District secretariat as his residence. It was transferred by the District Secretariat to the University of Rajarata for academic purpose. See letter of transfer dated on 16th October 2017. University has provided him an alternate residence.	

F. Approval		
Proposed by: Project Team Leader, {Department/Division} Date:	**Reviewed by**: Social Safeguard Specialist, RSDD/RSES Date:	
Endorsed by: Social Development Specialist, {Department/Division} Date:	Director, RSES Date:	
Endorsed by: Director, {Division} Date:	**Approved by**: Chief Compliance Officer Date:	☐ Highly Complex and Sensitive Project

Indigenous Peoples Impact Screening Checklist

KEY CONCERNS (Please provide elaborations on the Remarks column)	**YES**	**NO**	**NOT KNOWN**	**Remarks**
A. Indigenous Peoples Identification				
1. Are there socio-cultural groups present in or use the project area who may be considered as "tribes" (hill tribes, schedules tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities" in the project area?		✓		
2. Are there national or local laws or policies as well as anthropological researches/studies that consider these groups present in or using the project area as belonging to "ethnic minorities", scheduled tribes, tribal peoples, national minorities, or cultural communities?		✓		
3. Do such groups self-identify as being part of a distinct social and cultural group?		✓		
4. Do such groups maintain collective attachments to distinct habitats or ancestral territories and/or to the natural		✓		

resources in these habitats and territories?				
5. Do such groups maintain cultural, economic, social, and political institutions distinct from the dominant society and culture?		✓		
6. Do such groups speak a distinct language or dialect?		✓		
7. Has such groups been historically, socially and economically marginalized, disempowered, excluded, and/or discriminated against?		✓		
8. Are such groups represented as "Indigenous Peoples" or as "ethnic minorities" or "scheduled tribes" or "tribal populations" in any formal decision-making bodies at the national or local levels?		✓		
B. Identification of Potential Impacts				
9. Will the project directly or indirectly benefit or target Indigenous Peoples?		✓		
10. Will the project directly or indirectly affect Indigenous Peoples' traditional socio-cultural and belief practices? (e.g. child-rearing, health, education, arts, and governance)		✓		
11. Will the project affect the livelihood systems of Indigenous Peoples? (e.g., food production system, natural resource management, crafts and trade, employment status)		✓		
KEY CONCERNS (Please provide elaborations on the Remarks column)	**YES**	**NO**	**NOT KNOWN**	**Remarks**
12. Will the project be in an area (land or territory) occupied, owned, or used by Indigenous Peoples, and/or claimed as ancestral domain?		✓		
C. Identification of Special Requirements *Will the project activities include:*		✓		
13. Commercial development of the cultural resources and knowledge of		✓		

Indigenous Peoples?				
14. Physical displacement from traditional or customary lands?		✓		
15. Commercial development of natural resources (such as minerals, hydrocarbons, forests, water, hunting or fishing grounds) within customary lands under use that would impact the livelihoods or the cultural, ceremonial, spiritual uses that define the identity and community of Indigenous Peoples?		✓		
16. Establishing legal recognition of rights to lands and territories that are traditionally owned or customarily used, occupied or claimed by indigenous peoples ?		✓		
17. Acquisition of lands that are traditionally owned or customarily used, occupied or claimed by indigenous peoples?		✓		

D. Anticipated project impacts on Indigenous Peoples

Project component/ activity/ output	Anticipated positive effect	Anticipated negative effect
1.		
2.		
3.		
4.		
5.		

Note: The project team may attach additional information on the project, as necessary.

INVOLUNTARY RESETTLEMENT IMPACT CATEGORIZATION

Date:30.10.2017

A. Instructions

(i) The project team completes and submits the form to the Environment and Safeguards Division (RSES) for endorsement by RSES Director, and for approval by the Chief Compliance Officer (CCO).

(ii) The classification of a project is a continuing process. If there is a change in the project components or/and site that may result in category change, the Sector Division submits a new form and requests for recategorization, and endorsement by RSES Director and by the CCO. The old form is attached for reference.

(iii) In addition, the project team may propose in the comments section that the project is highly complex and sensitive (HCS), for approval by the CCO. HCS projects are a subset of category A projects that ADB deems to be highly risky or contentious or involve serious and multidimensional and generally interrelated potential social and/or environmental impacts.

B. Project Data

Country/Project No./Project Title : Rajarata University of Sri Lanka - Technology Faculty Development Project

Department/ Division : Faculty of Applied Science

Processing Stage : Preliminary stage

Modality

[x] Project Loan [ ] Program Loan [ ] Financial Intermediary [ ] General Corporate Finance [ ] Sector Loan [ ] MFF [ ] Emergency Assistance [ ] Grant [ ] Other financing modalities:

C. Involuntary Resettlement Category

[x] New [ ] Recategorization — Previous Category [ ]

[ ] Category A	[ ] Category B	[ ] Category C	[ ] Category FI

D. Comments

Project Team Comments:	RSES Comments:
There are no inhabitants currently occupying this land. Land is state owned and previously occupied by the District secretariat as his residence. It was transferred by the District Secretariat to the University of Rajarata for academic purpose. See letter of transfer dated on 16th October 2017. University has provided him an alternate residence.	

E. Approval

Proposed by: **Reviewed by**:

Project Team Leader, {Department/Division} Social Safeguard Specialist, SES RSDD/R

Date: Date:

<table>
<tr><td colspan="3">Endorsed by:</td></tr>
<tr><td colspan="3">Social Development Specialist, {Department/Division} Director, RSES
Date: Date:</td></tr>
<tr><td colspan="2">Endorsed by:</td><td rowspan="2">Approved by:

Highly Complex ☐ and Sensitive Project</td></tr>
<tr><td>Director, {Division}
Date:</td><td>Chief Compliance Officer
Date:</td></tr>
</table>

Involuntary Resettlement Impact Categorization Form

Involuntary Resettlement Impact Categorization Checklist

Probable Involuntary Resettlement Effects	Yes	No	Not Known	Remarks
Involuntary Acquisition of Land				
1. Will there be land acquisition?		✓		
2. Is the site for land acquisition known?		✓		
3. Is the ownership status and current usage of land to be acquired known?		✓		It is own by the divisional Secretariate of Anuradhapura and is transferred to University of Rajarata
4. Will easement be utilized within an existing Right of Way (ROW)?		✓		
5. Will there be loss of shelter and residential land due to land acquisition?		✓		The Divisional secretariats bungalow is relocated and built by the university in another alternative site.
6. Will there be loss of agricultural and other productive assets due to land acquisition?		✓		
7. Will there be losses of crops, trees, and fixed assets due to land acquisition?		✓		
8. Will there be loss of businesses or enterprises due to land acquisition?		✓		
9. Will there be loss of income sources and means of livelihoods due to land acquisition?		✓		
Involuntary restrictions on land use or on access to legally designated parks and protected areas				
10. Will people lose access to natural resources, communal facilities and services?		✓		
11. If land use is changed, will it have an adverse impact on social and economic activities?		✓		
12. Will access to land and resources owned communally or by the state be restricted?		✓		
Information on Displaced Persons:				

Any estimate of the likely number of persons that will be displaced by the Project? [ ] No [ ] Yes If yes, approximately how many? _____	✓
Are any of them poor, female-heads of households, or vulnerable to poverty risks? [ ] No [ ] Yes	✓
Are any displaced persons from indigenous or ethnic minority groups? [ ] Yes	✓ [ ] No

Note: The project team may attach additional information on the project, as necessary.

ENVIRONMENT CATEGORIZATION

Date: 30.10.2017

A. Instructions

(i) The project team completes and submits the form to the Environment and Safeguards Division (RSES) for endorsement by RSES Director, and for approval by the Chief Compliance Officer (CCO). OM F1/OP on *Safeguard Review Procedures* (paras. 4-7) provides the requirements on environment categorization.

(ii) The classification of a project is a continuing process. If there is a change in the project components or/and site that may result in category change, the Sector Division submits a new form and requests for recategorization, and endorsement by RSES Director and by the CCO. The old form is attached for reference.

(iii) In addition, the project team may propose in the comments section that the project is highly complex and sensitive (HCS), for approval by the CCO. HCS projects are a subset of category A projects that ADB deems to be highly risky or contentious or involve serious and multidimensional and generally interrelated potential social and/or environmental impacts.

B. Project Data

Country/Project No./Project Title : Rajarata University of Sri Lanka – New technology faculty development project :

: Department of Applied Science

Department/ Division :

Processing Stage: Preliminary

Modality

[X] Project Loan [ ] Program Loan [ ] Financial Intermediary [ ] General Corporate Finance

[ ] Sector Loan [ ] MFF [ ] Emergency Assistance [ ] Grant

[ ] Other financing modalities:

C. Environment Category (please tick one category based on the set of criteria in OMF1 (paras. 6-7))

[X] New [ ] Recategorization — Previous Category [ ]

[ ]	Category A	[X]	Category B	[ ]	Category C	[ ]	Category FI

D. Basis for Categorization/ Recategorization (please. attach supporting documents):

[✓] REA Checklist

[ ] Project and/or Site Description

[ ] Other: Pictures

E. Comments

Project Team Comments	RSES Comments

F. Approval

<table>
<tr><td colspan="3">Proposed by: Endorsed by:

Project Team Leader, {Department/Division} Director, RSES
Date: Date:</td></tr>
<tr><td>Endorsed by:</td><td>Approved by:</td><td rowspan="2">☐ Highly Complex and Sensitive Project</td></tr>
<tr><td>Director, {Division}
Date:</td><td>Chief Compliance Officer
Date:</td></tr>
</table>

Environment
Categorization Form

ANNEX 03:

SITE REPORT

Rajarata University Technology Faculty Development Project Brief Site Inspection Report

(31st of October 2017)

Site description:

The establishment of a technology faculty is to train undergraduate and graduate students in computing skills and technology. The site that is identified for development is located in Mihintale which known as Mihintalekele has been handed over by the Divisional Secretariat of Mihintale. The land is situated on the Puttalum Anuradapura A12 highway and 794 m from the Mihintale town. Anubudu Mihindu Maha Seya which is 190m from the site and is one of the closely located archeological sites. There are several archeologically significant sites located in close proximity to the site these include Mihintale temple (1.5km), Naga pokuna (1.37km),Sinha pokuna (1.26km), Kaludiya pokuna (1.37km). The Mihintale wewa 190m from the site.

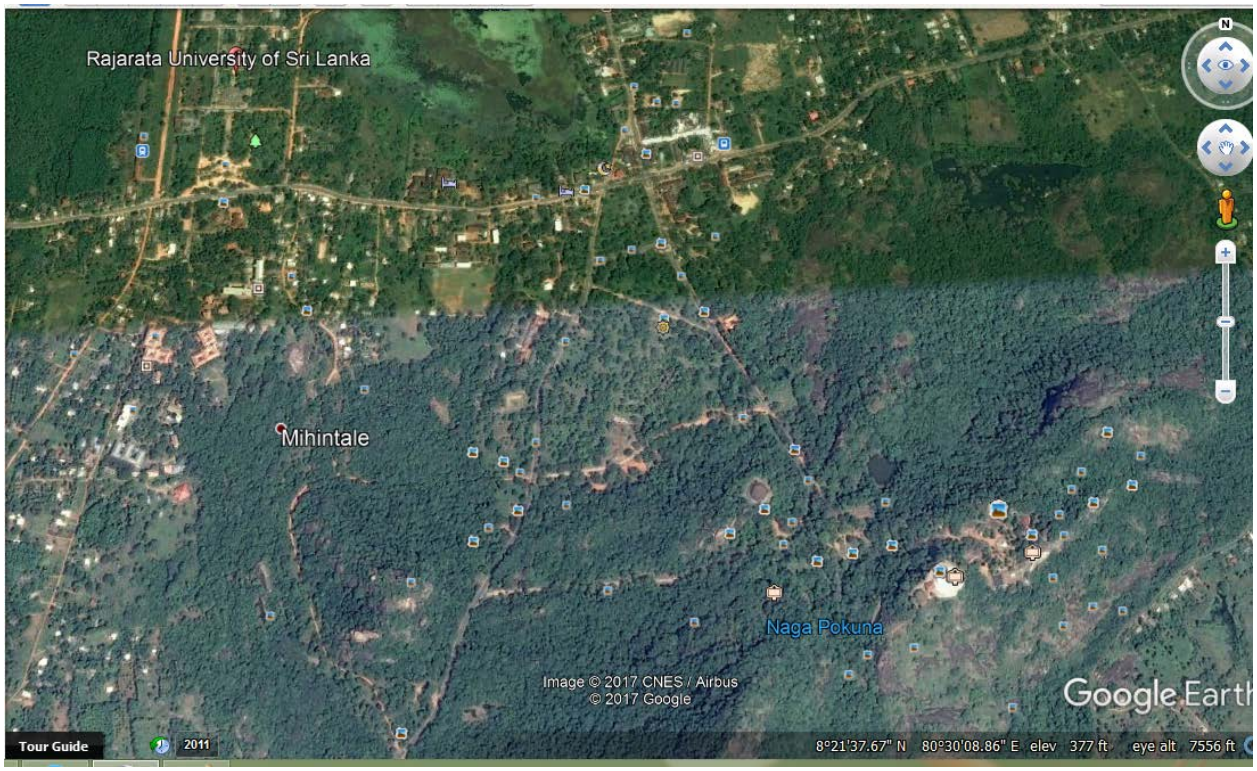

Figure 1. Project location seen as plantation area with 80% green cover

The land for the development of the technology faculty is located closely to several archeological site as mentioned above. Therefore prior to any site clearance it is important that clearance be obtained from the department of archeology for the building of the technology faculty. This would set the limits for building heigh and any other archeological concerns.

