

Initial Environmental Examination

July 2018

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

CURRENCY EQUIVALENTS

(as of 11 July 2018)

Currency unit	–	Sri Lanka rupee/s (SLRe/SLRs)
SLRe1.00	=	\$0.006278
\$1.00	=	SLRs159.27

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-operated
DMC	–	developing member country
DOF	–	Forest Department
DPC	–	damp-proof course
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
FOE	–	Faculty of Engineering
GRC	–	Grievance Redress Committee
GRM	–	Grievance Redress Mechanism
GND	–	Grama Niladari Division
HPS	–	Homagama Pradehiya Saba
HSE	–	Health, Safety and Environment
IEE	–	initial environmental examination
IP	–	indigenous peoples
IR	–	involuntary resettlement
IR DDR	–	involuntary resettlement due diligence report
ILO	–	International Labor Organization
LFS	–	Labour Force Survey
M&E	–	monitoring & evaluation
MHECA	–	Ministry of Higher Education and Cultural Affairs
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
PBC	–	performance-based contracts
PIU	–	project implementation unit
PMC	–	project management consultant
PMU	–	project management unit
PP	–	project proponent
REA	–	Rapid Environmental Assessment
SEP	–	Site Environment Plan
SLEC	–	State Level Empowerment Committee
SLLRDC	–	Sri Lanka Land Reclamation and Development Cooperation
SPS	–	Safeguard Policy Statement
STHRDP	–	Science and Technology and Human Resource Development Project
TA	–	technical assistance
TDP	–	Technology Stream Degree Programmes
TMS	–	Total Management Solutions
UDA	–	Urban Development Authority
UOSJP	–	University of Sri Jayewardenepura, Sri Lanka
VEC	–	Valued Environment Component

NOTE

In this report, "\$" refers to US dollars unless otherwise stated.

This initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the ["terms of use"](#) section on ADB's website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

	Page
EXECUTIVE SUMMARY	
I. INTRODUCTION	1
A. Subproject Background	1
B. Objectives of the IEE	2
C. Approach and Methodology	3
D. Structure of IEE Report	4
II. DESCRIPTION OF THE SUBPROJECT	5
A. Subproject Location	5
B. Description of the Subproject	9
III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK	15
A. Applicable Measurable Environmental legislations	15
B. Administrative Framework	19
C. International Agreements	19
D. ADB Safeguard Policy Statement, 2009.	20
IV. DESCRIPTION OF THE ENVIRONMENT	24
A. Methodology used for Baseline Study	24
B. Location Area and Connectivity	24
C. Land Use	26
D. Seismicity	26
E. Geology, Soil and Topography	26
F. Climate and Meteorology	27
G. Ambient Air and Noise Quality	30
H. Surface and Ground Water Quality	30
I. Ecology and Biodiversity	31
J. Waste Management:	33
K. Educational, Medical and Religious Properties	34
L. Demographic details of affected population	34
V. ANALYSIS OF ALTERNATIVES	35
VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	37
A. Land and Environment	37
B. Water and Environment	38
C. Air Environment	40
D. Noise Environment	41
E. Impact on Fauna and Flora	43
F. Waste Disposal and Sanitation	45
G. Design of FOE buildings under the green building	48
H. Risk of Fire and Emergency Preparedness	50
I. Occupational Health and Safety and General Public	50
J. Health and Safety of Trainees	51
K. Adopt food safety guidelines	51
L. Social Impact	52
M. Cumulative impacts	52
N. Climate Change Impact and Risk	53

VII.	PUBLIC CONSULTATION	53
	A. Approach to Public Consultation	53
	B. Methodology	54
VIII.	GRIEVANCE REDRESS MECHANISM	57
	A. GRM Process	57
	B. Registering Complaints	57
IX.	ENVIRONMENTAL MANAGEMENT PLAN	59
	A. Environmental Management Plan	59
	B. Implementing Arrangement	59
	C. Environmental Monitoring and Reporting	63
	D. Consultation and Information Disclosure	63
X.	CONCLUSION AND RECOMMENDATIONS	63
	A. Conclusion	63
	B. Recommendation	64
ANNEXES		
	1. Site Report	66
	2. BIQ	70
	3. Survey Plan	77
	4. Gazette Notification of The Land	78
	5. Letter of DS Office	81
	6. Applicable Environmental Legislations	82
	7. Green Building Application	90
	8. Letter of Permission of UDA	92
	9. Soil Report	93
	10. Summary of Stakeholder Consultation Meeting	98
	11. Letter Megapolis Approval Letter	112
	12. Complaints Form	113
	13. Terms of Reference for Environment Safeguards Consultant	114
	ENVIRONMENTAL MANAGEMENT PLAN	116

EXECUTIVE SUMMARY

Government of Sri Lanka with loan funding from Asian Development Bank (ADB) has proposed to implement Science and Technology and Human Resource Development Project (STHRDP). This project aims to increase the technology-oriented workforce to transform Sri Lanka's growing economy by supporting a series of Universities across the country. The objectives of the IEE are to:

- Determine the category of the subproject 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 requirement of statutory clearances;
- Baseline environmental monitoring and survey;
- Predict impacts on relevant environmental attributes and mitigation measures to minimize the impacts.

The sub subproject. The proposed construction of the new Faculty of Engineering (FOE) of the University of Sri Jayewardenepura, Sri Lanka (UOSJP) is located in Homagama in the Colombo District, Western Province, Sri Lanka. Establishment of the FOE with training on subjects such as Civil Engineering, Computer Engineering, Electrical and Electronic Engineering, Mechanical Engineering, Interdisciplinary studies, etc. will improve the job security for these graduates in the local as well as global job market.

The proposed FOE is composed of the Mechanical Engineering Department (4625sqm²), Electrical and Electronic Department (5475 sqm²), Computer Engineering Department (4375sqm²), Civil Engineering Department (6225sqm²), Common Academic facilities along with the IS Department (4245 sqm²) Welfare and Recreation (3225 sqm²), and Administrative Division (6875 sqm²). The number of buildings will depend on the Master Plan to be developed by the Contractor.

The introduction of the five undergraduate courses at FOE will involve the admission of 120 students per intake. There will be two intakes each year.

Description of the environment. The sub subproject site (i.e. land) is located alongside the Kottawa Polgasowita Road and is within 1km of the Kottawa town. The land location points are 6°49'26.1"N+79°58'04.7"E. The land selected is 10 acres which was acquired under a government directive from a real estate company, Prime Land. Adjoining properties are privately owned for residential purpose by Prime lands (Pvt) Ltd on one side and, abandoned paddy land along the other boundary. The proposed subproject site is located 7.43 km from the existing premises of UOSJP.

There are no major environmental concerns associated with the site as it is already cleared land. However, two households located outside of the UOSJP FOE were deemed to lose access upon establishment of the boundary walls. This has been resolved by providing an agreeable compensation package for relocation.

Policy, legal and Administrative Framework and Sub Subproject Categorization. As per the ADB's Safeguards Policy Statement of 2009 and based on the REA Checklist of ADB classification, the FOE was categorized as Environment Category B. The subproject was

assessed against the 11 SPS Environment Policy Principles and no further assessments were carried out or recommended.

ADB IP safeguards are not triggered under this subproject. IR safeguards were triggered due to land acquisition and an issue of loss of access to two households outside of the proposed FOE premises. This is discussed in the subproject IR DDR. However, it is identified that the said land was not acquired in anticipation of ADB financing and falls within Category C for IR safeguards.

According to the BIQ and IEE/EIA environmental guidelines of Central Environmental Authority of Sri Lanka (CEA), the proposed subproject falls in to the non-prescribed category. Therefore, environmental clearance (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.

Analysis of Alternatives. Alternative sites were not considered as site was already acquired for FOE establishment prior to request for ADB financing. Examination of the subproject land, show that it is compliant to Government of Sri Lanka requirements and ADP Policies. The selected site is strategically located in the Western Province and within close proximity to Kottawa Expressway exists that connects with the major expressways in Sri Lanka: Biyagama and Katunayake export processing zones. The site is 8.03 km from the proposed Green Tech City development under Ministry of Megapolis and Western Development. It is also within 7.43 km to the main UOSJP Campus in Nugegoda.

Public Consultation. A stakeholder consultation was held on 17th May 2018 at the Faculty of Graduate Studies at UOSJP in Gangodawilla, Nugegoda. Consultation was carried out with villagers, residents adjoining the property, officers from authorities, UOSJP students, and UOSJP FOE academic staff. In total 50 persons attended the meeting. To obtain additional information, key informant interviews were carried out. The main issues that came up included the need to obtain the relevant clearances through UDA, need to consult with the Agrarian Services regarding the buffer and discharge of any water on the boundary bordering the paddy lands.

Grievance Redress Mechanism: The subproject will follow the GRM process identified in the IEE. Assessment of the existing GRM shows that it has provided citizens with an effective platform for redress of their grievances. This IEE describes the existing GRM including informal and formal channels, time frame and mechanisms for resolving complaints about environmental performance.

Anticipated Impacts and Mitigation Measures: An EMP has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels. The FOE subproject is unlikely to cause significant adverse impacts because most predicted impacts are localized and likely to be associated with the construction process which is temporary. Locations and siting of the proposed infrastructures were considered to further reduce impacts. The land was identified to have soil erosion impacts on the adjacent irrigation canal system that supports a 40 acre agrarian system on the Western boundary (immediately adjacent to the subproject is 10 acres of abandoned paddy land). The other major concern for the subproject involved the relocation of 2 families due loss of access or the provision of alternative access.

Recommendations: The EMP and associated UDA, CEA, Homagama Divisional Secretariat guidelines should be followed during construction and operation phases of the subproject. The detailed engineering design of the building should consider the geotechnical report and propose migratory measures that ensure strong foundation. The IEE is based on preliminary design and

will be updated once detailed engineering design is developed. The land is prone to soil erosion and measures should be adopted to mitigate the problem during the design phase. This should be carried out in consultation with the Department of Agrarian Services Development. UOSJP should consult Homagama Pradesha Saba, to ensure that the solid waste is disposed properly. Under no circumstances should the waste water from the proposed FOE be disposed to the surrounding environment without proper treatment. Therefore, a waste water treatment plant should be established within the premises.

Conclusion: The IEE study did not find any major incompatibilities with the surrounding physical, biological, socio-economic or cultural environment. Only issue of concern was the loss of access to 2 households outside of the premises is now being resolved. With the establishment of the FOE, it will generate economic and social benefit to the community and the land market value will increase in the area with the influx of people. However, careful planning and design of the new development is necessary to ensure that it does pose any significant long term environmental or social threat. Most impacts are likely during the construction phase and are expected to be temporary in nature and could be mitigated with proper management and good practices. Since the proposed subproject is unlikely to cause any significant adverse environmental impacts, no further study is required. The GRM and EMP provide appropriate guidance for suitable environmental and social safeguards. Accordingly, the proposed subproject can be recommended for implementation with strict adherence to EMP and GRM provided in this IEE

I. INTRODUCTION

A. Subproject Background

1. 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 Engineering study, In the engineering services sector, related activities have grown significantly by 66.9% YOY in Colombo District in 2017(Department of Census and statistics). Successive governments in Sri Lanka have promoted the concept of a 'knowledge-based economy', particularly during the past two decades^{1,2}

2. 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 Engineering, ICT, tourism & hospitality, construction and light engineering industries³. The Faculty of Engineering (FOE) of the University of Sri Jayewardenepura, Sri Lanka (UOSJP) was approved on 8th of January 2016 and initial intake of students started in 2018 to make a significant contribution to meet the human resource needs of Sri Lanka. The FOE has introduced latest teaching and learning methodologies to its undergraduate students. Currently FOE lacks infrastructure to arrange the lectures and the practical laboratory sessions within the available limited space, functioning at a temporary facility in Rathmalana. As a result, the faculty runs academic constrains in conducting practicals and lectures as they need to train a large number of students in limited space without adequate facilities.

3. 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 Cultural Affairs (MHECA) shall be the Executing Agency and UOSJP shall be the implementing agency for the subproject. This subproject aims to increase the technology-oriented work force which will contribute to transform Sri Lankans growing economy. Under this subproject UOSJP will build a new Faculty of Engineering (FOE) in Homagama.

4. The safeguards screening for UOSJP has been completed by the consultants mobilized under TA8235. Initially, the resettlement of two families was identified, which later turned out to be confirmed that the resettlement was caused without anticipation of the ADB-funded project. The resettlement is appropriately addressed by the UOSJP, and this is further discussed in the IR DDR carried out for the overall project.

5. The proposed feasibility study and the detailed designs of the FOE at UOSJP proposes Phase I and II both to be financed by ADB. Phase I of the subproject will involve the construction of basic laboratories, lecture halls, staff offices, basic research facilities, administration and primary welfare facilities. Phase II will involve the extension of research and welfare facilities, specialized laboratories, and extension of the industrial collaboration space.

6. Four undergraduate courses are introduced at the FOE, UOSJP. The four fields of engineering will lead to the award of the degree in 'Bachelor of Science Engineering'. The four fields of engineering covered are Civil Engineering, Computer Engineering, Electrical and

¹ Mahinda Chinthana, 2005, Government of Sri Lanka

² An Empowered Sri Lanka, 2016, Government of Sri Lanka

³ The skills gap in four industrial sectors in Sri Lanka, 2015, International Labour Organisation

Electronic Engineering, and Mechanical Engineering. The total anticipated student population will be 970 inclusive of undergraduate and postgraduate students (see Table 1 for breakdown).

Table 1: Subproject Intake Number of Students

Subproject intake number of students of Faculty of Engineering UOSJP						
	Degree Program	2018	2019	2020	2021	2022
Bachelors Students	Civil Engineering	30	30	40	50	75
	Computer Engineering	30	30	40	50	75
	Electrical & Electronic	30	30	40	50	75
	Mechanical Engineering	30	30	40	50	75
	Total	120	120	160	200	300
Post Graduate Students	Civil Engineering	0	2	2	4	7
	Computer Engineering	0	2	2	4	7
	Electrical & Electronic	0	2	2	4	7
	Mechanical Engineering	0	2	2	4	7
	Interdisciplinary Studies	0	1	2	3	4
	Total	0	9	10	19	32

7. The academic staff is recruited by following the procedures set by the UGC. Initially at the formation of the faculty, four senior lecturers with PhDs in various engineering disciplines were recruited. At present the total number of academic staff is 14 having PhDs and Master Qualifications in Engineering.

8. The FOE will train graduates who are ready for industries such as ICT, manufacturing, electrical, electronic, and civil engineering services. This will ensure that these graduates will have a competitive edge to secure jobs both locally and internationally.

B. Objectives of the IEE

9. The objectives of the Environmental Study are to:

- Determine the category of the subproject 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;
- Determine the appropriate extent and type of EA required (IEE or EIA), i.e. scoping;
- Determine the requirement of statutory clearances;
- Provide a baseline environmental monitoring and survey; on biodiversity, biophysical resources;
- Predict impacts on relevant environmental attributes and mitigation measures to minimize the impacts.

10. Recommendations will be provided for mitigating any negative impacts wherever possible through the EMP. The EMP 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 subproject anticipated environmental impacts that will arise due to the subproject activities, necessary measures that have to be adopted to mitigate them and public views and suggestions regarding the subproject.

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

C. Approach and Methodology

12. 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.

13. **Reconnaissance Survey:** A reconnaissance survey was carried out identify the value environmental components surrounding the subproject. Location of environmentally protected areas; surface water bodies; environmentally sensitive receptors (educational institutions, religious structures, medical facilities etc.) at the subproject site was identified during the survey. The Consultant conducted preliminary analysis of the nature, scale and magnitude of the impacts that the subproject is likely to cause on the environment, especially on the identified Valued Environment Component (VECs). REA, IP and IR checklists were filled out and the findings incorporated in the preparation of the IEE. Site inspection of proposed subproject was carried out on 28th of September_2017 (refer Annex 01 for details).

14. 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. Secondary information for the report was gathered from printed materials and other sources of the relevant Government Departments, Authorities, Divisional Secretariat and relevant websites

15. Another study will be carried out to analyze and identify the demand for engineering graduates in the labor market to justify the public investment in the technology education and on proposed FOE subproject. This will be carried out by ADB Separately.

16. **Data Collection & Review:** Secondary data such as Survey of Sri Lanka Topo Sheets, District Planning Maps, Reports 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 MOMDE.

17. **Environmental Screening & Scoping:** Screening has been conducted with specific consideration such as location of the subproject with respect soil erosion and land settlement issues to be studied in detail to provide an 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.

18. **Baseline Environmental Monitoring:** To establish the baseline environmental status, it is recommended that monitoring is carried out for various environmental parameters such as meteorology, ambient air quality, ambient noise level, ground & surface water quality and soil ⁴ at the subproject site. Secondary data was referred from numerous reports. No rapid biodiversity assessment was carried out to assess the importance of the biodiversity surrounding the subproject site as it was an already developed land. The subproject site slopes towards the southern boundary where the agrarian canal is located. Therefore, care will have to be taken during infilling and land preparation activities. The Department of Agrarian Services and Development should be consulted on reservation limits of the southern boundary and develop soil control measures prior to construction. The geotechnical report suggests that since the bedrock is highly weathered, a shallow type off a foundation structure should be considered when finalizing the layout of the master plan. Master Plan will be developed by the Contractor once appointed.

19. **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 environmental pollution.

20. **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.

21. **Environment Management Plan:** The EMP (Part III) has been prepared as per the requirements of ADB safeguard policy statement. The EMP includes management of construction camp; rain water harvesting, storm water management practices; soil erosion; requirement of noise barrier, establishment of a waste water treatment plant & solid waste management plan. At the same time, information was collected to prepare a Basic Information Questionnaire (BIQ) for environment clearance from CEA (refer Annex 02).

D. Structure of IEE Report

22. 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:

Part 1. IEE Report

Executive Summary

Chapter 1- Introduction

Chapter 2-Description of the subproject

Chapter 3- Policy, Legal, and Administrative Framework

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- Grievance redress mechanism

Chapter 9-Environmental Management Plan

Chapter 10-Conclusion and Recommendation

⁴ Soil report for the site.

Part II. Annexes
Part III. EMP

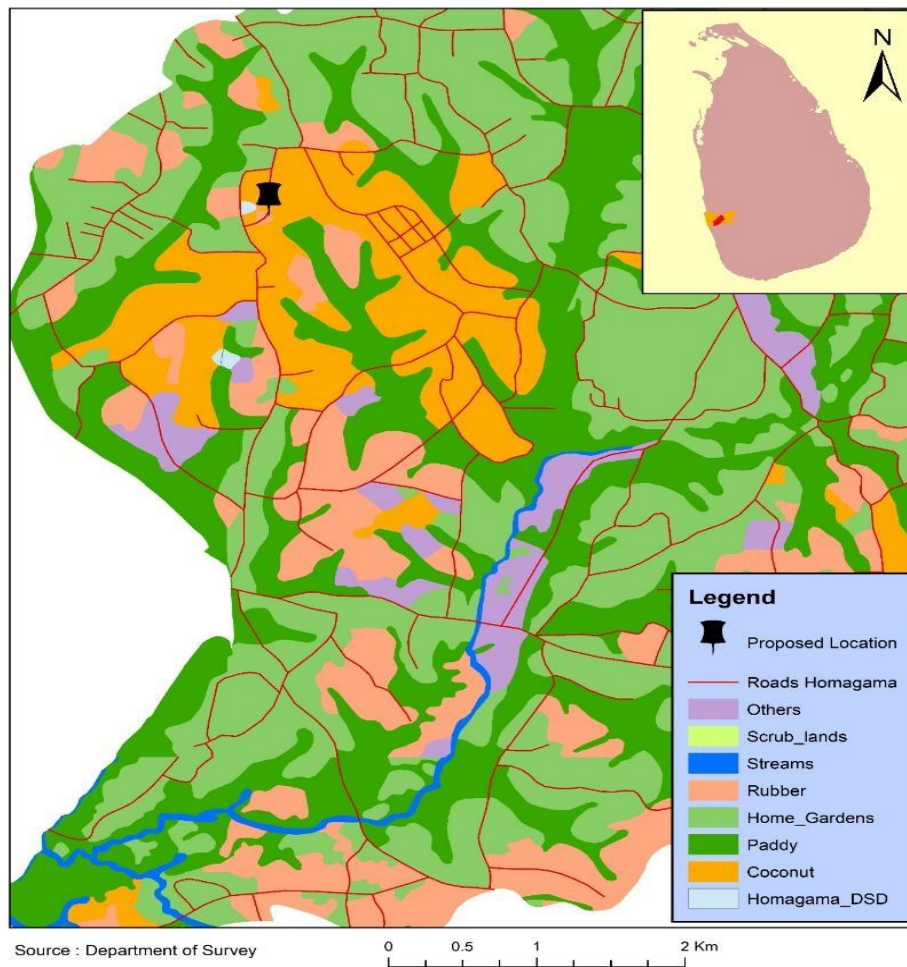
II. DESCRIPTION OF THE SUBPROJECT

A. Subproject Location

23. The proposed construction of the new FOE is located in Homagama - Maththegoda, Colombo District, Western Province, Sri Lanka. The land location points are 6°49'26.1"N+79°58'04.7"E. The subproject site (i.e. land) is located alongside the Kottawa – Polgasowita Road and is within 2 km of Kottawa town. The proposed subproject site is located 7.43 km from the UOSJP main campus building in Gangodaawila Nugegoda.

24. On the Northern boundary lies the Kottawa – Polgasowita Road, on the eastern boundary lies Kakunagahawatte and southern boundary supports a canal and Delgahawatte land, while the western boundary adjoins the Lot B a residential developed lands by the land developer. These details are shown in the attached site survey plan (Annex 3). Ali Dena Temple is located 40.23m to the site. See Figure 1 for location of the subproject site.

Figure 1: Location of Subproject Site
Proposed new Engineering Faculty of USJP



Source: Prepared by TMS.

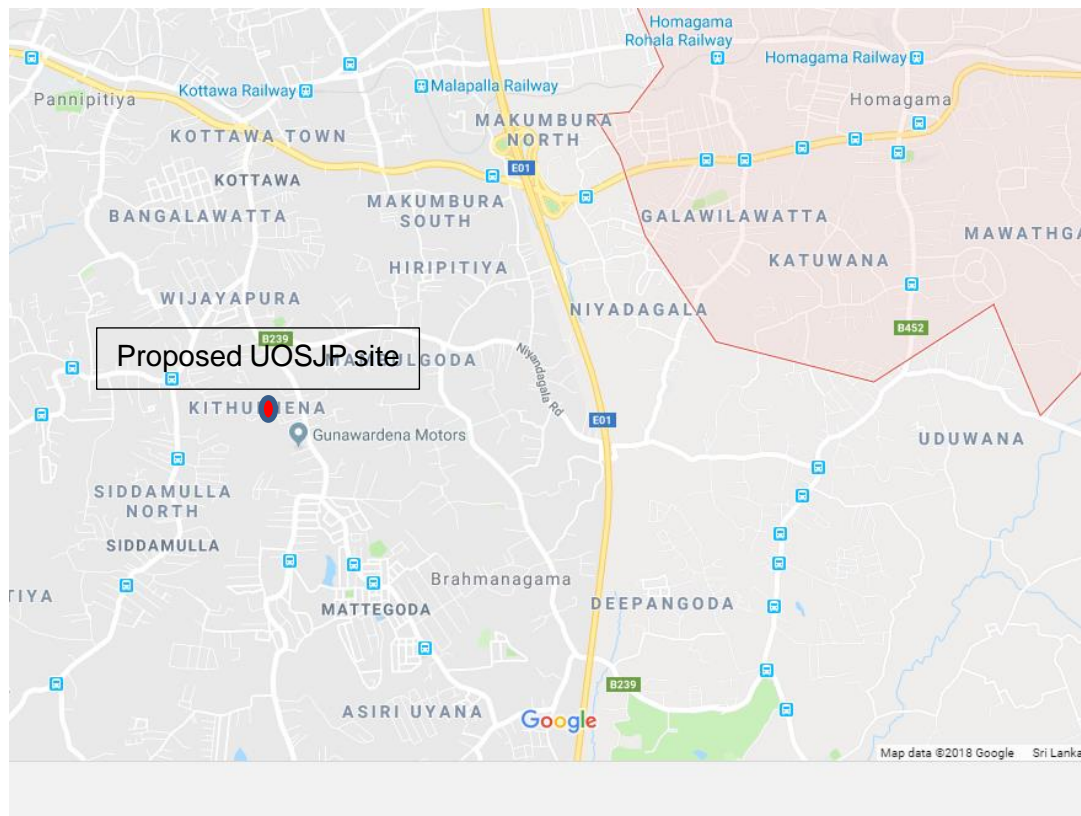
25. The environmentally sensitive receptors at the subproject site include the temple across the road and the home garden system on the North boundary and the abandoned paddy land on the West boundary. See Figure 4 for subproject vicinity map.

Figure 3: Pictures of Subproject Associate Site



Source: Captured by TMS.

Figure 4: Proposed Subproject Vicinity Plan



B. Description of the Subproject

26. The subproject associated area is rural and residential. Under Ministry of Megapolis and Western Development this area was zoned for residential development (Figure 2 shows the zonation plan for the area). However, the decision was reversed based on the national need to establish a FOE at UOSJP. The subproject land was originally a coconut land which was developed by Prime Land (Pvt) Ltd for residential purpose. This was later acquired by UOSJP for FOE (refer Annex 04 for relevant documents such as the Sri Lankan Government Gazette notification 2033/33 of 23 September 2017). The Sri Lankan Government granted the university with 4.0469-hectare land located in Kakunagawatte, 587 Mathtegoda Village, Homagama, Pradeshiya Saba limits. Details on land acquisition are provided in the ADB IR DDR prepared for STHRDP.

27. Adjoining properties on the western and the northern boundaries are privately owned by Prime Land (Pvt) Ltd. These lands are sold by Prime Land (Pvt) Ltd for residential purpose after clearing. There are no permanent or temporary structures on the site as it has been cleared by Prime Land (Pvt) Ltd. Since the site has been lying vacant and unused, small shrubs have grown over time. Some photos of the site are shown in Figures 3. The Homagama Divisional Secretariat has granted permission to UOSJP to continue with the proposed development (see Annex 05).