The proposed site is state owned and the official housing for divisional secretary was within the land. It was handed over to Rajarata university by the Mihintale Divisional Secretary under the condition that the university bears the cost for relocation of the divisional

secretary's bungalow. The site is composed of scrub vegetation and has few large trees such as Mee (02), Kohomba (02), coconut tree (1) and Kiriya tree (2). Some of these tree would have to be removed during the site preparation as per the requirement of building designing and construction. On the south west boundary lies a well that was used to supply water for the site. (figure 02).

Figure 2 Mihintale tank adjacent to the site

figure 2: overview of the site with the well and the power pylons

Land extent is 1 acre and 10.2 perches. Eastern boundary is State Land , that is to be acquired by the Rajarata university. Right around the property is by a wire fence. The western boundary is the road that provides access to the Jaffna road and is maintained by the Pradeshiya Saba. The southern boundary adjoins the A12 Anuradhapura to Jaffna road. (Refer survey Map No 8472).

Considering the location of the land and terrain, certain areas of the land will require filling, especially near the A12 road. On the eastern section of the land water logged condition was observed. To bring the site to the road level nearly 2-3 feet soil should be compacted and filled during the site preparation stage. South eastern border high tension electricity lines were observed that will be required to be removed or relocated to ensure the safety at the construction site ..

Since the land falls under the Mihintale urban council limits, University of Rajarata will be required to obtain a letter of approval from the Local Authority before commencement of any work. At the time of the site inspection, no onsite work was initiated. The university was involved legal process to secure the ownership of the land. Already for the proposed development the Rajarata university has received a letter of land transfer from the Divisional Secretary Mihintale, however, it is subject to approval from other agencies.

We recommend that an IEE be carried out for this site. However, once the development plan is prepared approvals will have to be sought from the relevant local authorities including the UDA, CEA, CECB, Department of Irrigation, Department of Archeology without delay. It is recommended that the IEE give special attention to the following:

a. Review environmental recommendations provided under UDA for development in this region. Obtain the green building certificate.
b. Approval and clearance from the Department of Archeology and carry out an archeological assessment.
c. Review any other work related to water drainage especially near the road (A12 road)
d. Provision of adequate reservation for green buffer for the northern boundary for the Mihintale wewa reservation
e. Obtain clearance l from the department of irrigation
f. Test for Soil stability and suitable design,
g. Disposal of spoil material generated as result of demolition of the official quarters.
h. Review of building design and layout to ensure conformity with environmental and social requirements.
i. Management of various categories of waste (solid and liquid)

Recommendations to the Rajarata University of Sri Lanka as preliminary activities:

a. Soil testing be carried out.
b. Obtain formal approval from Director Department of Archeology for the use of this land for the purpose of a faculty of technology .
c. Clarence from the Department of irrigation for site preparation etc.
d. Fill a BIQ (basic information and questioner) and submit it to the CEA (Central Environmental Authority) for assessment and evaluation locally.

ANNEX 04:

SUMMARY OF STAKEHOLDER CONSULTATION MEETING

SUMMARY OF STAKEHOLDER CONSULTATION MEETING

HELD IN UNIVERSITY OF RAJARATA

Date: 19th April 2018 Time: 10.30 am - 11.30 a.m

Location: University of Rajarata

Invitees: Government officer representatives

- Assistant Director planning, Mihinthale
- Grama Niladari, Mihinthale

University of Rajarata Representatives

- Dean of the faculty of technology & Science
- Head of the department, Electrical and Electronics
- Lecturer - in-charge, Department of ICT
- Lecturer – in charge, Department of Materials Technology
- Senior lecturer, Temporary
- Two temporary lecturers
- Seven probationary lecturers

Student Society Representatives

- President of technology faculty student society
- Two members of technology faculty student society

Representation from the community

- Ajith Priyantha
- R.M.P. Karunarathne

Consultant firm representatives

- Environmental Compliance Consultant ADB – Charmini Kodituwakku
- Project Administrative Officer – Champika Kumari

For the meeting representatives from UDA, Mihintale Pradeshiya Saba, Department of Irrigation, Department of Wildlife Conservation, were invited however they did not attend the meeting

Matters Presented at the Meeting:

a) Objective of the proposed building and its benefits and the history of the project
b) Building plan and the layout structure that is proposed
c) Description of importance of the meeting and its scope
d) Archeological impact on as a result of project work
e) Approval requirements for the project
f) Invited stakeholder's views and comments discussion on impact associate with the project.

Section (a-b) were presented by Dr. Ananda Karunarathna, Dean Faculty of Technology & Science in University of Rajarata. The Environmental Compliance Consultant from TMS presented Section e and f. Presentations were made in Sinhala.

Method of information dissemination and collection:

- Notes were taken on the discussion
- A feedback questionnaire in local language (Sinhala) was presented at the common forum and then asked each of the stakeholder to express their views regarding the question. The issue that were broadly covered in the questioner was:
    - On obtaining the relevant approval from the concerning authorities
    - Solid waste disposal associated with the project
    - Waste water management of the project
    - Issue of environmental pollution concerning solid and waste water waste disposal and how it will impact the water shed of the Mihintale wewa
    - Issue of environmental pollution concerning solid and waste water waste disposal
    - Improvement of the drainage in the canal system associated with the project
    - Disturbance due to project work for the surrounding community
- Discussion were based on adoption of possible migratory measures for environmental issues that were encountered as result of project activities
- Record of the Meeting: General information of the participants such as name, name of the organization the participant belongs to along with their signature was recorded during the public consultation meetings and is attached in the report.

Common issues and concerns raised at public consultation meetings

1. Mr. Ajith Priyantha, (resident living adjoining the land) pointed out that the project was beneficial to the community. He pointed out that there were environmental issues concerning the project area. The environmental issues include disposal of sludge and sewage by the army camps to the Mihintale Tank. He added that even the Pradeshya Saba disposes sewage in to Mihinthale Tank and Doramadalawa temple lands. The improper disposal of sludge and sewage has resulted in environmental pollution of the tank.

2. Disposal of solid waste is another environmental issue he said. Mihintale Pradeshiya Saba disposes its solid waste closer to the forest of Doramadalawa temple which is an archeological site. He pointed out that unless this is urgently resolved it would contribute to the environmental pollution and obscure the environment.
3. Mrs. K.A.M. Lakmali, Grama Niladari officer and Mrs. W.M.W.M. Wanninayaka, Assistant Director of Planning both agreed on point raised by Mr. Ajith. Mrs. Charmini (ADB/TMS environmental compliance consultant) wanted to clarify whether there was any waste management plan in place with the Mihintale Pradeshiysa saba. Mrs. Wanninayaka said that currently there was no such solid waste management plan and that there haphazard dumping was practiced.
4. Mrs. Charmini raised the question on whether there was any requirement of any government approval to be obtain for the project. In response to this question Mrs. W.M.W.M. Wanninayaka said to seek approval from agencies such as UDA, CEA, Mihintale Pradeshiysa Saba, Irrigation Department, Archeology Department.
5. Mrs. Charmini raised the question on how solid waste is being managed at the university premises. Head of the Department in Electrical and Electronics Dr. P.B. Jayathilaka in response to this question said that CEA had granted 10 million to establish the composting program. He said that they were exploring other possibility such as installing a biogas plant as an alternative. Already hey have consulted a university based in Germany to install a biogas plant. He further added that on the issue of treating waste water they have a system in place however this becomes dysfunctional due to lack of funds to operate that sand beds in the treatment plant.
6. Mrs. Charmini raised the question of whether there were any social or cultural issues as a result of student unrest or behavior. Initially the forum was reluctant to express their view but Mr. Ajith Priyantha (resident) pointed out that few minor issues had arisen due to unacceptable social behavior of few students. He, however, confirmed that that there were no conflicts between the villagers and the students. In most occasions the university through their community centered project would assist the villagers in different tasks.
7. Mrs. Charmini asked the student represented at the meeting whether there were any difficulties that they face currently as a result of not having the project. Mr. P.M.J.D. Siripalla (president of the student society in Technology faculty) said that the as students experience difficulties due to lack of adequate space to conduct their academic work. He added that they do not have well-spaced class rooms, laboratories and etc. and that they currently use facilities from the Applied Science Faculty. Due to limitation of space they had to work even during the evening till about 8.00pm unlike other university graduates. This set up makes it very difficult for them to obtain a student break and sometime a safety issue for the female students So, he requested that the processes is urgently speeded up.
8. Mrs. Charmini raised question on environmental issues concerning the Mihinthale Tank. In response, Mr. Ajith said that once the Mihintale tank was a biodiversity rich habitat that supported clear water however, now it is degraded beyond comprehension due to waste water being emptied from the gully bowsers. The forested area adjoining the tank is the catchment area.

9. GN officer K.A.M. Lakmali and the Assistant Director of Planning from DS office, Mrs. W.M.W.M. Wanninayaka added that it would be best that the university contact the UDA to get master plan for Mihintale. Mrs. W.M.W.M. Wanninayaka pointed out that we need to check the zonation of this land and then seek for an approval letter from them.

10. Meanwhile Mrs. Chamini pointed out that university need to obtain provisional approval letter from the Mihintale Pradeshiya Saba. Since the project area has micro climatic issues such as tornados and water-logged conditions during the monsoonal period, proper mitigation should be adopted during the construction phase. She also pointed out that the university need to take immediate action to remove the high-tension lines on the site to increase the available space for construction. Therefore, the University of Rajarata needs to liaise with CEB on this.


Plate 01- During the Stakeholder meeting


Plate 02- During the Stakeholder meeting


Plate 03- During the Stakeholder meeting


Plate 04-During the Stakeholder meeting

ANNEX 05: BIQ

A
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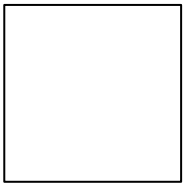


Central Environmental Authority

BASICINFORMATIONQUESTIONNAIRE

Essential information to determine the environmental approval requirement of projects

(Note: Use separate sheets as and when required)

1. BACKGROUND INFORMATION

1.1. Project Title: Proposed Faculty of Technology Building Complex in Mihinthale

1.2. Name of the Project Proponent: Rajarata University of Sri Lanka (Company/Firm/Individual)

1.3. Details of the Project Proponent:

Postal Address: Rajarata University of Sri Lanka, Mihinthale.

Phone No: 0775875360
Fax No:
E-mail Address: Ananda Karunaratne <anandaxrf@yahoo.com>

1.4. Details of the Contact Person:

Name: Dr Ananda Karunaratne /
Designation: Dean/Faculty of Technology Rajarata University of Sri Lanka

Mr. Selarathane

Works Engineer Rajarata University

Phone No: 0775875360 (Dr Ananda), 0714412107
Fax No:
E-mail Address: anandaxrf@yahoo.com / amsseelaratne@yahoo.com

2. PROJECT LOCATION DETAILS

2.1. Location of the project:

Province/s: North Central Province

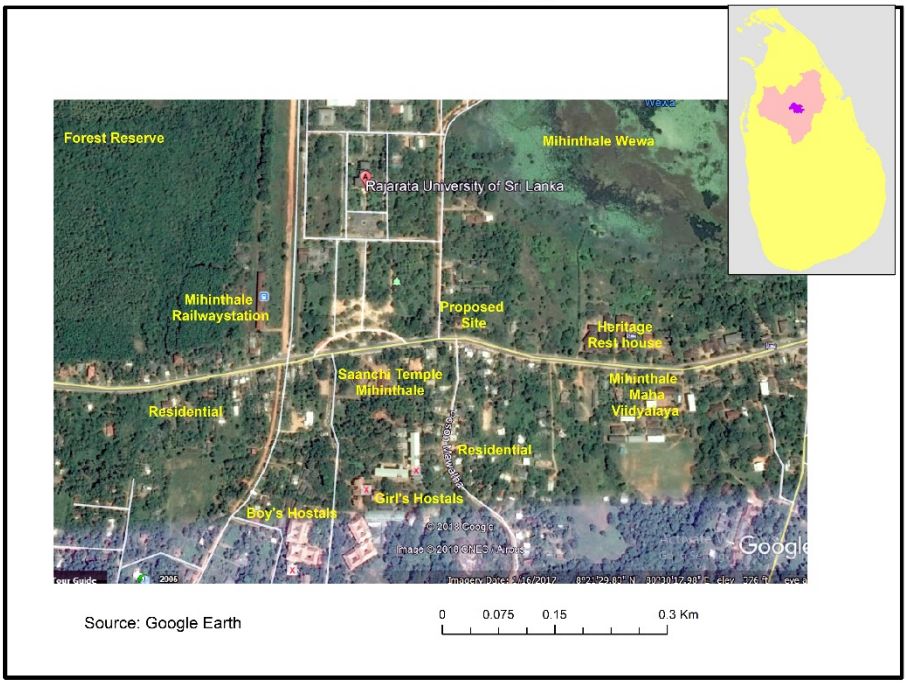
District/s: Anuradhapura District

Divisional Secretariat Division/s: Mihinthale

Local Authority/s: Mihinthale Pradeshiya Saba

(***Provide location in1:50,000scale Toposheet)***

Project Highlights



Source TMS

2.2. Physical scale or the extent of the project site (in ha): 0.8470 ha
(*Provide Survey plan*) To be filled by RUSL

2.3. Does the project whole your partly fall within any area specified below?

Area	Yes	No	Remarks
100m from the boundaries of or within any area declared under the National Heritage Wilderness Act No.4 of 1988		✓	
100m from the boundaries of or within any area declared under the Forest Ordinance (Chapter451)		✓	
Coastal Zone as defined in the Coast Conservation Act. No.57 of1981		✓	
Any erodible area declared under the Soil Conservation Act(Chapter450)		✓	
Any flood area declared under the Flood Protection Ordinance (Chapter449)	✓		
Any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act No.15 of 1968 as amended by Act No.52 0f1982		✓	
60meters from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having width of more than 25 meters at any point of its course.		✓	
Any reservation beyond the full supply level of a reservoir.		✓	
Any archaeological reserve, ancient or protected monuments as defined or declared under the Antiques Ordinance (Chapter188)		✓	
Any area declared under the Botanic Gardens Ordinance (Chapter446)		✓	
Within 100meters from the boundaries of or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter469)		✓	
Within 100meters from the high flood level contour of or within a public lake as defined in the Crowns Lands Ordinance (Chapter 454) including those declared under section 71 of the said Ordinance	✓		
Within a distance of one mile of the boundary of a National Reserve declared under the Fauna and Flora		✓	

Protection Ordinance			

2.4. Present ownership of the project site:

State	Private	Other (Specify)
✓		

(If state owned, please submit a letter of consent of the release of land from the state agency

2.5 Present land use type of the project site (approximate % of the total project site):

Landusetype	**%**	**Landusetype**	**%**
Marsh/mangrove		Bareland	65
Water bodies		Paddy	
Denseforest		Tea	
Sparseforest		Rubber	
Scrubforest		Coconut	10
Grassland		Built-uparea	25
Home gardens		Anyother (Specify)	

3. PROJECT DETAILS

3.1. Objective/s of the project:

Establishment of such a technology faculty will generate new employment opportunities for the undergraduate students improve skills and training in the bio process technology, food technology, electrical and electronic technology, material technology, and information and communication technology. Thus, it will simultaneously contribute to improvement of education in the whole country while improving opportunities for employment in bio systems technology, engineering technology, material technology and communication technology which are being identified as key sectors of the economy. There is bound to be increased interest in these professions and it will attract young people. The faculty will facilitate infrastructure to conduct lectures and engage in activates that will promote technology subjects.

3.2. Present stage of the project in the project cycle:

(i)	Pre-feasibility	✓
(ii)	Feasibility	Done
(iii)	Design	Not yet
(iv)	Other (specify)	Not yet

3.3. Type of the project (Please tick the relevant cage/s):

Land development/clearing	✓	Hotels /Recreational Facilities	
Timber extraction/tree felling		Housing and building	
Reclamation of Land/wetland		Resettlement	

Conversion of forests into non-forest uses		Laying of gas and liquid (excluding water) transferring pipe lines	
Urban development	✓	Mining	
Portand Harbour Development		Tunneling	
Transportation system		Fisheries and aquaculture	
River basin development/Irrigation		Disposal of solid/liquid/hazardous wastes	
Power generation and transmission		Salterns	
Surface/ground water extraction		Any other (Specify)	
Industry/Industrial Estates and Parks			

3.4. Physical scale or the magnitude of the project:

The extent of the building is:
Ground floor–
First floor – (DATA NOT RECEIVED TO DATE)
Total -

Approximate student capacity	1576
Faculty board room	2500 sq. ft
Six Academic departments	15000 sq. ft
Academic staff rooms	10000 sq. ft
General Administration	3000 sq. ft
Auditorium	10000 sq. ft
Lecture halls	12600 sq. ft
Seminar room	2500 sq. ft
Drawing room	3000 sq. ft
Physical laboratory	3500 sq. ft
Chemistry laboratory	3500 sq. ft
Biological Laboratory	3500 sq. ft
General computer lab	2500 sq. ft
Labs for bio system technology	Biosystem technology Molecular biology lab Micro Biology Laboratory Tissue Culture Laboratory Immunology Laboratory Cell Culture Laboratory Bio technology lab

	Bio processing lab
Labs for food technology	Food processing lab Food chemistry lab Sensory evaluation lab Culinary lab
Electrical and Electronic Technology	Electronics Laboratory 3500 sq. ft Electrical Laboratory 3500 sq. ft Communication Laboratory 3500 sq. ft Robotics & Automation Laboratory 2500 sq. ft Advanced Electronics Laboratory 1500 sq. ft Advanced Research Laboratory – 1200 sq. ft
ICT	Network and security lab Hardware Technician Laboratory Robotics Laboratory Virtual Reality Laboratory IOTA laboratory
Faculty library	1500 sq. ft
Student common area	10000 sq. ft
Industrial park three rooms	(DATA NOT RECEIVED TO DATE)
Land Use	Bare land adjacent to the University of Rajarata. Already developed land with Divisional Secretariats quarters (subsequently demolished).
Cafeteria two	10000
Total extent of the building	(DATA NOT RECEIVED TO DATE)

3.5. Major components of the project:

The proposed Faculty of Technology Development project will involve construction of a new faculty with facilities to conduct lectures for technology students. The FT will be with several storied It will include laboratory facilities for, Physics and Chemistry and biology, bio system technology, Electrical and Electronic technology, food technology ICT and Faculty library. a product design lab. It will also include two computer labs that will train 50 students at a time. There will be two cafeteria that will be 10,000 sq ft that will cater for the student population. The FT will provide facilities for 1567 after five years .DATA NOT RECEIVED TO DATE)

3.6. Project layout plan (Conceptual): DATA NOT RECEIVED TO DATE)

3.7. Project process/s in terms of:

Inputs including resources such as raw materials, water, and energy used in construction/operational phases of the project and source of such resources

Outputs (including products and by-products)

Major types of equipment/technology to be used

Please contact contractor of the project & project engineer of the project for details and fill in

A bio gas plant would be established to minimize the impact of solid waste. To treat the waste water a waste water treatment plant will be established or it will be removed by gully bowsers on frequent intervals to be treated at the waste water treatment plant at the university premises.

3.8. Does the project involve any of the following activities other than the major project activities?

	Activity	**Yes**	**No**	**If yes please quantify**
(i)	Reclamation of land/wetland		✓	
(ii)	Conversion of forests into non-forest uses		✓	
(iii)	Clearing of lands	✓		
(iv)	Extraction of timber		✓	
(v)	Mining and mineral extraction	✓		
(vi)	Lying of pipelines	✓		
(vii)	Tunneling	✓		
(viii)	Power generation & transmission		✓	
(ix)	Resettlement		✓	
(x)	Extraction of surface/groundwater	✓		
(xi)	Disposal of wastes(solid/liquid/hazardous)	✓		

3.9. Amount of capital investment: Total Rs 2930 million

Foreign:	DATA NOT RECEIVED TO DATE
Local:	DATA NOT RECEIVED TO DATE

3.10. Proposed timing and schedule including phased development: DATA NOT RECEIVED TO DATE

3.11. Details of availability of following services/infrastructure facilities:

(i) Roads/access(Specify): Puttalam-Anuradhapura- Trincomalee Hwy

(ii) Water (Specify): liters per day DATA NOT RECEIVED TO DATE

(iii) Power(Specify): generator and grid would be installed DATA NOT RECEIVED TO DATE

(iv) Telecommunication(Specify): Sri Lanka Telecom

(v) Common waste water treatment facilities (To be filled by RUSL): Will be directed to a septic and sewage tanks that will be emptied with the assistance of the Mihintale Pradeshiya Saba.

(vi) Common solid waste management facilities(Specify): Mihintale Pradeshiya saba. A bio gas plant to be established with the collaboration of a German university. Composting project will be under way with the 10 million granted by CEA.

(vii) Any other (Specify):

3.12. Will the development result in displacement of people or property: (Quantify)? No

3.13. Will the development result in change of way of life of local people? Yes. The village community is reliant on support services that provide for the university. Improvement of the family incomes through support services such as providing lodging, food and other services. Establishment of the university generated revenue for RUSL adjacent village community

3.14. Will the project have plans for future expansion with/without land/space: demands?

No. The space will be used efficiently there is no space for further expansion unless the adjoining state land is acquired.

3.15. Information on likely impacts of the project (Please tick the relevant cage/s):

Impact/s	Yes	No	Short term	Medium term	Long term
● Impacts on people & human health	✓		✓		
● Impacts on fauna/flora/sensitive habitats	✓		✓		
● Impacts on soils and land use	✓		✓		
● Impacts on water quality (surface and ground)	✓			✓	
● Impacts on drainage/hydrology	✓			✓	
● Impacts on air quality	✓		✓		
● Generation of excessive noise and vibration	✓		✓		
● Impacts on landscape/visual environment	✓				✓
● Impacts on historical and cultural resources	✓		✓		
● Presence and aggravation of hazards		✓	-		
● Any other (Specify)					

3.16. Information and measures being considered to mitigate likely impacts of the project cited under: with the supervision of the consultant appointed for this project-

The enclosed ESMP provide information as to the proposed impacts and suggested migratory measures. (Refer annex ESMP for mitigation proposed during the construction and operation). The waste water treatment will be an environmental issue that can be mitigated from the proposed waste water treatment plant. In the absence of the WWTP the waste water will be directed to septic tanks and emptied by gully bowers at regular intervals. This will be properly monitor by CEA and the Mihintale Pradeshiysa Saba. The construction contractor and the RUSL should develop a schedule and implement it. Practice proper waste management on site during construction and commissioning of the proposed Faculty of Technology.

Unless the discharge effluent meets the CEA guidelines for waste water standard it will lead to contamination of ground water and increase the health risk.

On disposal of solid waste, the composting project will be implemented. Apart from that negotiation are being carried out with foreign university to establish bio gas plant.

Water logging during the monsoon is an environmental issue at the site. In the preliminary designs a proper storm water drainage system is planned. Geotechnical report will be provided to assess the foundation stability and withstand a tornado.

In the even the and archeological monument is found Develop a protocol for use by the construction contractor in conducting any excavation work, to ensure that any chance finds are recognized and conserved.

Immediately install first aid facilities and train at least one worker on first aid. Install colour coded bins, and mode for source separation, document the waste management with the expected expanded operation.