28. The proposed FOE subproject will involve construction of a new faculty with facilities to conduct lectures and practicals for engineering students. The FOE will build multiple story buildings and will be constructed in two phases. The proposed FOE is composed of a Mechanical Engineering Department (4625m²), an Electrical and Electronic Department (5475 m²), a Computer Engineering Department (4375m²), a Civil Engineering Department (6225m²), a IS

Department (4245 m²), Welfare and Recreation (3225 m²), and an Administrative Division (6875 m²). Altogether after the completion of phase I and II, 5 buildings are anticipated at the FOE complex. It will include 12 laboratories for mechanical engineering, 15 laboratories for electrical and electronic engineering, 12 laboratories for computer engineering, 13 laboratories for civil engineering and one laboratory for IS department. The details design and the lay out plan for the FOE is provided in Figure 5. The Master plan and preliminary design plan for FOE will be developed in due course.

29. Once the detail designs are conceptualized it would include CCTV system, data and telephone system, lighting protection system, air condition systems and drainage systems, solid waste management room (200m²) will be installed. However, the design has not considered space for a waste water management plant or Rain water harvesting system in their draft lay out plan. The layout plan of FOE of UOSJP is shown below in Figure 5. The site plans and 3D views have been shown in Figure 6.

30. The FT will be 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 and treatment plant for collection of waste water and sewage will be developed with detailed design.

Figure 5: Layout Plan of the FOE

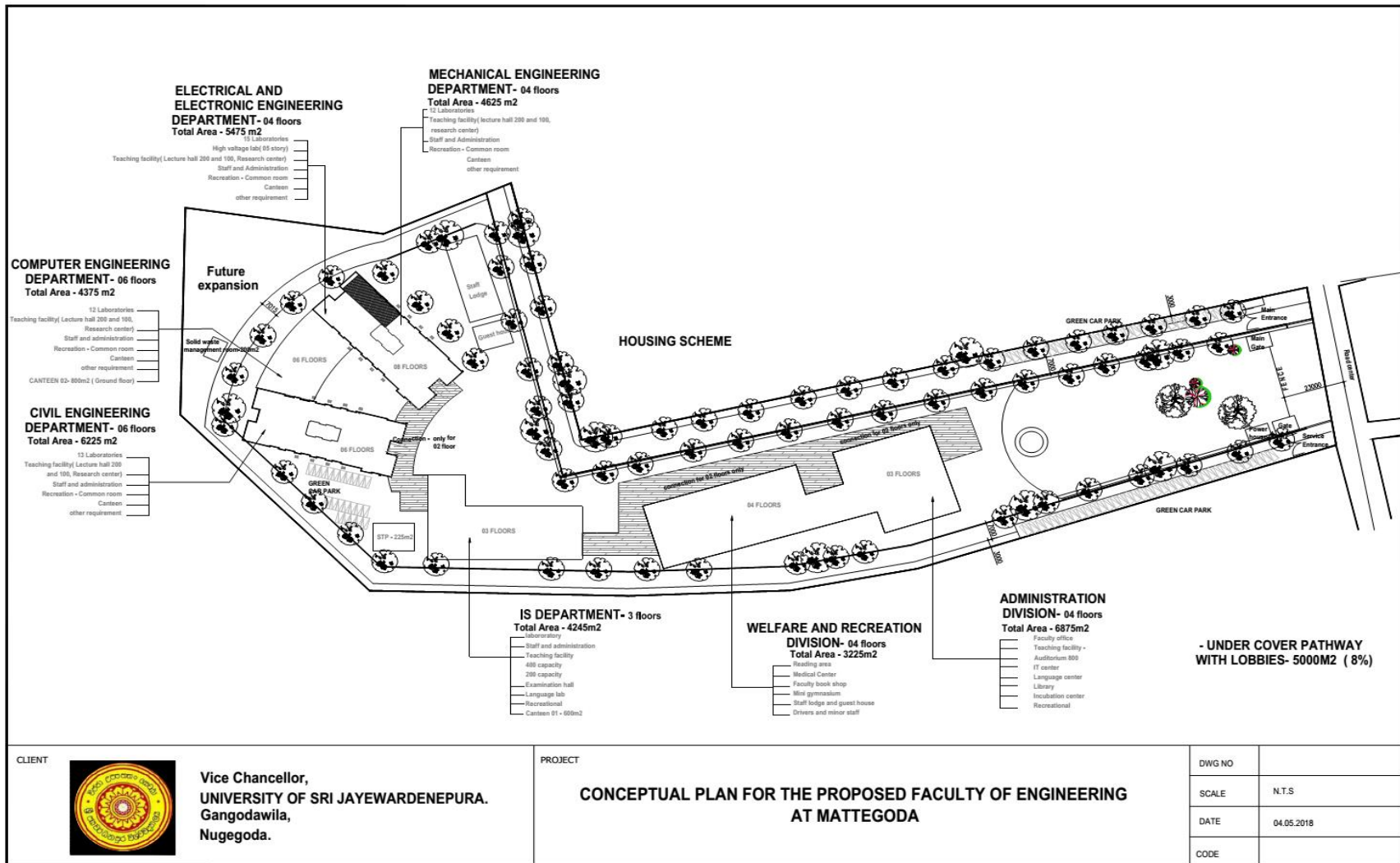
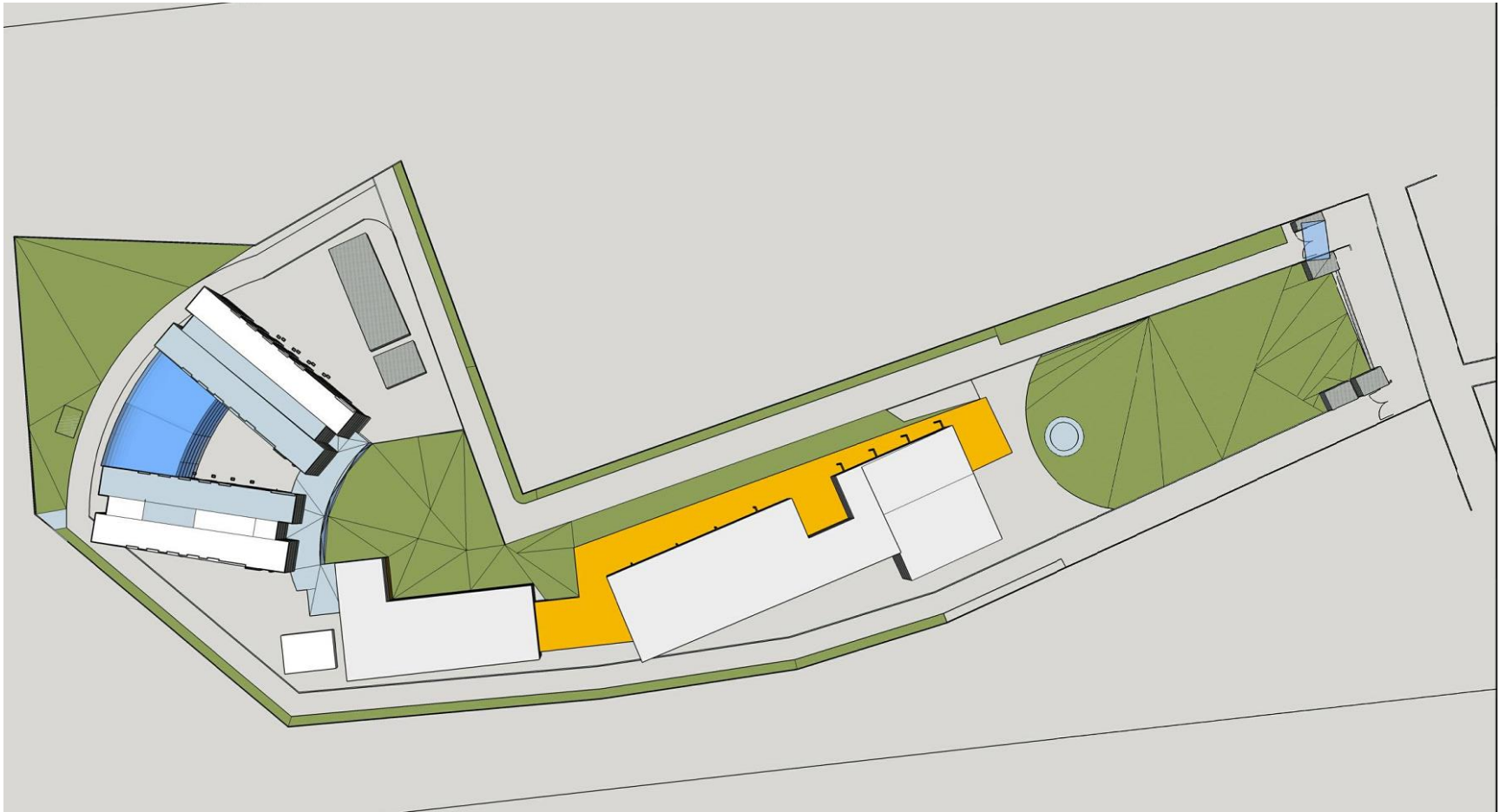


Figure 6: Conceptual 3D View of the FOE Building UOSJP



31. **Culvert:** There should be a culvert across the land to discharge the water from the adjoining land owned by Prime land the property developer.

32. **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.

33. **Utilities:** To facilitate utilities to the FOE 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 FOE occupancy size and utilities needed.

34. **FOE improvement proposal:** The primary objective of the FOE is to produce exceptional graduates who will have the capacity to outstand among other engineering undergraduates and to contribute towards national and regional economy through academic, industrial, research and development. It is also envisaged to harness the strengths of other Faculties such as Faculty of Management Studies so that the FOE student is instilled with multi-disciplinary special skills.

35. UOSJP is planning to introduce result-oriented staff and student recognition and awarding system that will ensure continuous improvement in the system. The Faculty has also signed MoUs with academic and industrial partners in order to conduct research and development work that has a high commercial value. FOE has obtained services of consultants to provide critical assessment of the curriculum and conforms to national and international standards for higher education in engineering The Faculty plans to establish an innovation and incubation center that will be mutually beneficial to both university and Industry. There will be more reforms within the FOE including the following:

- Make the curricula flexible by introducing different entry and exit points;
- Motivate students to obtain foreign exposure as part of degree programs;
- Encourage research-lead teaching and learning practices;
- Introduce multidisciplinary and inter-disciplinary courses and programs;
- Introduce student centered learning methods to facilitate independent and active learning;
- Apply modern technologies in teaching and learning enabling the staff to work with state-of-the art technologies;
- Enable students to learn by research activities and exchanging knowledge;
- Work closely with professional bodies, industry, alumni and other stakeholders to ensure the degree programs are responsive to current needs;
- Reward system: this include motivate the staff by clearly linking individuals' goals to organizational goals;
- Upgrade the quality and relevance of programs through internal quality assurance framework and international accreditation;
- Introduce codes of conduct and best practices for teaching and learning;
- Formulate a sound research agenda by exploring new and emerging areas of research beyond traditional boundaries;
- Publish, popularize, commercialize and apply generated knowledge through research and innovation;
- Enhance the involvement of students in research and publications.

36. **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.

37. Sources of construction material

- **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 subproject and the access road to FOE. The suitability of borrow materials can be checked by laboratory tests such as proctor compaction test, gradation test, liquid limit plastic limit etc.
- **Fine Aggregate Material:** Local enquiry suggests that extraction / mining of natural sand is banned in Kalu, Kelani rivers in the western province. It is therefore suggested to use sea sand which can be obtained from the SLLRDC sand depositary for the site.
- **Cement:** Local and imported cement in bag or bulk form is available for construction. Cement shall conform to SLS 107 for building
- **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.

38. **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. 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.

39. **Cost of the Subproject:** The total cost estimated for major items associated with the proposed subproject (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 subproject. The estimated civil work and design cost for Phases I is SLRs. 3,134,255,000.00. Refer Table 2 for total estimated cost according to procurement plan.

**Table 2: Subproject Cost and Procurement Plan
COST ESTIMATES AND PROCUREMENT PLAN**

Assignment Description	Cost estimate (USD)	
	ADB	Government
Infrastructure	21623429.49	7703557.692
Human Resource (Capacity Building & Development)	128205.1282	0
Equipment	7884615.385	1201923.077
Operation and Maintenance		432692.3077
Subproject Administration	210000	0
Grand Total	2,984,6250	9,338,173.077

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

A. Applicable Measurable Environmental legislations

40. 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.

41. The following section outlines the broad legal and institutional framework in Sri Lanka for environmental management, relevant to the proposed subproject. The relevant legislations are listed below. Further details are provided in Annex 06. The EPL procedure under the CEA is explained in Annex 06 along with the rest of the laws that are listed below.

- The Constitution of Sri Lanka (Articles 18, 27(14), Articles 154 (A), 9, 19 and (III) 17)- Covers environmental governance at the provincial level. In the event of public nuisance / grievance this becomes applicable to address the court of law.
- National Environmental Act No. 47 of 1980 (and its amendments of 1988) EIA is covered under this Act- This is discussed separately below since this is the main environment regulatory enactment.
- Disaster Management Act No. 13 of 2005- Comes into force in case of a national or regional level disaster. This is relevant due to the flood risk in the area.
- Pradeshiya Sabha Act No. 15 of 1987- body which regulates the planning and zonation of the region. This will be relevant for obtaining planning approval for the sub subproject.
- Mines and Minerals Act No. 33 of 1992 – Relevant for the extraction of building material from the natural environment,
- Fauna and Flora Protection Ordinance, Act No. 49 of 1983 – Protection and management of wetland fauna and flora at site.
- Flood Protection Ordinance, Act No. 22 of 1955 – Control and protects the watershed area of a catchment.
- Irrigation Act No 23 of 1983- control and service of irrigation water and systems.
- National Water Supply and Drainage Board Law of No. 2 of 1974 – supply of water for the sub subproject.

- Prevention of Mosquito Breeding, Act No. 11 of 2007 – to ensure that the site is free of mosquitoes related habitats as this is an area identified for dengue epidemics.
- The Urban Development Authority, Law, No 41 of 1978- regulates the zonation of the Homagama urban development. Provides guidelines for the FT green building certification (Annex 07)
- State Land Ordinance, Act No. 13 of 1949, Land Acquisition Act No. 09 in 1950 and subsequent amendments in 1983 1nd 1986, and Land Acquisition regulation of 2008- Relevant for land transfer from state to state agency.

42. **National Environmental (Amendment) Act 47 of 1980** and its amendments: 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).

43. The Environmental Impact Assessment (EIA) procedure for major development subprojects 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 subproject of the FOE does not require an IEE because it is not within a designated protected area.

44. 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. 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 for a EPL for the subproject will have to be initiated. The statutory clearances required by the subproject are briefly described in Table 03.

Table 3: Statutory Clearances Required for the Subproject

Type of Clearance	Activity	Name of the Authority	When required
Environment Clearance (Environmental Protection Licensing) Regulation No. 1533/16 of 2008	Implementation of the subproject and waste water treatment.	CEA	Before construction
Clearance for development activities (refer Annex 08)	Implementation of the subproject and construction of the building. They will direct to obtain approval from the Homagama Pradeshiya Saba and CEA	UDA	Before construction

Local Government Authorities building approval	The Municipal Councils, Urban Councils and Pradeshiya Sabhas share the powers regarding the approval of buildings plans, control of solid waste disposal, sewerage and other public utilities. Under these laws the new construction requires approval. Adhere to building regulation	Local Authority (Homagama 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. Requirement of buffer zone and water quality parameters.	Urban Development Authority, CEA, Department of Agrarian Services.	Before construction
Consent to Ceylon Electricity board	Obtaining the electricity supply for the FOE complex	Ceylon Electricity Board	After completion of the building
Water Supply	Supply of Potable water for the facility and supply the certification of pumping drainage	NWSDB	After completion of the building

45. Apart from the clearances for the overall subproject work, the contractor, before starting the construction work, has to obtain required clearances as listed in Table 04 for operating his equipment and carrying out construction work.

Table 4: Clearances 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
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	Homagama Pradeshiya Saba	Local Government Ordinances and Acts –Urban Council Ordinance 61 of 1939, Act 29 of 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 generated during building and construction	Homagama Pradeshiya Saba	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- <ul style="list-style-type: none"> • 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 Shop and Office Employees (Regulation of Employment and Remuneration) Act, 1954 Factories Ordinance, 1942 2010 on fair treatment

46. **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. 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. 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 05 provides the Timeframe for Planning & Implementation.

Table 5: Timeframe for Planning and 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 PIU	1 times a year

47. Present feasibility and cost for equipment and building of the FOE at UOSJP were completed in #####. Bidding document was prepared for FOE in August 2017 and technical bids will be evaluated by#####. The contracts for the civil works of this subproject are expected to be awarded by #####.

B. Administrative Framework

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

49. UOSJP will be required to obtain an environmental recommendation letter or EPL from CEA. The NEA regulations stipulate that canteen facilities which provide seating capacity for over 50 students at a time fall under EPL category B.

50. According to the BIQ, the proposed subproject falls in to the un-prescribed category. Therefore, environmental clearance for an IEE will not be required from government of Sri Lanka. CEA consent for the FOE development subproject under un-prescribed category has to be obtained through a letter. (Annex 02- BIQ has been filled out and ready to be submitted to CEA for environment clearance.)

51. 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 treated water quality should conform to regulations No. 1534/18 dated 01.02.2008.

52. **Homagama Pradeshiysa Saba (HPS):** Homagama has been declared as an Urban Development Area" under the Urban Development Authority Act No. 41 of 1978 since 1978. (Map No. 18). All land development activities and the blocking out of lands within the administrative area of the HPS should be first registered at with them. It regulates land development activities in Homagama urban area (limits were gazzeted in 2009). Thereafter PIU FOE would require to obtain a permit for the construction activities of FOE building complex from the HPS prior to construction.

53. Disposal of solid waste during construction and operation has to be coordinated with the HPS. Removal of untreated waste water of the new FOE premises by using gully bowsers until the proper waste water treatment plant is established. For this purpose, initially an application form should be filled in and submitted to Secretary of the HPS. It will be then inspected, and fees estimated for the service by the PHI of HPS which would be subjected for approval from the Secretary of the HPS.

54. **Ministry of Megapolis and Western Development:** Homagama falls within the jurisdiction of the Ministry of Megapolis and Western Development. The subproject site was identified for residential development under this vision, but permission has been granted for educational purpose development in this instance. However, UDA regulations will be applicable, and clearances will have to be obtained.

C. International Agreements

55. Sri Lanka is signatory to numerous environmental conventions. The applicable international agreements are provided below.

- Conventions on Wetlands of International Importance especially as waterfowl habitats / Ramsar (entered into force in Sri Lanka in 1990)
- Convention on the conservation of Migratory Species of Wild Animals/ CMS (1990).

- United Nations Framework Convention on Climate Change/ UNFCCC (Sri Lanka ratified it in November 1993)
- UN Convention on Biological Diversity / CBD (Sri Lanka ratified in 1994).
- Plant Protection Agreement for Asia and the Pacific region (Sri Lanka ratified in 1994).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Sri Lanka ratified in 1992).

D. ADB Safeguard Policy Statement, 2009.

56. The Asian Development Bank has defined its Safeguard requirements under its 'Safeguard Policy Statement 2009 (SPS 2009). It has three operational policies on the environment, indigenous people, and involuntary resettlement. These three policies involve a structured process of impact assessment, planning, and mitigation to address the adverse effects of the subprojects throughout its cycle. The safeguard policies require that (i) impacts are identified and assessed early in the subproject cycle; (ii) plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and (iii) affected people are informed and consulted during subproject preparation and implementation. The policies apply to all ADB-financed projects.

57. The Environment Safeguards Policy ensures environmental soundness and sustainability of projects and supports the integration of environmental considerations into the decision-making process.

58. The projects are screened according to type, location, scale, and sensitivity and the magnitude of their potential environmental impacts, including direct, indirect, induced, and cumulative impacts.

59. ADB's SPS 2009 classify a project depending on following four 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.
- Category FI. A proposed project involves the investment of ADB funds to or through a financial intermediary. The financial intermediary must apply and maintain an environmental and social management system, unless all of the financial intermediary's business activities have minimal or no environmental impacts or risks.

60. **Policy principles:** Ensures that the screening process is used for proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken and potential impacts and risks assessed. There are 11

guiding policy principals for environmental safeguards to ensure environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process. Environmental safeguards are triggered if the subproject is likely to have potential environmental risks. Their relevance to the subproject is discussed in Table 6.

Table 6: SPS Policy Principles

	Policy principles	Met	Comments
1	Use a screening process for each proposed subproject, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of Potential impacts and risks.	✓	All screening for environmental, IR, IP carried out
2	Conduct an environmental assessment for each proposed subproject to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the subproject's area of influence. Assess potential trans boundary and global impacts, including climate Change. Use strategic environmental assessment where appropriate	✓	
3	Examine alternatives to the subproject's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no subproject alternative	✓	Site alternative not considered as already procured prior to ADB financing.
4	Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.	✓	EMP prepared
5	Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the subproject preparation process and ensure that their views and concerns are made	✓	Stakeholder consultations were carried out on 17 th May 2018 and was attended by 16 people with female representation. EMP recommends continuous stakeholder consultations.

	known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout subproject implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the subproject's environmental performance.		
6	Disclose a draft environmental assessment (including the EMP) in a timely manner, before subproject appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.	✓	Done
7	Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports	X	To be carried out. No in-house capacity to implement therefore external consultant will be brought in.
8	Do not implement subproject activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a subproject is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the subproject substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.	✓	
9	Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or	X	National standards for air, noise and sewage discharge are below the IFC-WB EHS standards. Therefore, IEE recommend the adoption of more stringent standards.

	phaseouts. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.		
10	Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities	✓	IEE has incorporated these conditions.
11	Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during subproject implementation.	✓	This land is not in an archaeologically sensitive area therefore chance find procedures do not apply under the local context. However, EMP will include a note that in event of a chance find, all work at the site will be stopped and the Department of Archaeology be informed.

61. There are 12 IR Safeguard Policy Principles to avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring sub project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups. IR safeguards are triggered under physical displacement (relocation, loss of residential land, or loss of shelter) and economic displacement (loss of land, assets, access to assets, income sources, or means of livelihoods) as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas. It covers them whether such losses and involuntary restrictions are full or partial, permanent or temporary. For this subproject IR safeguards were triggered with relocation/provision of alternatives to the two households losing access due t development of FOE. This has been followed up and analyzed in the IR DDR. The land accession did not take place in anticipation of ADB financing.

62. IP Safeguards have 9 guiding policy principals to design and implement projects in a way that fosters full respect for Indigenous Peoples' identity, dignity human rights, livelihood systems, and cultural uniqueness as defined by the Indigenous Peoples. IP safeguards do not get triggered under this subproject or the overall project.

63. **Conclusion:** The proposed subproject causes 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 FOE subproject of UOSJP has been classified as Category 'B' subproject requiring Initial Environmental Examination (IEE). In order to meet policy principles 2 and 7 additional recommended actions are proposed. All other policy principles are in line with subproject. IR classification is Category C.

64. 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 required for the subproject.

IV. DESCRIPTION OF THE ENVIRONMENT

A. Methodology used for Baseline Study

65. 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. The literature survey broadly covered the following;

- Subproject details, reports, maps, and other documents prepared by technical experts of the ADB PPTA team and discussions with technical experts of the PIU of UOSJP team, local authorities, relevant government agencies like UDA, CEA, Department of Agrarian Services Development etc.
- 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.
- Several visits to the subproject sites were made during IEE preparation period between September 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 biodiversity at the selected site as it was not deemed necessary. 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, key informant interviews were carried out. Other reliable information was collected from villagers and respective authorities during public consultation meetings.

B. Location Area and Connectivity

66. The Polgasowita Road passes near the subproject site. Homagama Division is one of the main commercial hubs located 19 km away from the Colombo city. The subproject site is 4.65 km from the Homagama railway station, 444m from the Salgas Junction served with one bus stop and 635m away from the Mattegoda Junction served with one bus stop. The site is also 2 km from the Kottawa town served with two bus stops.

67. Homagama is linked to all parts of the country through the High-Level Road which also links up to the Southern Expressway with the Kottawa Entrance within 2.5 km. The Kelani Valley Railway Line, running parallel to High Level Road is linked with Avissawella.

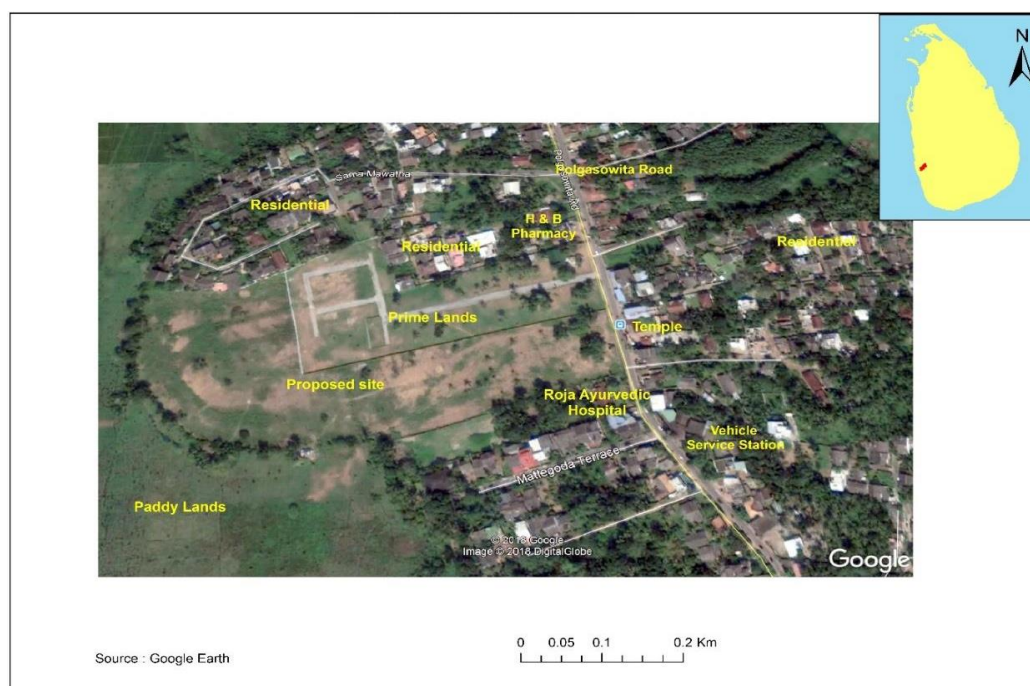
68. Homagama Divisional Secretariat consists of 81 Grama Niladhari divisions. The subproject area comprises Maththegoda, Kottawa, Homagama and Salgaha Junction. In the Colombo Core Area Plan, Homagama has been categorized as a 4th order township⁵ and is one of the main commercial hubs. Homagama DSD is one of industrial DSD located close to Colombo⁶. Subproject road predominately traverse through plain terrain. Refer Index Map - Figure 7 for location.