3.17. Relationship with other existing /planned: developments:

The selected site is strategically located close to the Mihintale tank in the Mihintale DSD North Central Province and within close proximity to the Lakshauyana Industrial Zone in Polonnaruwa, Mawatha Gama Export Processing Zones (EPZ) in Kandy It is closely located mineral resources such as Eppawella mineral deposit, Pulmudai Mineral (Zircon, Ilmenite, and Rutite), deposits, Kaikawala Feldspar and Quartz deposits, Namal Uyana Rose Quartz deposit, Yan Oya Red Clay deposit which provides ideal research opportunities for RUSL students in material sciences.: It is easily accessible to the student community to carry out research and their educational activities. Thus, the development of the land into a training facility will be the better option under the existing condition.

3.18. Details of any other permits required for the project:

- Environment Clearance - From UDA, Mihintale Pradeshiya Saba, Irrigation Department
- Consent from relevant government agencies –Mihinthale Pradeshiya Saba provisional approved will be required before site clearance
- Consent letter for construction of buildings from the Anuradhapura Division, Department of Archelogy has already been obtained. (Refer Annex XXXX)
- Consent letter from the Department of Irrigation DATA NOT RECEIVED TO DATE

4. OTHER

Provide any other information that may be relevant

I……. certify that the information provided above is true and correct to the best of my knowledge. I am aware that this information will be utilized indecision making.

Name: .....Designation: .....

Signature: ..... Date: .....

ANNEX 06:

LAND TRANSFERRING LETTER FROM DS OFFICE

ප්‍රාදේශීය මහ ලේකම් කාර්යාලය - මිහින්තලය
பிரதேச செயலகம் – மிகிந்தலை
Divisional Secretariat – Mihinthalaya

Fax : 025 - 2266658/ 025-2266872   E – mail:- mdsa.divi.mihinthale@gmail.com

Divisional Secretary	Asst. Divisional Secretary	Accountant	Asst. D. of Planning	Office
025-2266660	025-2266915	025-2266872	025-2266026	025-2266658

My No : [illegible]/19/6-3/577/[illegible]   Your No :   Date : 2017.10.16

[illegible],
[illegible] විශ්ව විද්‍යාලය,
මිහින්තලේ.

(01) Registrar / Rusl
To proceed and for n/a
17/10/2017

17 OCT 2017

[illegible]

[illegible] 1/5/3/19/2015-iii [illegible] 2015.11.23 [illegible]

02. [illegible]

[illegible]
ප්‍රාදේශීය ලේකම්,
මිහින්තලේ.
පිටපත් -
1. [illegible] 1/5/3/19/2015-iii [illegible] 2015.11.23 [illegible]

(02) AR/Adm
for open a file
[signature] 17/10/17

(03) AD/03
29/10

ANNEX 07:

SURVEY PLAN

A.M.B.Ratnasiri(...P.)
Licensed Surveyor & Leveller
Court Commissioner & Valuer
560/A,Godage Mawatha,
Anuradhapura
Registration No.19910457
T.P. 025-2235895

Plan No.8472

Scale 1:1000

PLAN

Of 3 allotments of State land called Mihintalawwa being part of Lot 177 in P.V.P.564, situated in the Village of Mihintale(P.V.P.564),in Kekulawa Korale, in the Divisional Secretary's Division of Mihintale, in the District of,

ANURADHAPURA

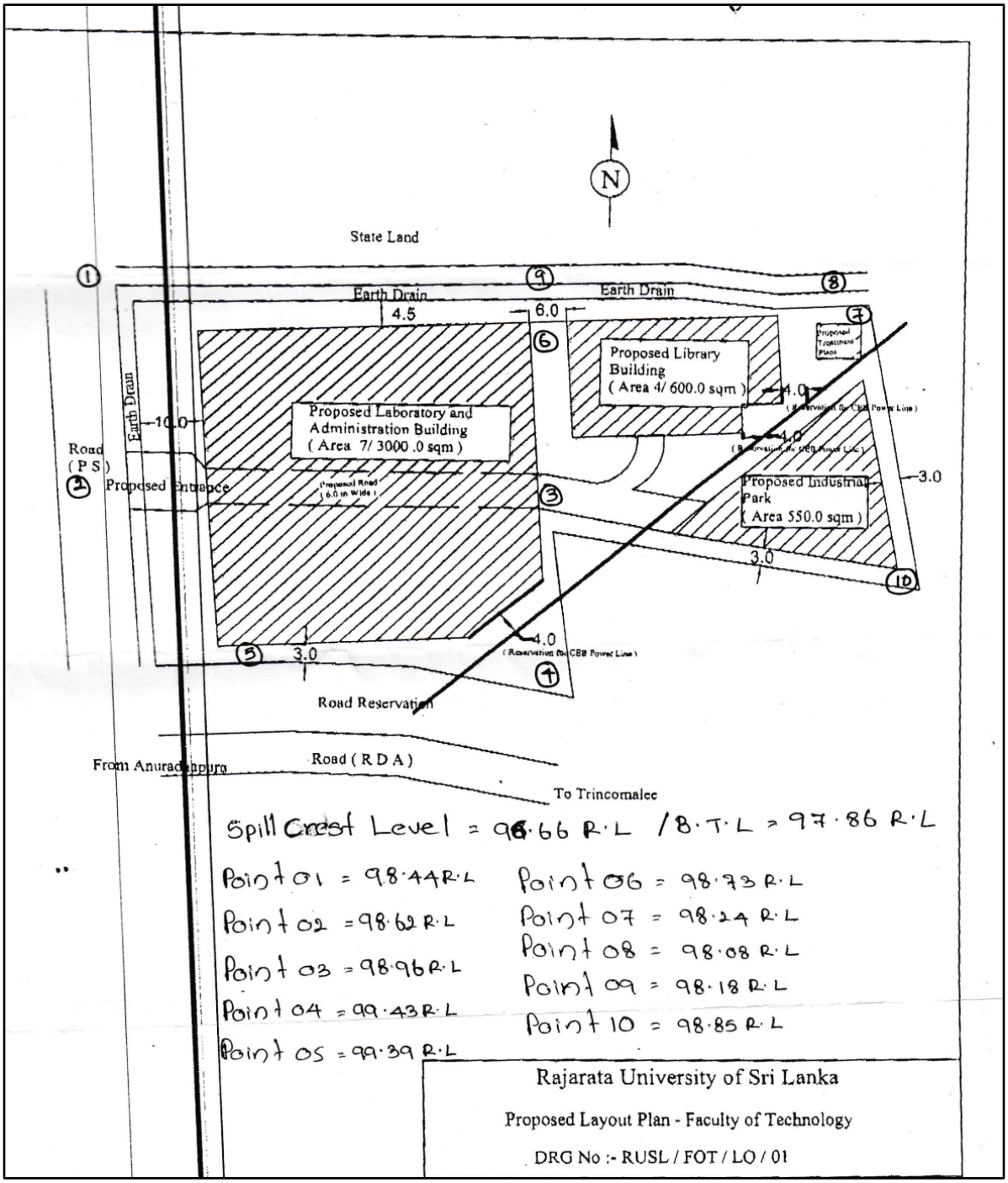
NORTH CENTRAL PROVINCE

Lot No.	Extent				Schedule of Boundaries			
	Hectares	A	R	P	North	East	South	West
1	0.4304	1	0	10.2	State Land	Lot 2 in this Plan & State Land	Proposed Reservation	Road(A9)
2	0.2763	0	2	20.0	State Land	Lot 3 in this Plan & State Land	State Land	Lot 1 in this Plan
3	0.1383	0	1	14.7	State Land	State Land	State Land	Lot 2 in this Plan
Total	0.8470	2	0	14.9				

Surveyed at the request of the Rajarata/Rajarata University of Sri Lanka

ANNEX 08:

LAYOUT PLAN



Spill Crest Level = 98.66 R.L / S.T.L = 97.86 R.L

Point 01 = 98.44 R.L
Point 02 = 98.62 R.L
Point 03 = 98.96 R.L
Point 04 = 99.43 R.L
Point 05 = 99.39 R.L
Point 06 = 98.73 R.L
Point 07 = 98.24 R.L
Point 08 = 98.08 R.L
Point 09 = 98.18 R.L
Point 10 = 98.85 R.L

Rajarata University of Sri Lanka

Proposed Layout Plan - Faculty of Technology

DRG No :- RUSL / FOT / LO / 01

ANNEX 09:

APPLICABLE ENVIRONMENTAL LEGISLATIONS

Applicable Environmental legislations

a) Environmental Impact Assessment

Sri Lankan Government recognizes Environmental Impact Assessment as an effective tool for the purpose of integrating environmental considerations with development planning. EIA/IEE considered as a means of ensuring that the likely effects of new development projects on the environment are understood before development is allowed to proceed.

The legal provision for EIA in Sri Lanka was first included in the Coast Conservation Act No. 57 of 1981 (see below). The broader legal framework for the EIA process in Sri Lanka was laid down by the amendments made to NEA in 1988 through National Environmental (Amendment) Act No. 56 of 1988. The provision relating to EIA is contained in Part IV C of the National Environmental Act. The procedure stipulated in the Act for the approval of projects provides for the submission of two types of reports Initial Environmental Examination (IEE) report and Environmental Impact Assessment (EIA) report. Such reports are required in respect of "prescribed projects" included in a Schedule in an Order published by the Minister of Environment in terms of section 23 Z of the act in the Gazette Extra Ordinary No. 772/22 dated 24th June 1993. This amendment makes EIA mandatory for whole of Sri Lanka and transformed Central Environment Authority (CEA) into enforcement and implementing agency.

Any developmental activity of any description whatsoever proposed to be established within one mile of the boundary of any National Reserve, should receive the prior written approval of the Director of Wildlife Conservation. EIA/IEE will be requires if the project is located near FFPO designated five categories of protected areas.

The EIA process is implemented through designated Project Approving Agencies (PAAs). PAA's are those organizations that are directly connected with such a prescribed project. At present, 23 state agencies have been recognized by the Minister as PAA's including Ceylon Tourist Board. A given organization cannot act both as the PAA as well as the project proponent. In such cases the CEA will designate an appropriate PAA. Similarly, when there are more than one PAA the CEA must determine the appropriate PAA. In the event of doubt or difficulty in identifying the appropriate PAA, CEA itself will function as the PAA. At present, there are 31 such PAAs to deal with review and approval of environmental plans

In order for a project to be approved the project proponent should submit either an Initial Environmental Examination (IEE) report or an Environmental Impact Assessment (EIA) report. Once an EIA report has been submitted there is mandatory period of 30 days during which the public can inspect the document and comment on the report. Further, a public hearing may be held to provide an opportunity to any member of the public to voice their concerns. A decision whether to approve the project will be made only after public consultation is done and necessary major issues are resolved.

b) Environmental Protection License

The Environmental Protection License (EPL) is a regulatory/legal tool under the provisions of the National Environmental Act. The CEA issues Environmental Protection Licenses (EPL) to medium and high polluting industries under section 23(A) of the NEA. The regulations are gazette under Gazette Extraordinary No. 1533/16 dated January 25,2008, for a variety of sectors involving in manufacturing, construction or services which need to obtain Environment Protection Licenses (EPL) The Environmental License (EPL) procedure for the control of pollution. Regulations pertaining to this process have been published in 1990 and are available with the CEA. The EPL issued to an industry or development activity and is legally binding and violation of conditions in the license is a punishable offence under the NEA. EPLs are issued by the CEA or a designated body which can be local authorities for low polluting industries, Board of Investment (BOI) for BOI industries. In the North Western Province, where a separate Provincial Environmental Authority exists, the EPLs are issued by the North Western Provincial Environmental Authority (NWPEA).

The EPL procedure has been introduced to prevent or minimize the release of discharges and emissions into the environment from industrial activities in compliance with national discharge and emission standards, to provide guidance on pollution control for polluting processes and to encourage the use of pollution abatement technology such as cleaner production, waste minimization etc. Here the industries are classified into three lists named A, B and C. List A comprise of 80 potentially high polluting industries, List B comprise of 33 medium polluting industries and List C comprise of 25 low polluting industrial activities. These projects will come under List B or List C.

EPL's for List A and List B industries are issued by the relevant Provincial/ District offices of the CEA while EPL; s for List C industries are issued by the relevant local authority. The EPL issued for List A industries are valid for a period of one year while List B and List C industries are valid for a period of three years, from the effective day of the issue of license.