⁵ UDA Development plan Homagama

⁶ Megapolis Plan WRMPP 2017. Ministry of Mega polis a and Western Developments

69. The Science and Technology City is to be built on the Malambe Homagama corridor and it is approximately 9 km away from new FOE. Homagama Technology City project is 8.3 km from the subproject site. These areas have been demarcated as a satellite residential city which will serve Colombo city under the Megapolis planning process⁷. Homagama has been identified as a region with opportunities for further development of national level projects such as universities, industrial parks and service apartment and logistic stations due to close proximity to the interchange of Southern expressway from Kottawa. The daily commuting population is considerably high in Homagama due to the easy access from High level road and low-level roads.

Figure 7: Map Showing the Location of the Subproject and the Surrounding



Source: Prepared by TMS

⁷ ibid

C. Land Use

70. Homagama has been declared as urban development area since 2009 due to its potential for structured growth and planning⁸. There are several crucial environmental challenges facing the Homagama DSD including improper land use planning, improper waste disposal, water pollution due to urbanization, agricultural activities etc.

71. The total land area of Homagama is 11,815.5ha. The land use system of the region is dominated by home gardens (5,982 ha). The built-up area consists 473 ha, paddy land 2,427 ha and other agricultural lands are 2,422 ha. Table 7 highlights the land use patterns in the DSD. Before urbanization, Homagama was composed of wetlands and paddy land⁹. The land use pattern in the subproject area today, is urban with predominately mixed development. Subproject area can be categorized as a built-up area with home gardens (50.62 %) and tanks and reservoirs (0.64%). Land use of the subproject area consists of private land, state land, residential land, industrial land, and several natural habitats (paddy lands).

Table 7: Land Use Pattern

Land Use	Hectare	As % of the DSD
Developed lands (areas with buildings /Residential areas/ industrial areas/ urban service centers)	473.458	4.00%
Paddy	2427.121	20.54%
Rubber	1632.636	13.81%
Coconut	587.951	4.976%
other field crops	194.541	1.64%
Home garden	5981.532	50.62%
Shrubs / jungles	11.123	0.09%
Tanks / Reservoirs	75.702	0.64%
other lands (lands with rocks / bare lands)	198.527	1.68%
Playgrounds	68.415	0.57%
Total hectare	11815.5	

D. Seismicity

72. The subproject is located in the Western 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 soil should be considered during building design. The site is partly sloping and rolling terrain.¹⁰

E. Geology, Soil and Topography

73. The location is in the Homagama Divisional Secretariat which is geologically there are 04 types of soil distribution. 2 types of soil types fall within the red- yellow podzolic soil category. That means the red- yellow podzolic soil is deeper stretched (a deep soil) which can often be seen in mountain slopes and wrinkle lands and soft or hard laterite areas. Except above two soil types,

⁸ UDA Homagama Development Plan 2009

⁹ Kaliniya DSD resource profile 2014

¹⁰ Soil Report

closer to the canals, streams, rivers and marshland areas exhibit bog and half-bog soils and the remaining areas have alluvial soils.

74. Podzolic soil is mostly used for constructions and growing trees and crops. Because of good water drainage in the area, there is a mixed crop of rubber, coconut, and home gardens in the area. Areas which have bog and half-bog soil, serve as environmentally beneficial service areas for flood protection. Alluvial soil is used for paddy cultivation.

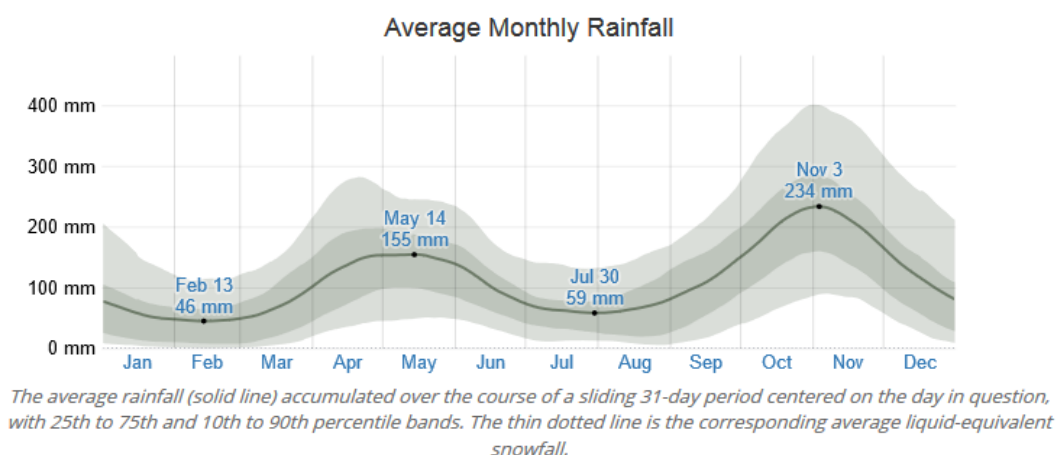
75. The site is on a Western Intermediate Erosional Platform and in general the lithography of the terrain is composed of layered metamorphic rock subjected to high grade metamorphism ¹¹. The maximum slope of the area is 30° slope horizontal and the terrain is not uniform.

76. The initial designs of FOE academic building should consider that net allowable carrying capacity and the carrying capacity in skin friction within the basement rock or the ultimate skin friction coefficient provided in the geotechnical report. These should be in line with the ICTAD recommended guidelines. (Refer Annex 09).

F. Climate and Meteorology

77. Climate conditions in the study area: Homagama division lies within the wet zone and according to agro ecological classification, the subproject area comes under the category of Wet Zone Low Country. It experiences a uniform rainfall pattern and receives rainfall from both monsoon periods as well as during inter-monsoon periods (South-West Monsoon from June to September, North-East Monsoon from December to March and in between two inter-monsoon periods of two months each). Rainfall and temperature details of the subproject area are given in the Figure 8 and 9. FOE subproject area receives highest rainfall (234mm) in the month of November and the lowest (46mm) in the month of February with an average annual rainfall of about 3,030 mm.

Figure 8: Average Monthly Precipitation Over the Year (Rainfall) at the Subproject Site



Source: <https://weatherspark.com/>

78. Past meteorological data was collected from the nearest Anuradhapura air force station for the period of January 1, 1980 to December 31, 2016 which establishes the baseline climatic

¹¹ ibid

conditions of the area. The key parameters of collected meteorological data have been summarized in Table 8.

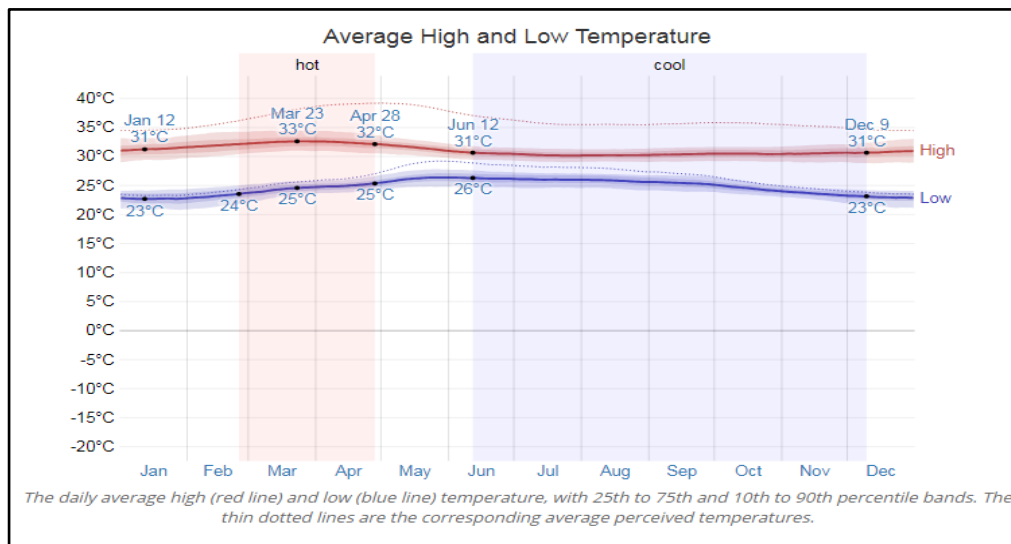
Table 8: Summaries of the climatological data

Parameters	Monthly	Annual
Mean daily max temp (°C)	32 °C	30 °C
Mean daily min temp (°C)	24 °C	25 °C
Total rainfall (mm)	59mm	234 mm
Wind speed (km/h)	9 km/h	15km/h
Cloud cover (partly cloudy/ mostly cloudy)	Partly cloudy – 11% of the time	Mostly cloudy – 57% of the time

Source: <https://weatherspark.com>

79. **Temperature:** The hot season lasts for 2 months, from February 24 to April 28, with an average daily high temperature above 32°C. The hottest day of the year is March 23, with an average high of 33°C and low of 25°C. The cool season lasts for approximately 6 months, from June 12 to December 9, with an average daily high temperature below 31°C. The coldest day of the year is January 15, with an average low of 23°C and high of 31°C. The monthly mean minimum and maximum daily temperature chart shown in centigrade is given in Figure 9.

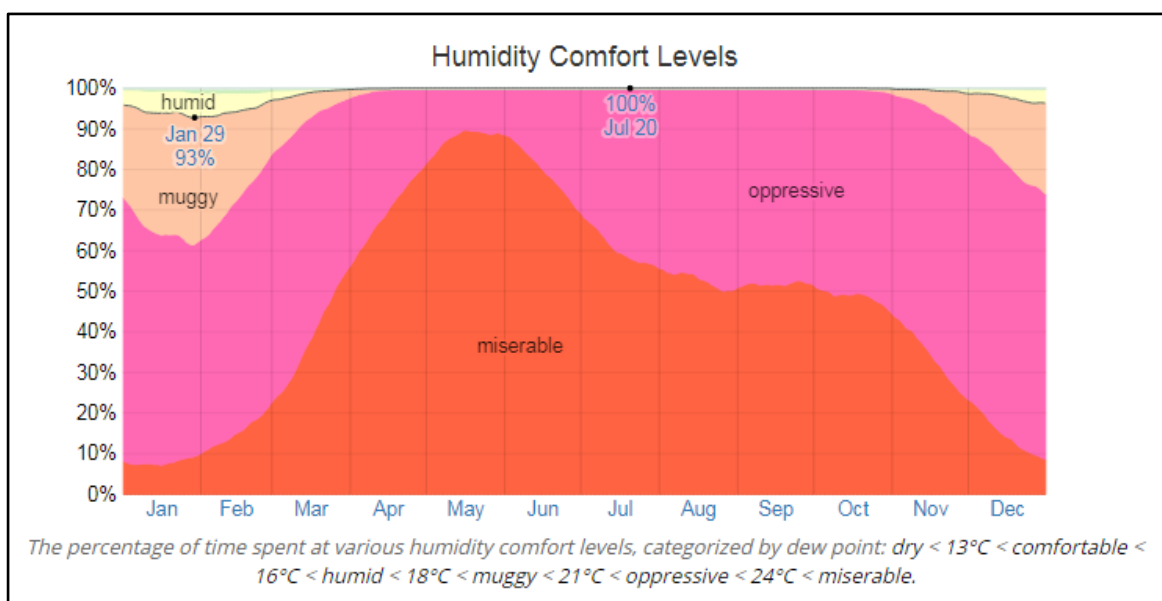
Figure 9: Variation of Temperature Average in the Subproject Area



Source: <https://weatherspark.com/>

80. The perceived humidity level in Homagama, 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 10).

Figure 10: Humidity Comfort Level



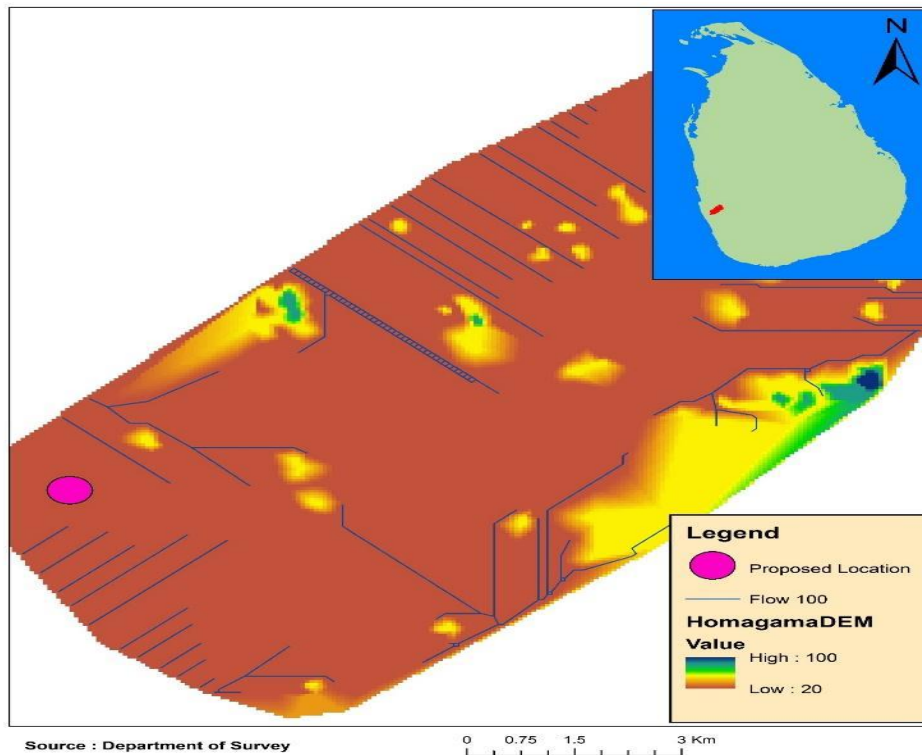
Source: <https://weatherspark.com/>

81. **Wind speed and direction:** 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 average hourly wind speed in Homagama varies significantly over the year. The windier part of the year lasts for about 5 months, from May 5 to October 15, with average wind speeds of more than 15 kilometers per hour. The windiest day of the year is June 10, with an average hourly wind speed of 21.3 kilometers per hour according to the annual records. The calmer time of year lasts for 6.7 months, from October 15 to May 5. The predominant average hourly wind direction in Homagama varies throughout the year. The wind is most often from the west for 8.5 months, from February to November. The wind is most often from the north for 3.4 months, from November to February.

82. **Drainage and the River Systems:** Homagama area is a part of the river basins of Kaluganga and Kelani ganga. The Puss Eli Oya located in the northern part of the area is forming as part of the Kelani river basin and the small streams which are flowing to the southern part of the area to Bolgoda lake are being connected with Kalu ganga and forms the Kalu ganga basin.¹² The drainage map for Homagama area is given in Figure 11. It shows that the subproject area is not prone to flooding.

¹² UDA Homagama Development Plan 2009

Figure 11: Drainage Map of Proposed Site
Drainage Map of Homagama



83. The first pipe borne water supply scheme for the Homagama PS area was constructed by the National Water Supply & Drainage Board in 1995. The Palletwatte supply scheme supplies water to Homagama and Kasbawa areas. Mattegoda housing scheme has a separate water tank to supply the scheme.¹³

G. Ambient Air and Noise Quality

84. To draw up a baseline status of the ambient air quality the UOSJP will take the measurements prior to the commencement of the development subproject. To assess the baseline value for the background noise level, ambient noise monitoring will be conducted by the UOSJP prior to the construction activities at the site.

H. Surface and Ground Water Quality

85. Individual well water is the main source of water in the area with and 88% dependency on it. The underground water table is at a depth of 2-5 m. The source of water according to household is given in Table 9.

¹³ UDA Homagama Development Plan 2009.

Table 9: The Source of Water According to Household

Source	No. of families	Percentage
Protected well (Within the premises)	30,694	66.03
Protected wells (Outside the premises)	8,124	17.47
Unprotected wells	2,101	4.52
Tube Wells	215	0.46
Pipe born water (Within the premises)	3,079	6.62
Pipe borne water (Outside the premises)	1,744	3.75
Other (Lakes and canals)	101	0.21
Not specified	422	0.90
Total	46,980	100

Source: Dept. of Censes and Statistics & National Water Supply & Drainage Board

86. The baseline data on water quality will be collected for two locations within the subproject area by the UOSJP 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.

87. The subproject site runs a possible risk of erosion due to water flow in the slopy terrain and natural drainage from adjoining developed land.

I. Ecology and Biodiversity

88. Natural flora of the proposed subproject site mainly consists of few trees, and shrub vegetation (Figure 12). The adjacent area of the proposed site is characterized by home gardens in the East, and West. Southern boundary is covered is an abandoned paddy field. The flora found in the site are ordinary, and not rare or protected or of unique importance. There are trees and shrubs disturbed by human activity. The adjoining lands also contain very poorly managed low productive coconut trees.

Figure 12: Existing Vegetation Conditions

Source: Captured by TMS.

89. There are several food web interactions in these paddy fields. Ploughing (Figure 13), flooding, adding fertilizer before planting and at critical growth stages, application of pesticides, weedicides, manual weeding and abandoning the fields after harvest to fallow are an integral part of rice cultivation. These practices impact the population dynamics of the rice field¹⁴. Aquatic part of the paddy field is colonized by amphibians and fish species. These are then attracted by predator species such as king fisher herons, egrets, monitor lizard, water snakes.

¹⁴ Edirisinghe, J.P. and C.N.B. Babaradeniya. (2006) Rice field an ecosystem rich in biodiversity. *j. Natn.Sci. Foundation Sri Lanka* 34(2): 57-59

Figure 13: Animals Associated with Paddy Cultivation



90. The rice field waters have become the home of several mosquito species, some of which are disease vectors. The aquatic snails too play the role of intermediate host to certain diseases causing organisms and mice cause rate fever. There are predator arthropods such as regular weavers spider, irregular space -web spinner and hunting spider. In a rice field there are about 40 species of pest. There are about a further 90 species who predate upon these pest¹⁵

91. Overall, it can be concluded that there is no significant biodiversity issues associated with the subproject. This was a monoculture coconut plantation prior to the land development and hence there was no biodiversity concern.

92. **Fauna** With regard to fauna, some common birds such as bulbul (*Pycnonotus leucogenys*) and Myna (*Acridotheres tristis melanosternus*) and among other nests were observed on the trees however, the species are not rare or protected. Their images are provided in Figure 14 Some butterflies and dragon flies were also observed. Small vertebrates and invertebrates were found in the shrub land. The proposed land for the construction is a bare land with grasses and open soil due to removal of top soil.

Figure 14: Fauna in Subproject Area



J. Waste Management:

93. Solid waste disposal is a problem to the Homagama Pradeshiya Saba¹⁶. According to the data analysis, it reveals that the main issue in solid waste is the haphazard disposal of it rather than the high generation of the waste. The Kahatuduwa, Polgasovita area where the subproject

¹⁵ Edirisinghe, J.P. and C.N.B. Babaradeniya. (2006) Rice field an ecosystem rich in biodiversity. *j. Natn.Sci. Foundation Sri Lanka* 2006 34(2): 57-59

¹⁶ UDA Homagama Development Plan 2009

is located in an area that generates high loads of solid waste¹⁷. The daily volume of disposal was around 9.0 Mt in 2009 and is anticipated to be much higher now with the further development in the area. Currently the HPS operates an open waste disposal system. The HPS collects 22.2 tons of unsorted solid waste and spends Rs 15,590 on waste management activities¹⁸. HPS collection cost per unit (ton) is SLRs.1,404 and disposal cost is SLRs 305.¹⁹

K. Educational, Medical and Religious Properties

94. Within Homagama DSD there are 130 pre-schools, 37 governmental schools, 74 Buddhist dharma schools, and 84 registered tuition classes. Of the schools 7 are “A” Grade Maha Vidyalayas which have education facilities up to Advance Level. There are 20,837 students and 1053 teachers in these schools. Apart from school education facility, the Technical College at Godagama, the Buddhist Pali University at Pitipana, District Agriculture Training Centre at Pitipana and the 4 vocational training centers are the other main education institutions located in the area.

95. Homagama base hospital is the main hospital in Homagama DSD. There are 46 midwives and 11 health officers within the DS. There is only one Ayurveda Hospital and an Ayurveda doctor in the DSD.

96. The Ambulgama Purana Viharaya in Homagama DS division has a high historical value. It comes from the time of that arrival of Lord Buddha to Kelaniya, this Ambulgama Purana Viharaya is also referred to as “Nailata Puuta”. This temple also is home to the branch of Sri Maha Bodhi. This temple was established in 1246 by King Vijayaba. It is located 13.23 km from the FOE site. In addition, there are Meegoda Purana Viharaya, Lenagala Rajamaha Viharaya, Sri Sudharmarama Vihara in this DSD.

L. Demographic details of affected population

97. The total DS population is 255,316 of which 48.56% is male and 51.43% is female. Homagama is predominantly a Sinhala area having 98.35% Sinhala, 0.58% Tamil, 0.59% Muslims, 0.47% other (including Burgher, Malay, Chetty). The DSD population is mainly Buddhist (96.98%) followed by Hindus (0.44%), Muslims (0.71%), and Roman Catholics (1.06%). The number of housing units is approximately 65,000. There were 64,827 housing units in total.

98. The agriculture sector provides employment for 4.98%, the industrial sector for 5.29% the service sector for 21.96% for the labor force in the Homagama DSD. Within Homagama DSD, paddy cultivation plays an important role overriding vegetables and other cultivation. Vegetable varieties such as brinjal, radish, long beans, bitter gourd, and etc. are cultivated. Apart from vegetables, other crops such as cinnamon, pepper, coffee, ginger, areca, maniyok, kiri ala, fruits and flowers are also cultivated. Livestock also plays an important part in economic activities in Homagama DSD.

99. Homagama area has been identified as a future growth centre in the Western Province and there are many industrial estates located at present in Katuwana, Templerburg, Meegoda

¹⁷ ibid

¹⁸ Data Collection Survey on Solid Waste Management in Democratic Socialist Republic of Sri Lanka Japan International Cooperation Agency (JICA) 2016.

¹⁹ ibid

and Panagoda. There are 140 industries and 7440 employees working in these industries²⁰. The subproject site is located 4.70 km away from the industrial zone.

100. The highest land value prevails in Homagama Town Centre. The land value of commercial areas ranges from SLRs. 100,000 – 1250,000 per perch. In the sub-centers of Pitipana, Makumbura the commercial land value has also increase with the new development. It is anticipated that the subproject adjoining area land prices will increase with the increased demand for subproject associated accommodation.

V. ANALYSIS OF ALTERNATIVES

101. The FOE development location land was procured prior to the request for ADB financing. Therefore, alternatives to the subproject location were not considered, especially since the location was compliant to the regulations of the Government of Sri Lanka and also to the SPS 2009. There is also no free land space that can be developed which is 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.

102. Although the proposed FOE site is located in close proximity to a paddy land, impacts associated with construction stage are temporary and short term. Any long-term impacts can be managed by adhering to the EMP. Also, there is no existing facility in the vicinity that can be developed as an alternative to the proposed subproject. By looking at Table 10, it can be concluded that “With” subproject scenario, with positive/beneficial impacts will greatly enhance social & economic development of the region and improve the environment, when compared to the “Without” subproject scenario, which will further deteriorate the existing environment and quality of life. Hence the “With” subproject scenario with some reversible impacts is an acceptable option rather than the “Without” subproject scenario. The implementation of the subproject 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.

103. The site is 8.03 km from the proposed Green Tech City development under Ministry of Megapolis and Western Development. It is also within 7.43 km to the main UOSJP Campus in Nugegoda and therefore student and staff can easily commute.

²⁰ UDA Homagama Development Plan 2009.

Table 10: Subproject Scenario

With Subproject Impacts		Without Subproject Impacts	
Positive	Negative	Positive	Negative
Provision of facility to train graduates 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 land identified for residential purpose is now being used to improve the regional economy and education.	May contribute to increased flooding in the area.	Land widely available for flood water retention. Reduced threat of flooding in the area	Nil
Land preparation and improvement activities will increase the chance off erosion	Impact on land at the site	No impact on the site	No land development and economic development in the region
Improvement in ecology through maintenance of the natural drainage	Nil	Land is left unproductive and band	Increased soil erosion and degradation of the land Increased
Improved drainage in subproject site and the surrounding area	Nil	Land no developed and rainwater flows on natural drainage	Flooding conditions during rainy season will be increased
Enhanced trade and commerce	Increase of noise during the construction and operational phase	Nil	Microlevel trade in the area will be limited
Increased access to job markets	Nil	Nil	Reduced employment/ economic opportunities
Employment to local workers during the execution of the subproject	Outsourcing people from other parts of the country will increase traffic congestion and demand for logistics	Nil	There is no additional employment
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 subproject, it will be difficult for the Sri Lankan government to finance such a technology education development facility for UOSJP from its own resources

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

104. The proposed work under FOE subproject will impact on the environment in two distinct phases. 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 FOE and enhancing the landscape to support the agrarian system. 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.

A. Land and Environment

105. **Construction Phase:** Not much filling is anticipated at the current location however aggregate and sand will be procured from the authorized suppliers and prevalent rules will be followed for borrowing of soil. These will lead to impacts associated with sand mining and quarrying. However, the impact on geology of the region is not considered significant as a result of this subproject. The details of proposed borrow areas investigated with their respective locations would have to be given by the PIU and the site engineer concerned.

106. Construction Impact:

- Alteration of current land use & change in existing profile of the land due to construction activities at proposed subproject location.
- Changes of topography due to indiscriminate quarrying for aggregate.
- River bank erosion due to unregulated sand mining.