For List A and List B industries the project proponent must submit a duly filled application (can be obtained from CEA headquarters, provincial and district offices or downloaded from www.cea.lk) for each prescribed activity to provincial or district office of CEA who will evaluate the application and determine the relevancy of issuing an EPL and the adequacy of the details furnished and determine and appropriate inspection fee. Then the project proponent must pay the prescribed fee to CEA headquarters, provincial or district office of CEA and submit the receipt to the relevant provincial or district office of the CEA. Then a team of officers will carry out an inspection and submit a report based on the site visit and the information provided. If the Issue of EPL is recommended the project proponent can obtain the EPL upon payment of license fee.

For List C industries issue of EPL is delegated to local authorities (Municipal councils, Urban councils or Pradeshiya Sabha). The procedure to be followed is the same except the Local Authority will appoint a Technical Evaluation Committee (TEC) that will make the final decision regarding the issue of EPL based on the field assessment report and information furnished by the industrialist. The EPL can be renewed by submitting a renewal application three month prior to the date of expiry to the relevant authority who will conduct afield inspection and determine whether the EPL should be renewed.

c) Fauna and Flora Protection Ordinance (FFPO) Amended Act No. 49 of 1993

EIA provisions are also included in the Fauna and Flora (Amended) Act No. 49 of 1993. According to this Act, any development activity of any description what so ever proposed to be established within one mile from the boundary of any National Reserve, is required to be subjected to EIA/IEE, and written approval should be obtained from the Director General, Department of Wildlife Conservation prior to implementation of such projects. The EIA/IEE process under the FFPO is similar to that described in the NEA.

Under the FFPO five categories of protected areas are established viz, Strict nature reserve, National parks, Nature reserve, Jungle Corridors etc. According to the act any development activity of any description what so ever proposed to be established within a national reserve of

within one mile of any boundary of any national reserve is required to be subjected to EIA/IEE and written approval should be obtained from the Director general Department of Wild life and Conservation prior to implementation of such projects. The FFPO follows a similar process as the NEA in conducting scoping, setting the TOR, preparation of EA, review of EA, public consultation and disclosure.

d) The Constitution of Sri Lanka (Articles 18, 27(14), Articles 154 (A), 9, 19 and (III) 17)

The Constitution of Sri Lanka contains several provisions relating to the environment such as Article 18 ("It is the duty of every person of Sri Lanka to protect nature and conserve its riches") and Article 27 (14) (" The state shall protect, preserve and improve the environment for the benefit of the community"). The 13th Amendment to the Constitution created new institution at the provincial level for environmental protection and management. Each provincial government under this Amendment has legislative and executive powers over environmental matters (Articles 154 (A), 9, 19 and (III) 17). Using such provincial legislative and executive powers, the North Western Provincial Council adopted the North Western Provincial Environmental Authority to supervise and monitor environmental activities in the North Western Province of Sri Lanka.

e) Pradeshiya Sabha Act No. 15 of 1987

Section 12 (2) of the Pradeshiya Sabha Act authorizes the appointment of a committee at the divisional level to advice on environmental matters. Section 105 of the Act prohibits polluting water or any streams, while Section 106 refers to pollution caused by industry and related offences. The Pradeshiya Sabha grants permission for construction activities within its jurisdiction. Such construction will have to comply with environmental requirements stipulated with permits. It also ensures that public health issues are efficiently dealt with and solid waste collection and disposal are appropriately done under this Act.

f) Flood Protection Ordinance, Act No. 22 of 1955

This ordinance provides necessary provisions to acquire land or buildings or part of any land or building for the purpose of flood protection.

g) Irrigation (Amendment) Act (No. 48 of 1968)

Part VI section 75 is mentioning about the Liability where irrigation work is damaged or water is used without authority or is wasted by a person who cannot be identified.

(1) Where water from any ela, channel, watercourse or other irrigation work is obtained in any manner not authorized or is allowed to run to waste, and the person who obtained such water or allowed such water to run to waste cannotbe identified, then, if any land has derived any benefit from such water, the proprietor of such land shall be liable to pay for such water at such rate as the Government Agent may determine.

(2) Where any act is committed whereby damage is caused to any irrigation work and the person who committed such act cannot be identified, then, if any land has derived any benefit as a result of the commission of such act, the proprietor of such land shall be liable to pay to the Government Agent the expenses incurred in repairing such damage.

(3) If default is made in the payment of any sum due under this section, such sum shall be recoverable in the manner provided in Part VII.

h) State Land Ordinance, Act No. 13 of 1949

The State Land Ordinance provides guidelines for:

(i) The protection of natural water springs, reservoirs, lakes, ponds, lagoons, creeks, canals, and aqueducts.
(ii) The protection of the source, course and bed of public streams.
(iii) The construction or protection of roads, paths, railways, and other means of internal communication systems.
(iv) The prevention of soil erosion.
(v) The preservation of water supply sources.

Section 75 of the Ordinance highlights riparian proprietors' rights and duties. The occupier of land on the banks of any public lake or public stream has the right to use water in that water body for domestic purpose, but cannot diverted water through a channel, drain or pipe or by any other mechanical device.

i) Soil Conservation Act, No. 25 of 1951

The Soil Conservation Act provides for the conservation of soil resources, prevention or mitigation of soil erosion, and for the protection of land against damage by floods and droughts. Under the Act, it is possible to declare any area defined as an erodible area and prohibit any physical construction. The following activities are also prohibited under Act:

(i) weeding of land or other agricultural practices that cause soil erosion;

(ii) use of land for agriculture purposes within water sources and banks of streams; and

(iii) Exploitation of forests and grassland resources and setting fire in restricted areas.

a) Sri Lanka Land Reclamation and Development Corporation Act No 15 of 1968

The act provides for the establishment of Sri Lanka Land Reclamation and Development Corporation for the development and reclamation of land according to the National policy relating to land Reclamation and Development. It has powers to prohibit the reclamation of development areas. Has powers to declare a wetland to a low line area if it is identified as significant in terms of ecology or environmentally. As per the recent amendment to the act, by act no. 35 of 2006 the corporation will be empowered to take legal action against unauthorized reclamation activities and pollution of inland water bodies as well.

j) Civil Aviation Act, No. 14 of 2010

This act to make provision for the regulation, control and matters related to civil aviation to give effect to the convention on international civil aviation and for matters connected therewith and incidental thereto.

k) Mines and Minerals Act No. 33 of 1992

Under this Act, mining falls within the purview of the Geological Survey and Mines Bureau (GSMB). Mining of minerals including sand must be done with a license issued by the GSMB. Mining is not permitted within archaeological reserves or within specified distances from such monuments. New mining licenses are subject to the EIA process, if the type and extent of mining is listed under the EIA regulations. Additionally, GSMB has the power to stipulate conditions including cash deposits and insurance policy for the protection of environment. Regulations

made by GSMB under the Act cover a variety of environmental stipulations, criteria and conditions for licensing and operating mines. This also covers the disposal of mine wastes. The Act also deals with the health, safety and welfare of miners. Mining rights on public and private land are subject to licensing by GSMB, and all minerals wherever situated belonging to the State. The right to mine public land parcels are subjected to the EA procedures.

l) Forest Ordinance, No 17 of 1907 (and amendments)

The Forest Ordinance of Sri Lanka is the law for conservation, protection and management of forest and forest resources. It regulates tree felling, transport of timber, and other forest related matters. The Forest Ordinance was amended by several Acts - Act 34 of 1951, No. 49 of 1954, Act 13 of 1966, Act 56 of 1979, Act 13 of 1982, and Act 84 of 1988. The Act 23 of 1995 replaced the old Ordinance. Under Section 4 of Act 23 of 1995, the Minister who is in charge of forests can declare any specified area of government land or the whole or any specified part of any reserve forest which has unique ecosystems, genetic resources or a habitat or rare and endemic species of flora, fauna, and microorganisms and of threatened species which need to be preserved in order to achieve an ecological balance in the area by preventing landslides and fire hazards. Under Section 5 of the Act, a Forest Officer has powers to stop any public or private watercourse which goes through a reserved forest. It shall be lawful for the District Secretary to determine the amount of compensation to be paid in case that the water course adversely affects the interests or one or more individuals.

Under Section 6 of the Act, the following activities are prohibited:

(i) trespassing or permits cattle to trespass;
(ii) damage by negligence in felling any tree, cutting or dragging any timber;
(iii) willfully strips off the bark or leaves from, or girdles, lop, taps, burns or otherwise damages any trees;
(iv) poisons water;
(v) mine stone, burns lime or charcoal, or collects any forest produce; and
(vi) extracts coral or shells or digs or mines for gems or other minerals

m) National Water Supply and Drainage Board Law of No. 2 of 1974

The National Water Supply and Drainage Board (NWSDB) is the principle water supply and

sanitation agency in Sri Lanka. It was established in January 1975 under the Law No. 2 of 1974. NWSDB develops, provides, operates and controls water supply and distributes water for public, domestic and industrial purpose.

n) National Policy for Rural Water Supply and Sanitation of 2001

The National Policyfor Rural Water Supply and Sanitation, approved by the cabinet in 2001, has laid down a framework for water supply and sanitation services to the rural sector, which is defined as any Grama Niladhari Division within a Pradeshiya Sabha area except for those in formertown council areas. It provides guidelines on the delivery of minimum water requirements to ensure health, and on levels of service in terms of quantity of water, haulage distance, adequacy of the source, equity, quality, flexibility for upgrade, and acceptable safe water supply systems.

The Policy prescribes ventilated, improved pit latrines as basic sanitation facilities and defines other acceptable options that include piped sewer with treatment, septic tanks with soakage pits, and water-sealed latrines with disposable pits. For rural water supply and sanitation, the Policy defines the roles and responsibilities of the government, provincial councils, local authorities, community-based organizations (CBO), non-governmental organizations (NGOs), private sector, and international donors. It also sets the scope of regulations for which the provincial councils and local authorities can enact statutes and by–laws.

o) Prevention of Mosquito Breeding, Act No. 11 of 2007

This Act was enacted to prevent and eradicate mosquito-borne diseases such as dengue. Under this Act, it shall be the duty of every owner or occupier of any premises to remove and destroy open tins, bottles, boxes, coconut shells, split coconuts, used tires, or any other article or receptacle found in such premises, and to maintain water wells in such premises to prevent breeding of mosquitoes. People are also bound to empty any artificial pond or pools at least once in a week. Shrubs, undergrowth and all other types of vegetation other than ornamental vegetation and food plants are to be removed.

p) The Urban Development Authority, Law, No 41 of 1978

The Urban Development Authority (UDA) promotes integrated planning and implementation of social, economic and physical development of areas which are declared as urban development

areas under the UDA Act. UDA provides technical support to local councils who require assistance in developing plans. It has the authority to develop plans when local authorities fail to do. The UDA monitors urban areas, including 1 km. inland from the coasts in all areas of the coastal zone, and develops land use policies for designated development areas.

q) Municipal Council Ordinances and Acts – Urban Council Ordinance 61 of 1939, Act 29 of 1947, Act 18 of 1979, and Act 13 of 1979

The Municipal Councils and Urban Councils share with Pradeshiya Sabhas powers regarding the approval of buildings plans, control of solid waste disposal, sewerage and other public utilities. Under these laws, new constructions and modifications to current buildings require approval of Municipal or Urban Council or Pradeshiya Sabha. Municipal and Urban councils follow planning and building guidelines of UDA.

The Environmental Policy, NEA and its amendments, and several other pieces of legislation relevant to SSEP outlined above show that environmental policies and the legal or regulatory framework is comprehensive and adequate to address and manage potential environmental impacts and risks associated with its refurbishment and construction activities.

r) Land Acquisition Act No. 09 in 1950 and subsequent amendments in 1983 1nd 1986

Land Acquisition act No 9 of 1950 provides a detailed procedure for acquiring land and sets out a process with inbuilt safeguards. The Act makes provision for the acquisition of land for public purpose. The actual public purpose can result from development programs initiated by various government Departments and agencies from a multitude of sectors. Under the Act land could be acquired either through a normal procedure or expedited process. In terms of regular process there is provision for the calling of objections from the public prior to proceeding with the acquisition. Land Acquisition Act provides limited grievance mechanism. The Act provides compensation based on market value. It also provides a mechanism through which objections to an acquisition of land can be made. A limited grievance mechanism is available relating to the quantum of compensation to be received.

s) National Involuntary Resettlement Policy

The National Resettlement Policy (NIRP) is adopted in 2001 for the benefit of the persons displaced by the process of land acquisition for development purpose. NIRP ensures that people affected by development projects are treated in affair and equitable manner and to ensure that they are not impoverished in the process. It also enables establishing the framework for project planning and implementation. Involuntary resettlement is not encouraged and if it is unavoidable affected persons should be adequately compensated to reestablish them. Compensations should be based on replacement cost and grievance redress mechanisms should be in place to resolve issues emanating from land acquisition. However BFL has not acquired land to expand their industry but land has been purchased from the private entities or obtains land on lease.

t) Land Acquisition Regulations, 2008

These regulations may be cited as the Land Acquisition Regulations, 2008.The basis of assessing the market value of any land or the compensation for any injurious affection caused by the acquisition of any land under this Act.