107. **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 EMP". They also have to consider the following:

- 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

108. **Operational Impact:**

- In the operation phase, the temporarily modified land use pattern such as temporary construction camps / tents would be dismantled. The FOE subproject, after completion of its construction, would consist of neat landscape pleasing environment.
- Likely change of land use due to squatter / encroachment within subproject land area and the surroundings.
- Likely change due to construction of the earth drains on the northern and the southern part of the boundary of the subproject site.

109. **Mitigation:**

- 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 UOSJP.
- Establishment of boundaries with walls, fences etc, at the commencement of construction.

B. Water and Environment

1. Drainage and Hydrological Flow

110. The FOE subproject site is 25m from the nearby agrarian canal that supports the agrarian system which is protected the Department of Agrarian Services Development. There is a canal on the southern boundary of the site notified by Department of Agrarian Services of Sri Lanka. An assessment of the seasonal flooding at the site has not been studied, however, the drainage flow map shows that this is not a flood risk area (see Figure 11).

111. Based on visual observations during the monsoonal period, it is evident that Department of Agrarian Services Development does not satisfactorily carry out its responsibilities on maintenance of the agrarian canal²¹. There is no drainage channel system surrounding the subproject site at the moment. These lands are devoid of any form of vegetation.

112. **Construction Impact:**

²¹ Form the key informants interview with the Grama Niladari Ms Damayanthi.

- Since the subproject site is near the agrarian system and no proper storm water drainage systems are in place, there will be a risk of soil erosion during heavy rains since there is no ground cover.
- Chances of accidental filling of existing drainage courses during land preparation may block drainage and lead to flooded conditions.

113. **Mitigation:** 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 agrarian canal. Construction activities will not aggravate soil erosion condition in the area if mitigation measures are followed by the contractor.

- Adequate building and roadside drains (within the premises) will be provided along property to facilitate its better maintenance.
- Reduce the inflow locations adjacent to the site, i.e. the side drains of the road need to be constructed by the relevant authorities (HPS, RDA).
- Detailed drainage plan and soil erosion 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 from the adjoining lands and to avoid possible formation of water pools at the subproject site.
- Silt fencing should be considered to prevent sediments from the construction site entering into the agrarian canal. 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 agrarian canal along when construction is in progress.
- Construction work near natural drainage channels of agrarian canal 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.
- Propose a storm water drainage system around the FOE complex to capture monsoonal drain waters during heavy rain and reduce runoff.
- Drains, of the subproject site and agrarian canal should be cleaned regularly to ensure smooth flow of water. This includes the regular maintenance of the downstream main peripheral drain. UOSJP 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.
- Temporary earth drains should be provided until required line or earth drains are provided after excavation or during other construction activities.
- Design and maintenance of the suitable sewerage system during floods for the FOE so that it will not impact the ground water table. Avoid construction of sanitation or other facilities that will use and store harmful materials.
- Unlined drain in the subproject 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 subproject area. Ground water recharge pits shall be constructed to facilitate the infiltration of runoff water into the ground. Paved surface of the FOE subproject 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 Senior Environmental Specialist of UOSJP 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 subproject.

2. Water Use

114. **Construction Impact:** During the construction period water is required for compaction of embankment, 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 subproject. Non-availability of adequate potable water will lead to worker dehydration and associated health issues.

115. **Operation Impact:** Water will be a limiting resource unless a proper water supply system is established. During the operation period unless uninterrupted water supply is made available, sanitation and hygiene will be compromised with the anticipated large number of students and staff. Rough estimate for water consumption per day during operation is 150m³. These figures are based on existing consumption rates and will have to be re-visited when detailed designs are finalized.

116. **Mitigation:**

- The contractor will provide a water requirement and sourcing plan during construction activities in order to avoid likely impacts on other users and to ensure adequate water supply to the construction site. Above measure would avoid pressure drops experienced in the water supply line.
- If tube-wells are to be bored, from the polluted water table to supply the water required for construction, 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.
- Obtain the water supply connection to the site from the NWSDB and calculate the requirements of water once the detailed designs are in place for the FOE operation and adopt storage facilities (water tanks) to ensure uninterrupted water supply. It is important that functional sanitary facilities are maintained in the university to avoid health risks and spread of disease.
- Regular sanitary facility checks and maintenance to be carried out by university. Already the design lay out of the building proposes a maintenance space. Maintenance staff should be employed for running of these sanitary facilities.
- Potable water to be sourced from a reputable source during construction. Storage tanks should be provided to ensure adequate potable water on site.

C. Air Environment

117. **Construction Impact:**

- 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.
- 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 FOE

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

- Wet down and spray water at construction site, regularly during the dry seasons.
- Dust emissions during transportation of construction materials should be controlled by enforcing speed limits on the vehicles and ensure transported material is covered with tarpaulin.
- All filling works are to be protected or covered in a manner to minimize dust generation.
- 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.
- 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.
- The air quality monitoring will be conducted as per the plan in Chapter 9 and will follow IFC-WB EHS standards as it overrides the national standards. This is in line with the SPS 2009 requirements. Refer Table 11 for air quality standards.

Table 11: Air Quality Standards

NEA standards			IFC Guidelines	
	Averaging Period	Guideline value in mg/m ³	Averaging Period	Guideline value in mg/m ³
Sulfur dioxide (SO ₂)	24 hrs	80	24hrs	125 (Interim target-1)* 50 (Interim target-2) 20 (guideline)
Nitrogen dioxide (NO ₂)	24hrs	100	1-year 1-hour	40 (guideline) 200 (guideline)
Ozone	8-hour daily Maximum	-	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

*Interim targets are provided in recognition of the need for a staged approach to achieving the recommended guidelines.

119. Air quality monitoring will be continued as identified in the monitoring plan post construction.

D. Noise Environment

120. **Construction Impact:**

- 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.

- Noise generated from sources mentioned above will be intermittent and mostly during daytime. Atha Gala temple and the settlements around the subproject will have some impact. Since the immediate surrounding is yet uninhabited, impacts will be minimal. However, the workers are likely to be exposed to high noise levels that may affect them.
- Increase in noise level due to construction activities like operation of construction equipment. 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 subproject is presented below in Table 12.

Table 12: 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

- 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 13: 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 & 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

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

121. **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.
- Activities involving high amounts of vibration should be limited since it may impact archeological monuments in the area of influence.
- Occupational safety measures should be adopted (e.g. usage of ear muffers for workers engaged in high noise activities).
- The maximum permissible noise levels at boundaries of the land in which the sources of noise is located for construction activities will conform to IFC-WB EHS mix development standards. This is in line with the SPS 2009 requirements. These standards override the NEA standards. Refer Table 14 below.

Table 14: Noise Level Standards

	NEA standards		IFC Guidelines	
	Day time 6am-7pm	Night time7pm-6am	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Commercial Areas	65	55	70	70
Industrial Area	70	60	70	70
Mixed Residential/ Residential; institutional; educational	63	55	55	45

Source: Compiled by TMS.

E. Impact on Fauna and Flora

122. **Construction Impact:** The species richness presently in the subproject area and the surroundings are not significant therefore the impact on flora and fauna can be considered minimal.

- However, the agrarian system on the southern boundary which is 10 acres (part of a 40-acre system) is composed of paddy which supports supporting, regulatory, provisioning and cultural ecosystem services. Therefore, enhancement of the existing ecosystem should be encouraged.
- Activities such as site clearing, construction of culvert, mining of boulders, removal of trees and green cover vegetation and etc., will potentially not impact on the

ecological resources of the area by means of disturbing habitat. However, increasing soil erosion and surface runoff, may be triggered as a result.

- Egrets, water herons, king fishers that were observed feeding in the adjoining abandoned paddy fields may be disturbed with the construction work associated noise and vibration
- Effect on aquatic fauna in the water canal can occur in case of accidental oil spill and toxic chemical release finds its way into the water body during construction and operation of the FOE.

Figure 15: Aquatic Fauna in the Agrarian System



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

- Trees should be planted to enhance the environment. Landscape architect should design placing of trees. Saplings for tree planting program should comprise of native or endemic species only. Native plant species are suggested for the tree planting program is listed in Table 15 which will enrich the habitat. Also, the local agricultural department office should be able to provide recommendations.
- Actions should be taken for speedy cleaning up of oil spills, fuel and toxic chemicals in the event of accidents.
- All the construction workers and staff of the subproject unit should be made aware and educated about the presence of the agrarian system in the area. Environmental awareness program should be provided to the Contractor, labours and all staff deployed at the site to ensure that no further degradation of the environment takes place. All staff / workers should be instructed not to chase or disturb any fauna seen near the subproject area.
- 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.
- Construction debris should not be dispose in the wetland areas.

Table 15: List of Species Suggest for Habitat Enrichment

Family	Species	Sinhala name	Type
Sapotaceae	<i>Mimusops elengi</i>	Muuna mala	Tree
Calophyllaceae	<i>Calophyllum bracteatum</i>	Valu keena	Tree
Myrtaceae	<i>Syzygium caryophyllatum</i>	Dan	Shrub

Melastomataceae	<i>Melastoma malabathricum</i>	Maha boowitiya	Shrub
Phyllanthaceae	<i>Glochidion zeylanicum</i>	Hunu kirilla	Shrub
Phyllanthaceae	<i>Margaritaria cyanosperma</i>	Karw	Tree
Phyllanthaceae	<i>Bridelia moonii</i>	Pth kela,	Tree
Apocynaceae	<i>Wrightia antidysenterica</i>	Idda	Shrub
Bignoniaceae	<i>Stereospermum tetragonum</i>	Dunu madala	Tree
Calophyllaceae	<i>Calophyllum inophyllum</i>	Doba	Tree
Combretaceae	<i>Terminalia bellirica</i>	Bulu	Tree
Dilleniaceae	<i>Dillenia retusa</i>	Godapara	Tree
Elaeocarpaceae	<i>Elaeocarpus serratus</i>	Weralu	Tree
Euphorbiaceae	<i>Mallotus tetracoccus</i>	Buu kenda	Tree
Lamiaceae	<i>Clerodendrum infortunatum</i>	pinna	Shrub
Lauraceae	<i>Cinnamomum verum</i>	Kurudu	Tree
Lauraceae	<i>Litsea longifolia</i>	Rath keliya	Tree
Lecythidaceae	<i>Barringtonia racemosa</i>	Diya midella	Tree
Fabaceae	<i>Erythrina fusca</i>	Yak Erabadu	Tree
Lythraceae	<i>Lagerstroemia speciosa</i>	Murutha	Tree

F. Waste Disposal and Sanitation

1. Solid waste

124. Construction Impact:

- 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 subproject affected area including impact on ecology, public health and scenic beauty.
- 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.

125. Mitigation

- 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 SEC Engineer and comply with guidelines/recommendations issued by CEA and HPS.
- A proper permanent disposal site for these spoil material should be identified early on so that it will not impact the environment. Contactor and PIU should consult the

Homagama Pradeshya Sabha (HPS) at the onset of the subproject on waste collection and disposal. Solid waste management is a significant problem with the demographic growth and development experienced in the HPS area. Coordinate with the Kahathuduwa PHI and develop a suitable mechanism for disposal and come to an agreement with the HPS on solid waste disposal.

- Majority of skilled and unskilled workers should be selected from the subproject influence area to avoid generation of waste and sanitation problems from labour camps.
- 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 State Engineering Cooperation (SEC), Engineers from PIU. Dump materials should be placed without interference to the irrigation canals, water bodies, agricultural lands or any other environmentally sensitive sites.
- 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 Kahathuduwa Public Health Inspector (PHI) in the area. PHI expressed concern on construction related waste disposal at the stakeholder consultation. Refer notes on the stakeholder meeting in Annex 10.
- 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.

126. **Operational Impact:** Waste disposal and sanitation becomes an important consideration with the occupancy level of the FOE buildings. It is estimated that the FOE will generate approximately 5.78 m³ per day of solid waste. These are rough estimates provided by FOE and should be revisited when preparing the plans.

- Presently at the FOE colour coded bins are placed for disposal of waste. However, the waste is not processed within the university premises and adds to the garbage problem of the area.
- Domestic solid waste will be generated as a result of cooking activities within the canteens and consumption of packed food brought in by the students. There will also be solid waste generated from the laboratories and the offices of FOE. As solid waste would not be disposed daily and since Homagama is already having a waste management problem, piling up of waste will obscure the environment and lead to health risks.

127. **Mitigation:**

- A sustainable and a self-sufficient (to the extent possible) solid waste management plan has to be developed where onsite composting can be carried out. Also waste generation minimization should be practiced and adopted in the management plan. Obtain financial support and guidance from CEA for the composting project.

- A solid waste storage area should be incorporated into the detailed design including a waste segregation area.
- FOE should enter into an agreement with the HPS for waste collection and disposal on a daily basis. Provide the information to the janitorial staff within the FOE. Allocate budgetary provisions within the FOE budget for their services.
- Train the students on importance of social responsibility and garbage disposal. Provide colour coded bins at several locations to encourage source separation.
- Prevent solid waste disposal to canal, culverts and drains within the subproject site.
- Illegal garbage dumping & firing will be a health issue to neighboring houses and it will be a health issue to students in the new faculty building.
- Come to an agreement with services providers on disposal of mechanical waste generated as result of maintenance work on equipment and computers and machinery, solar panels, etc. procured for FOE.