These Regulations establish the basis for assessing the market value of any land or the compensation for any injurious affection caused by the acquisition of land. Market Value should be assessed as follows: in case part of a land is acquired and when its value as a separate entity deems to realize a value proportionately lower than the Market Value of the main land the compensation should be proportionate to the value of the main land. When the date of intention to acquire was published, the building is used or is intended to be used for occupation and or business purposes, the difference between the cost of re-construction and the value of building, based for determination of Market Value under Section 1.1, should be paid as an additional compensation. Value based on development potential could be considered for paddy lands acquired where permission to fill such lands have been granted by the Agrarian Services Commissioner General. When an acquired building is occupied by a tenant/statutory tenant protected under the provisions of the Rent Act, No. 7 of 1972 (as amended thereafter) the compensation should be ascertained in proportion having regard to the provisions of Rent (Amendment) Act, No. 26 of 2006.

Annex 10:

Letter from the Department of Irrigation

මගේ අංකය: මගේ අංකය: NCP/PID/DE-KD/ED-01/01/2018
ප්‍රාදේශීය වාරිමාර්ග ඉංජිනේරු කාර්යාලය,
කහටගස්දිගිලිය.
2018/05/17

පියාධිපති,
තාක්ෂණ පීඨය,
රජරට විශ්ව විද්‍යාලය,
අනුරාධපුරය.

රජරට විශ්ව විද්‍යාලයේ තාක්ෂණ පීඨය ඉදිකිරීම සඳහා අවසර ලබා දීම.

උක්ත කරුණ සම්බන්ධයෙන් 2018/04/17 දිනැති ලිපිය අනුව කාර්මික නිලධාරි විසින් ක්ෂේත්‍ර පරීක්ෂාව සිදු කොට වැව මැනීමෙන් අනතුරුව මා වෙත වාර්තා කර ඇත.

02. ඒ අනුව, ඉදිරිපත් කර ඇති සැලැස්ම අදාල මිනුම් සටහන් කර මේ සමඟ අමුණා ඇත. වාන් මට්ටමට අනුව මෙම ස්ථානීය මිනුම් දක්වා ඇති අතර බැම්මේ මතුපිට මට්ටම (B.T.L.)97.86 R.L. හා වාන් මට්ටම (96.66 R.L.) වේ. එම නිරීක්ෂණයන්ට අනුව මෙම යෝජිත ඉදිකිරීම වැව බැම්මේ මතුපිට මට්ටමට වඩා ඉහලින් පිහිටා ඇති බව පෙනී යයි. සිතියම් ගත කාණු පද්ධති වලට බාධා කිරීම හෝ ඉවත් කිරීම නොකළ යුතු අතර, එම කාණු පද්ධතිය මඟින් අපවහන ජලය වැවට ගලා ඒම වලක්වා ගත යුතු බවද දන්වමි.

වාරිමාර්ග ඉංජිනේරු,
ප්‍රාදේශීය වාරිමාර්ග ඉංජිනේරු කාර්යාලය,
කහටගස්දිගිලිය.

ඒ.එල්. රංජිත් මෙන්ඩිස්
කළාප සභා ඉංජිනේරු
ප්‍රාදේශීය වාරිමාර්ග ඉංජි... කාර්යාලය
පළාත් වාරිමාර්ග දෙපාර්තමේන්තුව
කහටගස්දිගිලිය

පිටපත්:

01. පළාත් වාරිමාර්ග අධ්‍යක්ෂ, පළාත් වාරිමාර්ග දෙපාර්තමේන්තුව, උතුරුමැද පළාත.

Annex 11:

Letter of Archeological Department in Anuradhapura

අධ්‍යක්ෂ ජනරාල් / Director-General
දුරකථන අංක / Telephone Nos. 011-2695255
ෆැක්ස් / Fax 011-2696250
E mail : arch@diamond.lanka.net
Web site : www.archaeology.gov.lk
විදුලි පණිවුඩ / Telegrams : පුරාවිද් / Puravid.

පුරාවිද්‍යා දෙපාර්තමේන්තුව
தொல்லியல் திணைக்களம்
DEPARTMENT OF ARCHAEOLOGY
ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජය
இலங்கை சனநாயக சோசலிசக் குடியரசு
Government of the Democratic Socialist Republic of Sri Lanka
ප්‍රාදේශීය පුරාවිද්‍යා කාර්යාලය, අනුරාධපුර- 025-2222411

මගේ අංකය / My No. ARCH/AP/EDP/02/DS 19/2016
ඔබේ අංකය / Your No.
Sir Marcus Fernando Mawatha, Colombo 7.
දිනය / Date 2018.01.10

පාලන අංශය
12 JAN 2018

සහකාර ලේඛකාධිකාරී(පාලන)
ශ්‍රී ලංකා රජරට විශ්වවිද්‍යාලය
මිහින්තලේ.

<u>පුරාවිද්‍යා වටිනාකමින් ඇති/නැති බව සහතික කරගැනීම</u>
<u>තාක්ෂණ විද්‍යා පීඨය, ශ්‍රී ලංකා රජරට විශ්වවිද්‍යාලය</u>

ඉහත කරුණ සම්බන්ධයෙන් ඔබගේ අංක RJT/ADM/Technology Land හා 2017.11.03 දිනැති ලිපිය හා බැඳේ.

ඒ අනුව මිහින්තලය ප්‍රාදේශීය ලේකම් කොට්ඨාසයේ අංක 677 - මිහින්තලය ග්‍රාම නිලධාරී වසමේ රජරට විශ්ව විද්‍යාලයේ තාක්ෂණ විද්‍යා පීඨය ඉදිකිරීමට යෝජිත ඉඩම් කොටස නිලධාරීන් විසින් පරීක්ෂාකර මා වෙත වාර්තාවක් ඉදිරිපත්කර ඇත.

එම වාර්තාවට අනුව හෙක්ටයාර් 0.8470 පමණ වන ඉඩම තුළට හා අවට පුරාවිද්‍යා සාධක දක්නට නොමැති බව වාර්තා කර ඇත.

එබැවින් පහත සඳහන් කොන්දේසිවලට යටත්ව රජරට විශ්වවිද්‍යාලයේ තාක්ෂණ විද්‍යා පීඨය ඉදිකිරීම සම්බන්ධයෙන් පුරාවිද්‍යා දෙපාර්තමේන්තුවේ විරෝධතාවයක් නොමැති බව කාරුණිකව දන්වා සිටිමි.

<u>කොන්දේසි:</u>

- භූමියේ සංවර්ධන කටයුතු සිදුකරනු ලබන අවස්ථාවේ දී පුරාවිද්‍යාත්මක අගයෙන් යුතු සාධකයන් අනාවරණය වුව හොත් වහා ම සංවර්ධන කටයුතු නතරකර පුරාවිද්‍යා දෙපාර්තමේන්තුව දැනුවත් කළ යුතු ය.
- මෙම ලිපිය අදාළ කාර්යය ඉටුකරගැනීම සඳහා පමණක් වලංගු වන බව සලකනු මැනවි.

Dean/Fac. of Tec.
F.N.A pls.
12/01/18
AR/Admin

ඩී.එම්.පී.ජේ.බී. දිසානායක
සහකාර අධ්‍යක්ෂ (අනුරාධපුර)
ඩී.එම්.පී.ජේ.බී. දිසානායක
සහකාර අධ්‍යක්ෂ
ප්‍රාදේශීය පුරාවිද්‍යා කාර්යාලය
අනුරාධපුර.

පිටපත්-
01. ප්‍රාදේශීය ලේකම්, ප්‍රාදේශීය ලේකම් කාර්යාලය, මිහින්තලය. - කාරු. දැ. පි. ස.
02. කලාපභාර නිලධාරී, කලාප අංක 03, මිහින්තලය. - කාරු. දැ. පි. ස.

ප්‍රධාන කාර්යාලය – සාමාන්‍ය අංක / Head Office – General Numbers 011-2692840, 011-2692841
Police Unit – Prevention of Destruction and Theft of Antiquities
General 011-2694727
Hot Line 011-7222333

ANNEX 12:

AIR QUALITY PARAMETERS

Regulations

The National Environmental (Ambient Air Quality) Regulations, 1994, published in *Gazette Extraordinary*, No. 850/4 of December, 1994 are hereby amended by the subsitution for the Schedule to that regulation of the following :-

"SCHEDULE

Pollutant	*Averaging Time**	*Maximum Permissible Level*		*+ Method of measurement*
		μgm^{-3}	*ppm*	
1. Particulate Matter - Aerodynamic diameter is less than 10 μm in size (PM_{10})	Annual	50	—	Hi-volume sampling and Gravimtric or Beta Attenuation
	24 hrs.	100	—	
2. Particulate Matter - Aerodynamic diameter is less than 2.5 μm in size ($PM_{2.5}$)	Annual	25	—	Hi-volume sampling and Gravimtric or Beta Attenuation
	24 hrs.	50	—	
3. Nitrogen Dioxide (NO_2)	24 hrs.	100	0.05	Colorimetric using saltzman Method or equivalent Gas phase chemiluminescence
	8 hrs.	150	0.08	
	1hr.	250	0.13	
4. Sulphur Dixoxide (SO_2)	24 hrs.	80	0.03	Pararosaniliene Method or equivalent Pulse Flourescent
	8 hrs.	120	0.05	
	1hrs.	200	0.08	
5. Ozone (O_3)	1 hr.	200	0.10	Chemiluminescence Method or equivalent Ultraviolet photometric
6. Carbon Monoxide (CO)	8 hrs.	10,000	9.00	Non-Dispersive Infrared Spectroscopy"
	1 hr.	30,000	26.00	
	Any time	58,000	50.00	

* Minimum number of observatons required to determine the average over the specified period —

03 hour average	-	03 consecutive hourly average
08 hour average	-	08 hourly average
24 hour average	-	18 hourly average
Yearly average	-	09 monthly average with at least 02 monthly average each quarter.

\+ By using Chemicals or Automatic Analysers.

ANNEX 13:

COMPLAINTS FORM

PART III: ESMP

ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

Activity Title: Proposed Faculty of Computing and Technology Building Complex in Mihintale
District: Anuradhapura
Local Authority: - Mihintale Pradeshiya Saba
Implementing Partner: Ministry of Higher Education and Highways /Rajarata University of Sri Lanka

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
PLANNING						
Clearance for the project	Unless Local Authority building approval is obtained for new building it may lead to environmental and social impacts. It will not be in compliance with national environmental and social regulations. Unless the high-tension wires are relocated would result in safety issue and limitation to design the buildings.	(a) Obtain approval from Mihintale Pradeshiya Saba and UDA before commencement of construction. (b) Site is in close proximity to Mihintale Tank should follow CEA and Irrigation Department guidelines. (c) Liaise with CEB to relocate the high-tension wires.	Provisional approval obtained from relevant local authority, UDA, and Irrigation Department Power pylons relocated	PIU(I) Site Engineer (M)	Project cost	Before construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Social and cultural resource	Impact on Archeological monuments	(a) Consult Department of Archaeological of Sri Lanka or Anuradhapura Divisional Archaeology Department to obtain an expert assessment of the archaeological potential of Rajarata FT site. (b) Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available. (c) Develop a protocol for use by the construction contractor in conducting any excavation work, to ensure that in an event where any objects or structures that may be of archeological interest is found, they are protected and conserved.	Protocol for archeological conservation in place Provisional clearance letter for construction of the FT building obtained.	PIU (I, M) Site Engineer (I) Contactor (I)	Project cost	Before construction and vigilance during land preparation.
Structural considerations for sustainability of	Lack of sufficient planning to assure long-term sustainability of the improvements and	(a) Design has to include provisions for ensuring effective maintenance and protection of the FT in the	Verification of the design parameters Geo technical	PIU (I)	Project cost	Before construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
project.	ensure protection of the FT	long-term. The long-term sustainability has been ensured by consideration of relevant authorities for Standards Codes for design (such as UDA), appropriate wind load factor, and detailed design after carrying geotechnical investigations. (b) Since site is close to tank, temporary flooding will have to be taken into consideration when doing the detailed design. (c) The initial designs of FT academic building should consider that net allowable carrying capacity of XXXMN/m^2. The carrying capacity in skin friction within the basement rock or the ultimate skin friction coefficient is XXX kN/m2. It should be checked whether it is in compliance of the ICTAD recommended guidelines and propose the design. Refer the geotechnical soil	and topography report in place			

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		assessment recommendation **currently not available**. (d)				
DESIGN						
Risk of temporary floods	Lack of drainage within the project site will submerge the land during heavy rains In the absence of a proper storm water drainage system, there will be a risk of water logged conditions around the site. Temporary ponding pools formed during the monsoonal period which will increase the incidence of vector born disease.	(a) A simple flood assessment on temporary flooding should be carried out. (b) Will need to fill land by about 3 feet to reach the road level. (c) Identify and develop drain plan to carry rain water towards the tank. (d) Sloping of terrain to ensure natural drainage.	Flood situations properly managed and controlled Arrangement for proper diversion of storm water runoff in place	PIU (I) Site Engineer (M)	Incidental to the construction cost	During construction After mobilization of contractor at site and during establishment of construction n camp
Integration of energy efficiency and energy conservation programs in design of	Unsustainable, energy inefficient, and un-economical unviable building that will negatively impact the environment In the absence of water	The detailed designs for the project should ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.: - Usage of recyclable materials	Specifications for rain water harvesting structures, electrical fixtures, details of	PIU (I) Site engineer(M)	Project cost	During finalization of detailed designs of FT buildings PMU

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
project components. Noncompliance of green building guidelines	conservation and energy efficiency of the building structure, it may lead to resource constrains and increase the running cost.	like wood substitutes. - Installation of sustainable energy efficiency certified equipment - Usage of energy efficient lighting fixtures (LED) - Provision of photovoltaic cells on roofs for solar power - Rain water harvesting structures planned for ground water recharge and rain water collection.	water heating system Observations Check whether energy efficient lighting systems are installed			
Solid and liquid waste	Lack of properly designed disposal mechanisms for solid and liquid waste may lead to contamination of surface and ground water resources	(a) Design a waste water treatment plant. Wash water recovery technologies for the WTP to reduce effluent to be discharged should be considered. (b) Incorporate solid waste storage area in the plan. (c) No effluence from the university premises can be discharged to Mihintale tank. (refer Annex 10) (d) Need to discuss with Local Authority for immediate solution to garbage disposal.	Review waste disposal plan. Review of the waste water treatment plant. Agreement reached with Local Authority on solid waste disposal.	PIU (M &I) Design architect (I)	Project cost	During finalization of detailed designs of FT buildings Before construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Establishment of baseline environmental conditions prior to start of civil works	Non-availability of a method to audit the impact. Obtaining a suitable and representative baseline data set will be critical to the whole monitoring and audit process because it forms the standard against which environmental impacts are assessed. Impact of vibration noise, ground water pollution due to solid and waste water disposal etc.	(a) Conduct documentation of areas for construction zone (camp, staging, storage stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates. (b) Conduct base line monitoring in respect of ambient air quality, water quality, and noise levels as per monitoring plan. (c) Thus, baseline monitoring for water quality, noise, vibration will be audited prior to the start of construction and in site supervision.	Records and photographs	PIU (I&M)	Project cost	Once prior to construction and thereafter quarterly.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Utilities	Unless the high-tension pylon in the middle of the site is relocated it can cause a health hazard and safety risk to the university community. All utilities such as water and electricity are in place so no disruptions expected regarding those.	(a) Re-locate high-tension pylon. (b) -Contractor should prepare a contingency plan to include actions to be done in case of unintentional interruption of services occurs due to electrical work at the site.	Relocation of pylon identified and moved. Contingency plan for services disruption.	PIU (I&M) Contractor (I)	Contactor	Preconstruction
Resources mobilization and allocation of space	Allocation of space for storage yard for construction material, labour camp, project office may require addition amount of space. Use of additional land for resource mobilization during construction may lead to conflicts.	(c) Adequate provision should be made on site to mobilize the construction equipment. (d) Selection of land for construction material storage should be done carefully avoiding conflict with Mihinthale Pradeshiya Saba approval. (e) Selection of lands such purposes should be undertaken by the contractors carefully (f) Sitting of the construction camp shall be as per the guidelines below and details of layout to be approved by PMU.	Check for approval letter on release of land for the purpose from respective authorities if additional land is to be used. Observe the location of construction camp site, sanitary facilities etc.	Contactor (I) PIU Project site Engineer (M)	Contactor	At the time of establishment of the construction camp and finalizing the storage areas.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		(g) Potential sites, within the FT plot, for the labor camp will be lined up to be visited by the environmental expert of PMU. The one having least impacts on the environment will be approved by the PMU and Safeguards Cell. (h) The storage location of construction materials shall be at the any building close to the FT site. (i) Construction camp sanitation facilities shall be adequately planned. (j) Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labour camps. (k) Use local materials as much as possible to reduce the need for storage space.				

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Disaster management	Extreme climate events such as intense rainfall during the (flooding), cyclone, tornado etc. and fire may cause damages to lives and property.	(a) Adoption of appropriate disaster risk reduction strategy, emergency preparedness and recovery, training/orientation program for lecturers and students and construction worker, etc. (b) Identify an emergency evacuation point in the building. (c) An emergency alarm system has to be in place in all the buildings. (d) Install lightning receptors	Disaster Management Plan in place for the FT.	PIU (M) Contactor (I) Maintenance	Project cost	Before construction
Safety of students and academic staff	Lack of safety measures within the design will lead to fire and increase occupational safety hazards	(e) Plan for fire extinguishers, fire alarms and a stair case for emergency evacuations. (f) Fire safety management and mock drill. (g) Install lighting resisters since the project building will be located near a high-tension wire.	Review of design plans for fire safety	PIU (M) Site Engineer (I)	Project cost	At design stage and during construction.
Occupational Health, Safety, and essential facilities.	Unless worker safety is complied with, it can lead to injury and other health risks.	(a) Develop and implement comprehensive site-specific health and safety plan on Occupational Health and	Review design plans	PIU (I & M)	Project cost	Before construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		Safety. (b) Design should include fire safety specifications (appropriate number of stairways, emergency exits, etc.). (c) Provisions should be incorporated to accommodate students with disabilities (ramps, toilets, etc.).				
Public consultations	Unless regular consultations are carried out with the stakeholders including community, issues that crop up during the project will go un addressed leading to problems later on.	Continue information dissemination, consultations, and involvement or participation of stakeholders during project implementation.	Disclosure records; consultations	PIU (M & I) TMS (I)	Project cost	During Preparation of IEE report. Once in 6 months during construction
CONSTRUCTION PHASE						
Site Clarence	Construction activities	(a) Only ground cover or	Site	PMU(M)	Project cost	Weekly

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
and cut and fill operations	such as cut and fill operation etc. may lead soil erosion, sedimentation and siltation. Decrease of infiltration of rain water, acceleration of surface runoff, are the main impacts.	shrubs and trees that directly affect the permanent works or necessary temporary works shall be removed with prior approval from the environmental expert of the PIU (b) Permanent and temporary work should be undertaken to control soil erosion, sedimentation and water pollution (c) Top soil generated from construction sites should be stored properly (d) Use of silt traps and erosion control measures close to water bodies is also necessary. (e) Construction activities including earth work and construction of cross drainages should be conducted during the dry season	observation and reporting	Contractor (I) Project site Engineer from the Building Department (I)		during construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Land preparation	Activities such as site clearing, construction of culverts, removal of trees and green cover vegetation and etc., will potentially impact the ecological resources. Noise generated from construction vehicles, equipment, and vehicle traffic has the potential to disturb breeding, foraging, and migrating behavior of wild species in the Mihintale tank.	(a) Awareness programs should be organized for the workforce about the importance of flora, fauna and ecology of the wetland. (b) Contractor shall adhere to the guidelines and recommendation made by CEA and DS regarding removal of trees (c) Contractor should especially be aware not to introduce any alien species during construction related activities (d) Saplings for tree planting program should comprise of native or endemic species. Consult Agriculture department for recommendations.	Site observation and reporting Check for the CEA, recommendation letters	PIU(M) Contractor (I) Project site Engineer (I)	Project cost	During construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Drinking water availability at construction camp and construction site	No availability of drinking water for labours will result in dehydration and health risk. (This is especially essential during the water scarce periods).	(a) Sufficient supply of potable water to be provided and maintained at the site for the workers. The drinking water will be obtained from the market or any alternative source. (b) The drinking water will be stored in a suitable size storage tank to ensure uninterrupted availability. (c) In the event Pipe borne water supply which is to be obtained before construction is not sufficient for construction purpose then water bowsers will have to be brought in and storage tanks set up. (d) Contractor will submit his plan on ensuring water availability at the site for drinking sanitation and construction. The original source of the water supplied by the tankers will be recorded.	Water supply source and availability of water identified. Water availability plan.	PIU (M) Contractor (I)	Contractor Fee	Regularly during construction phase

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Arrangement for construction water in the event water requirement is large for construction and cannot be supported by the pipe water supply.	Delayed and interruption water supply leads to economic cost	The contractor shall provide a list of locations and type of sources from where water for construction shall be acquired. To avoid disruption or disturbance to other water users, the contractor shall arrange water from the market through authorized tanker suppliers or from the local municipality and consult PIU before finalizing the source.	Source of water used by the tanker	PIU (M) Contactor (I)	Contractor fee	Regularly during the construction phase
Use and transport of natural resources	Impact on the natural ecosystem by means of exploitation. Extraction, transportation and storage of construction materials may give negative impact such as noise, air, water, soil pollution, reduction of scenic beauty	a) Extraction of construction materials should be undertaken only from mines and quarries approved by GS&MB b) Environmental requirements and guidelines issued by the CEA, and LAs should be followed with respect of locating material extraction sites c) Transport, loading and unloading of construction materials should not cause nuisance, noise, vibration and dust	Availability of permits at the raw material extraction sites Observation and reporting	PIU (M) Contactor (I)	Contactor	During construction period

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		d) Sand, rubble, metal bitumen and cement should be covered to ensure protection from dust to avoid emissions.				
Transport of construction material	Transportation of construction materials on road network can cause damages to the access roads.	(a) The Contractor should obtain permits from LAs to use local roads prior to transportation of construction materials, machineries etc. (b) Construction materials shall not exceed the carrying capacity of the local road network. (c) If it is likely to cause damage to public roads, provision should be made for their repair as part of the contract.	a) Check for contractors permits from LAs to use local roads b) Observe whether construction materials meet the carrying capacity	PIU (M) Contactor (I)	Contractor fee	During construction

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
	Transportation of construction material may block the access roads. Loading and unloading shuttering and metal poles and handling of heavy objects may increase the risk and injury to workers.	(a) Construction materials and machinery should not be placed in a manner that blocks any roads, paths or local accesses; (b) Accidents while transporting of materials should be avoided by transporting material in fully covered method. (a) Loading and unloading of material should be done according to proper safety guidelines.	Observation and field check	PIU (M) Contractor (I)	Contractor fee	Weekly and whenever construction material is being brought to the site.
On Site housekeeping	Lack of solid waste and sanitation management on site can lead to lack of general cleanliness and impact on ecology, public health and scenic beauty.	(a) Pre-identified waste disposal site by the contractor should exclude areas which are close to public and sensitive environment (including Mihinthale Tank). (b) A solid waste management plan will be prepared by the contractor in consultation with local authorities (c) Make arrangements with the local authority on disposal of solid waste generated during	Waste disposal sites identified. Waste management plan in place Contractor has an agreement for disposal of waste with the Mihinthale Pradeshiya Saba.	PIU (M) PHI (M) Contactor (I)	Contactor fee	Regularly during the construction phase (Weekly)

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		construction a) Proper solid waste disposal, sanitation and sewerage facilities (drinking water, urinals, toilets and wash rooms in working condition should be provided to the site of labour camps b) The environmental specialist of PIU shall approve these disposal sites after conducting a joint inspection on the site with the contractor c) Contractor shall ensure that waste shall not be disposed of near storm water natural drain in the surrounding of the site and along the access path d) Practice cleanliness and good housekeeping practices on site. There should be a demarcated waste storage area on site. Provision of proper drainage facilities to minimize water stagnation around worker-based camps e) Under no circumstances	Observation cleanliness at the site. Solid waste storage area demarcated and in operation. All construction waste removed.			

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		should the solid waste be burned on site. Additionally, under no circumstances will any construction waste will be disposed of around the project site. f) Garbage bins should be provided to all workers-based camps, and construction sites				
Stockpiling of construction materials	Obstruction of drainage	-Stockpiling of construction materials will be done in such a way that it does not impact and obstruct the drainage. -Stockpiles will be covered to protect from duct and erosion.	Observe the stockpile site .	PIU (I) Contractor (M)	Contactor fee	Weekly
Air pollution	Impact from dust generation leads to Poor air quality release of Volatile Organic Compound (VOC) from storage sites and transfer of vehicle/equipment fuels, emission of small	(a) Wet down and spray water at construction site, quarries if required. Dust emissions during (b) transportation of construction materials should be controlled by enforcing speed limits on	Observations – controlled dust emissions. Air quality monitoring results and the water spray	PIU(M) Contractor (I)	Contactor	Regularly during the construction phase

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
	amounts of Carbon monoxide, Nitrogen dioxide and particulates from construction activities and vehicles may compromise health of the workers and surrounding community.	the vehicles close to site (c) Take steps to avoid dust emissions during loading and unloading of construction material. Tarpaulin covering is mandatory on trucks/lorries which are used for transporting materials. (d) All filling works are to be protected or covered in a manner to minimize dust generation (e) The air quality monitoring will be conducted as per the plan (f) All vehicles, equipment, and machinery used for construction shall conform to the Sri Lankan government vehicle emission test. For equipment emission norms as specified in air emission gazette under NEA (g) The Contractor shall maintain a record of pollution under control for all vehicles and machinery used during the contract	records available Dust screens in place. Construction material stored properly. Record of vehicle emission tests according to the standards issues under CEA			

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		period, which shall be produced for verification whenever required				
Noise pollution	Construction noise can disturb surroundings	(a) All machinery, equipment and vehicles should be maintained in a good condition by engaging skilled mechanics and regularly maintained. National Emission Standards (1994). Noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinance, no 924/12) should strictly be implemented for crushers, construction vehicles and equipment. (b) Contractor must ensure that all vehicles and equipment used in construction shall be fitted with exhaust silencers. (c) Construction work should be limited to daytime. (d) At the construction sites, noisy construction work such as crushing, operation	Observation	PIU(M) Contractor (I)		Weekly by Engineer

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		of diesel generator sets, use of high noise generation equipment shall be stopped during the night time between 10:00 p.m. to 6:00 a.m. (e) Adhere to noise levels stipulated under NEA. Construction noise level should be maintained at 75 dB(A) during day time (6:00 a.m. to 9:00 p.m.). (f) Noise level monitoring will be carried out as per monitoring plan.				
Onsite emergency plan for minor accidents and mishaps.	Absence of plan will lead to death to the worker and economic cost to the project	Onsite emergency management plan will be prepared by the contactor with the consultation of the PIU.	Onsite emergency plan for minor accidents and mishaps in place	PIU (M) Contactor (I)	Contractor fee	Mock drills to be carried out on a quarterly basis.
Disaster Management Plan	Life and property damage. Economic cost for the project	For natural calamities, disaster management plan prepared by the PIU under the provisions of Disaster Management Act. Refer disaster management under “planning”	Onsite disaster management plan documented and available with the PIU.	PIU (M) Contactor (I)	Contractor fee	Mock drills every quarter

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Occupational Health and Safety of workers		(a) Contactor to comply with ADB Environmental, Health, and Safety Guidelines, Labour Organization (ILO) convention No. 62, and Factory Ordinance to the extent that are applicable to workers contract. First aid treatment will be made available for all injuries likely to be sustained during work. (b) A management strategy and applying practices to eliminate, or minimize, fatalities injuries, and illnesses for workers performing activities and tasks associated with the project. (c) Include in the health and safety plan measures such as (i) type of hazards in the construction of the FT buildings, (ii) corresponding personal protective equipment for each identified hazard, (iii) health and safety training	Review of health and safety plan. First aid available onsite (appropriately equipped). Observations on safety attire of workers. Regular jobsite safety inspections being conducted. Data on available personal protective equipment.	PIU (M) Contractor (I)	Contractor cost	Weekly checks.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		for the site personnel, (iv) procedures to be followed for all site activities, and (v) documentation of work-related accidents. (d) Provide medical insurance coverage and indemnity for workers. (e) The contractor will conform to all anti dengue instructions given to him by the PHI and the PIU (f) Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles (g) Workers engaged in welding works will be provided with welder's protective eye shields (h) The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by				

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		the contractor. (i) Use of licensed and trained vehicle operators, workers should adopt necessary safety measures as stated in the contract including using of hard hats, boots, gloves and appropriate clothing. (j) First aid provisions available on site and personnel trained on use. (k) Keep the workplace free from hazards. (l) Provide suitable communication and information on safety				
Clearing of construction camp and restoration	Unless site is cleared it will not be visually pleasing and would lead to health risk.	Contractor to prepare site restoration plans for approval by the engineer (PIU). The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish removed, excreta or other disposal pits or trenches filled in and effectively sealed off, and the site left clean and tidy, at the contractor's	Restoration plan and records of preconstruction of temporary sites	PIU (M) Contactor (I)	Contractor fee	End of construction phase

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		expense, to the entire satisfaction of PIU.				
Landscaping	In the absence of proper landscape, it will not be aesthetically pleasing. Landscaping should blend in with the surrounding ecosystem.	(a) Project landscape activities have to be done as per either detailed design or typical design guidelines. (b) Plant floral species that are native to the area. (c) Carry out a resonance survey of floral species native to the area or contact Agriculture Department to identify suitable plant species.	Site observation and reporting. Note trees and shrubs planted by the project.	PIU(M) Contractor (I)	Contractor fee	Towards end of construction
OPERATIONAL PHASE						
Environmental conditions and parameters	Unless regular monitoring is conducted, it may lead to environmental pollution issues during the operation of the Campus.	Periodic monitoring of the ambient air quality, noise level, surface water quality, soil quality in the subproject area as suggested in the monitoring ng plan through an approved monitoring authority.	Monitoring results and relevant standards	CEA/ Mihinthale Pradeshiya saba(M)	RUSL	As per the monitoring plan

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Drainage Congestions	Stagnation or blocking the water flows may occur due to sediments, improper disposal of debris during maintenance activities or ignorance. This will provide suitable habitats for vectors like mosquitoes etc. In the absence of a proper storm water drainage system there will be a risk of water logged conditions around the site.	(a) University needs to undertake regular maintenance of the drainage system to avoid drainage congestions. (b) Employ staff to clean the drains and make sure that outfall is not blocked. (c) Drainage paths proposed in the survey plan shall not be blocked.	Site observation of congested drains and reporting	Mihinthale Pradeshiya saba PHI (M) Maintenance engineer at RUSL (I)		Once in 4 months
Solid waste management	Irregular collection of solid waste will increase the risk of solid waste piling up at the FCT premises. It can also lead to an increase in vector population and increase health risks. Unregulated disposal into natural habitats increase environmental pollution	(a) Ensure demarcated solid waste storage area with source separation for organic waste and other domestic non-organic waste. (b) Encourage composting programs (c) Place color coded bins at necessary places to dispose waste. (d) Implement the composting project awarded by	Waste plan in place and implemented. Cleanliness and good housekeeping practices observed. Review solid waste management plan. Compost	Mihinthale Pradeshiya Saba PHI(M) Maintenance engineer at RUSL (I)	RUSL	Once in 3 months

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		the CEA (e) Negotiate with the University of Germany to establish a bio gas plant as being discussed currently.	project in place			
Domestic liquid waste disposal	Poor maintenance of sanitary facilities and improper disposal of domestic waste water will result in environmental pollution.	a) Properly designed waste water treatment plant is in place. b) Ensure that the domestic waste water is directed to waste water treatment plant in conformity with the CEA, Local Authority guidelines and should not be discharged to the environment prior to the treatment. c) In instance of overflow, leaks, immediate repairs should be carried. Establish and collaborate with the Local Authority under such circumstances.	Check the design plans for cesspits and soakage pits. Review wastewater treatment plant maintenance. Carry out water quality tests of the treatment plant effluent.	Mihinthale Pradeshiya saba PHI(M) Maintenance engineer at RUSL (I)	FT at RUSL operation cost	At the design phase and thereafter once in 6 months or when need arises.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Sanitary facilities	Discharge of untreated or insufficiently treated sewage, and lack of maintenance of sanitary facilities may lead to: • Contamination of drinking water (ground and surface) • Spread of diseases among the student population and surrounding community	(a) Ensure proper maintenance of the sanitary facilities (flushable and clean) (b) Train maintenance and operation staff to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures. (c) Septic tanks will be regularly emptied and maintained. (d) Provide a suitable sump/ overhead tank, taking into account the daily requirement of water to ensure uninterrupted water supply for the sanitary faculties. (e) Maintain a required ratio of male/female toilets with in the faculty.	Observation on cleanliness and maintenance of sanitary facilities. Maintenance schedule in place Continuous water supply available in the toilets. The disposed waste water will conform to the waste water discharge standard stipulated under the NEA	Maintenance Engineer at RUSL	FT at RUSL operation cost	Bi-annually
Health and Safety of students:	Accidents during practical sessions in laboratories. Risk of accidental deaths due to negligence	(a) Train the students on occupational risk involved in handling the equipment. (b) Train the students and teachers on managing risk and emergencies. (c) Provision of first aid kit and	Observations and safety reports Traffic lights in place at the pedestrian crossing	RDA for traffic light installation the(I) FT at UOK on the traffic light	FT at RUSL operation cost or RDA cost for placement of traffic lights	Annually

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		train the teachers on usage. (d) Emergency switches should be properly covered. (e) Fire extinguishers must be placed adequately and they should be working at all times. (f) Ensure the road safety of the trainees on the Puttalum- Anuradhapura A12 highway. Place a traffic light for the already existing pedestrian crossing on the highway for students to cross the road.		installation (M)		

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Waste generated on account of operation and maintenance	There is maintenance waste such as e-waste etc.	(a) The solar thermal panels and water will be operated by the supplier. Any waste that is generated will be taken by the supplier for possible reuse and recycle. (b) E-waste to be disposed of in an appropriate manner. Have an agreement with the suppliers or the Local Authority. (c) Disposal of toxic chemicals from laboratories should be arranged with relevant institutions/private companies.	Agreements and plan in place for the disposal of the identified items	RUSL and the suppliers of the renewable energy systems (I)	FT at RUSL operation cost	During the entire operational phase
Onsite emergency plan for minor accidents mishaps and disaster management plan.	Damage to the property and life	(a) The FT of RUSL should prepare an onsite emergency plan in event of minor accidents. (b) A in house plan in event of a natural disaster should be developed to address floods tornados and cyclones.	On site emergency plan and disaster management plan documented and in place.	FT of RUSL (I)	FT at RUSL operation cost	Mock drills carried out every quarter.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
Maintenance of plantation and landscaped area in the FT project site	In the absence of maintained landscape FT grounds will not be pleasing to the eye	(a) The faculty head with the appropriate support staff allocated for the purpose will be responsible for the maintenance of shrubs, tree and land scape of the area. Minimum of 90% survival of plans will be maintained. Any short fall will be replaced during the monsoonal period.	Survival rate of plans, trees and shrubs in the landscaped area	FT (M) Faculty head and associated staff (I)	FT at RUSL operational cost	Every year before the onset of the monsoon period
Adopt food safety guidelines	If student don't maintain personal hygiene, it could be issue for the students and lecturers	(a) The conditions given below should be included in the contractual arrangement with the canteen operator. (b) Health checks of the canteen should be done annually (c) Prepare set of rules on personal hygiene should be displayed and followed. (d) Adopt food safety regulation imposed by the Ministry of Health. (e) Encourage regular hand washing during working hours. (f) Strike rules for canteen operators such as scalp hair	PHI Reports, observations.	Faculty head and the supporting staff at the university (I) Pradeshiya saba Mihinthale PHI (M)	Canteen operator cost	Bi-annual spot checks

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Fund Sources for Implementing Mitigation Measure	Time Frame
		be fully covered.				

P.S. Note: PIU: project implementation unit, PHI: public health inspector allocated to the area from the Pradeshiya Saba Mihintale, RUSL: Rajarata University of Sri Lanka, NEA; National Environmental Act.