2. Liquid Waste and Sanitation

128. Construction Impact

- Unregulated disposal of waste water and sewage will impact the ground water table and the surrounding agrarian systems on the southern border of the subproject land.

129. Mitigation:

- Proper sanitation facilities should be set up for the workers ensuring that any effluent released meets the stipulated standards. See Table 16 for discharge of wastewater and Table 17 for any discharge of sewage. Any release of waste water has to conform to SLSI standards. The proposed SLSI standards guideline is comparable to European Guidelines and is adopted nationally.

Table 16: Waste Water Quality Standards

Parameter	Unit	Bathing Water	Raw water for Drinking	Agriculture Water
Colour	Pt units.	-	100	-
pH	-	6.0-9.0	6.0-9.0	6.0-8.5
Conductivity	dS/m	-	-	0.7
Nitrates	mg/l	5	5	5
Total phosphate	mg/l	0.7	0.7	0.7
BOD5	mg/l	4	5	5
Total coliform	MPN/100 ml, (*P=95%)	1000	5000	1000
Fecal coli form	MPN/100 ml, (*P=95%)	50	-	-
Aluminum	mg/l		0.2	0.5

- Any release of sanitary sewage discharge should conform to IFC-WB EHS standards which override the national standards. This is in line with the SPS 2009 requirements. Refer Table 17 for standards.

Table 17: Sanitary Sewage Discharge Water Quality Standards

NEA standards Tolerance limits for discharge of effluents into public sewers with central treatment plants			IFC-WB EHS Guidelines 2007 Indicative Values for Treated Sanitary Sewage Discharges	
	Unit type of limit	Tolerance limit values	Units	Guideline Value
pH			pH	6-9
BOD	mg/1, max.	350	mg/l	30
COD	mg/1, max.	850	mg/l	125
Total nitrogen	mg/1, max.	500	mg/l	10
Total phosphorus			mg/l	2
Oil and grease	mg/1, max.	30	mg/l	10
Total suspended solids	mg/1, max.	500	mg/l	50
Total coliform bacteria			MPNb / 100 ml	400a

130. **Operational Impact:**

- Unregulated disposal of domestic waste water and sewage will impact the ground water table and the surrounding agrarian systems on the southern border of the subproject land. Wastewater flow per day is estimated at 100m³. This is a rough estimate provided by UOSP which will have to be revisited with detailed designs.
- Unless regular emptying of sewage pits are carried out, it may lead to overflows which will lead to bad odor and pose a health risk.

131. **Mitigation:**

- Properly designed waste water treatment plant should be designed and established to meet SLSI standards. It should also be compliant to CEA and Local Authority guidelines. Waste water treatment plant should consider wash water recovery technologies for the WTP to reduce effluent to be discharged. Wastewater treatment plant should be able to accommodate the wastewater generated for about 1500 persons (approximately daily flow of 100m³). Design should be shared with ADB for approval. 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.
- 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 decided by the Environmental Officer.
- HPS should be consulted and an agreement should be in place as to who will empty the sewers and where it will be discharged. Discharged sewage will have to meet IFC-WB EHS standards (see Table 17).

G. Design of FOE buildings under the green building132. **Impact:**

- Flaws in the FOE design may lead several negative impacts that may influence the students' wellbeing and function of the university complex.

- In the absence of water conservation and energy efficiency of the building structure, it may lead to resource constraints and increase the running cost.
- 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. 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.
- In the absence of a disability access such as elevators or stair ways in the building design will prevent disabled students from enrolling for the training program.
- Unavailability of geotechnical report did not allow recommended mitigations regarding design of building in relation to sub project site.
- Setting up of utilities such as water and electricity make coast disruption in service to surrounding community.

133. **Mitigation:**

- FOE 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
- 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 plan, there is no garbage collection area demarcated.
- 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. The PIU of UOSJP has initiated the process reevaluating the building designs.

- The basement rock structure has been investigated and a shallow foundation has been recommended in the geotechnical report. Geo-technical report recommendations should be followed.
- Contractor should have contingency plan for disruption in utility supplies to community.

H. Risk of Fire and Emergency Preparedness

134. **Operational Impact:** Once the FOE building is in operation, there could be incidents of student unrest or technical errors in the laboratories that may trigger off fire. This may cause damage to property and risk lives. Also, bad weather conditions with lightening can also cause fires.

135. **Mitigation:** Several mitigation measures can be adopted.

- Adopt of disaster risk reduction strategy and preparedness. This would include: Identification of an emergency evacuation point in the building, emergency stairways, and placing emergency alarm system in the building to warn the student population of any such situations.
- Emergency evacuation points should be identified, and plan of evacuation developed.
- Check with the Department of fire regulation on the specification of building accessibility for a fire extinguishing truck.
- Install lightening receptor.

I. Occupational Health and Safety and General Public

136. **Construction Impact:** Absence of emergency plan may lead to death to the worker and economic cost to the project.

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

- Contractor should organize awareness programs about personal safety for workers. This should provide briefing and training on safety precautions, their responsibilities towards safety, etc.
- 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.
- 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.
- Provide medical insurance coverage and indemnity for workers.
- Develop and implement comprehensive site-specific health and safety plan on Occupational Health and Safety. In the health and safety plan measures such as type of hazards in the construction of the Faculty buildings, (ii) corresponding personal protective equipment for each identified hazard, (iii) health and safety

training for the site personnel, (iv) procedures to be followed for all site activities, and (v) documentation of work-related accidents. The contractor will conform to all anti dengue instructions given to him by the PHI and the PIU.

- Workers engaged in welding works will be provided with welder's protective eye shields.
- 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 the contractor.
- The construction labour camp should be equipped with first aid facilities and a trained personnel onsite in case of an injury.
- Ample lighting around the construction site should be provided during the night.
- Excavated areas for construction should be barricaded using barricading tapes, sign board should be placed.
- 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.
- Onsite emergency plan for minor accidents and mishaps will be prepared by the contractor with the consultation of the PMU.

J. Health and Safety of Trainees

138. **Impact:** There are no anticipated significant impacts during the operation and maintenance of the subproject. 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.

139. **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 the road and this will ensure their safety of FOE students and staff.

K. Adopt food safety guidelines

140. **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.

141. **Mitigation:**

- Adopt food safety regulation imposed by the Ministry of Health.
- Train the canteen operators and improve awareness on food and safety and the national guidelines. These include adoption of food safety handling measures.

- 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.
- Health checks of the canteen staff done annually.
- Rules of canteen operators such as fault hair be fully covered specially in kitchen area.

L. Social Impact

142. Acquisition of the land for FOE construction project, two households in eastern border outside of the sub project premises. At the time of the IEE, negotiations are ongoing either relocate or to provide optional access road. Detail follow is provided in the IRDD report carried out for the STHRDP project. There for it recommended public consultation are carried out regularly during construction and operation to ensure that issues are resolve early in the sub project.

M. Cumulative impacts

143. According to the ADB Environment Safeguards Sourcebook cumulative impact is described as: "The combination of multiple impacts from existing subprojects, the proposed subproject and anticipated future subprojects 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.

144. Economic activities supporting FOE like lodging and restaurants are expected to increase with new student population and induce development in the subproject area. The subproject area has good infrastructure for training of highly skilled graduates in Civil Computer, Electrical and Electronic, and Mechanical Engineering fields.

145. The construction of the FOE will provide better multidisciplinary engineering trained graduates to meet the future demands of the engineering industry. Construction of FOE will lead to (i) Reduction in travel time to access resourced laboratories that are located in different places in the district (ii) state-of-the-art ICT and civil engineering research labs to carry out education and research (iii) Apply modern techniques, resources, and IT tools to complex engineering activities (iv) Design systems, components or processes that meet specified needs of the engineering industry (v) Access to new teaching and learning methods competitive edge to secure quality job that ensures personnel security. (vi) Being located close to Colombo and being connected with the satellite cities such as Ratmalana and Malabe, (vii) increased opportunities to collaborate with local and overseas companies engaged in engineering activities.

146. In terms of environment safeguard issues, the subproject is expected to enhance the degraded surroundings with habitat enriched green building on site Improvement in local economic conditions can also result in unorganized and illegal establishment of settlements and businesses along the access roads creating new problems of social issues. To address these potential problems, relevant local authorities and the university will have to monitor developments and strictly enforce rules from the beginning.

N. Climate Change Impact and Risk

147. Changes in the atmosphere have been detected that could drastically alter the climate system and the balance of ecosystems. Rising CO₂ 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.

- **High precipitation impacting drainage:** Heavy rains can cause disruption of the water ways and drainage within the subproject site. If drain and culvert carrying capacities are exceeded it can cause minor flood to occur.
- **Rain induced soil erosion:** The land is composed of 0-30° slope and observation of subproject associated land show that there is a higher tendency for soil erosion.
- **Lighting and wind:** Climatic condition of high wind and precipitation lightning strike could be experienced.

148. Mitigation:

- Ensure the adoption of key engineering measures taken to address soil erosion in the designing of the FOE complex. Required inputs should be sought from architects and engineers regarding prevention of soil erosion on the southern boundary of the land. The architectural design should be geared to accommodate extreme rainy condition related disaster.
- A drainage management plan should be developed for the site to ensure that the outfall to the canal embankments does not become eroded, which would destroy the marginal vegetation and increase the flooding risk.
- Adopt measures suggested by CEA, Department of Agrarian Services and Development on construction near the agrarian system. Obtain their approval and clearances prior to construction.
- Design and construction must be adequate to resist the anticipated forces of rain.
- Make sure that the drains are cleaned regularly and also the irrigation canal. - Obtain the assistance of the Homagama Pradeshiya Saba for this purpose. With the construction of houses in the adjoining plotted land, there is a possibility of drains and culvert being blocked. University will be required to monitor the situation and adopt necessary measures. Allocate fund by the PIU for this purpose.
- Ensure that the building and the equipment is insured against natural disaster and lightning resistors installed.

VII. PUBLIC CONSULTATION

A. Approach to Public Consultation

149. 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 subproject implementation. Thus, the meeting was held for residents around the subproject areas, public sector and private sector agencies who are concerned with the subproject 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.

150. Venue for the meeting was fixed at the meeting room of Faculty of Graduate Studies at the UOSJP. Affected communities and potential stakeholders such as a Buddhist monk from the adjoining temple, Dayaka Saba head from Athagala temple, HPS officials, official from Homagama DSD, Project Director of Ministry of Megapolis and Western Development, Grama Niladari from Maththegoda West (location of the land), adjoining land Grama Niladari of Krigampamunuwa, General Manager and the Chief Assistant of the Prime Lands (Pvt) Ltd, Deputy Director and Director Engineering in Consultancy Department of Planning Department in UDA, Deputy Director of RDA S.P.H.I. from Kahathuduwa M.O.H., PHI, FOE students and academic staff, General Manager of the Prime Lands (Pvt) Ltd, villagers from Krigampamunuwa 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. There were 50 stakeholders at the meeting and 16 were female participants. (Annex 12 provides the participant list).

B. Methodology

151. **Discussions, Questions and Answers:** In the meeting, the participants were informed of the proposed subproject and potential environmental impacts due to the subproject. 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 16.

152. **Collection of Feedback:** A feedback questionnaire in local language was presented at the common forum and then asked each of the stakeholders to express their views regarding the question. These questions were presented by the consultants conducting the meeting and answers sourced. (Annex 12 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:

- Perception of building stability and the lay out plan
- Perception on noise vibration and dust
- Perception on grown water quality in the area adjacent to the site
- Perception on the water drainage and soil erosion
- Perception on ecology and biodiversity issue
- Perception of the connectivity to the subproject site through the road network
- Perception of community benefits as result for the FOE complex
- Perception of the education offered at the faculty
- Perception of the solid waste management by the HPS
- Perception of the waste water management at the new FOE premises
- Perception of the community settlement and access road usage for adjoin settlement at the subproject site
- Approval of green building certificate
- Approval from the Ministry of Megapolis and Western Development (refer Annex 11)

153. **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 12.

154. **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 12.

- Design and implement a drainage plan for the subproject and improve soil conservation measures.
- Help manage the agrarian system in a way so that it would not get polluted. Reservation limits to be maintained to minimize the impact of the subproject on the agrarian canal.
- Managing noise, dust and vibration at the site.
- Importance of obtaining clearance from the Department of Agrarian Service and Development, Homagama Pradeshiya Saba (HPS), CEA and UDA for the subproject.
- Establish a funding mechanism as well as a schedule for maintenance and cleaning work of the drains and the agrarian canal associated with the subproject.
- Contact HPS 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 program is established within the university.
- Establishment of a waste water treatment plant to reduce water pollution and discharge in the agrarian canal.
- Proper road signage and speed control measures with a traffic light for pedestrian road crossing at the Kottawa – Polgasowita 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 16: Plates of Stakeholder Meeting



Plate 1 Prof. Amaratunga Vice chancellor UOJ & Dr. Subasingha Dean Faculty of engineering UOJ addressing the meeting



Plate 2 TMS consultants convening the stakeholder meeting.



Plate 3 Mr Ajith resident adjoin in the university property house No 12/A



Plate 4 Mr. Ruminda, General Manager of the Prime Lands (Pvt.) Ltd



Plate 5 President of the Dayaka Sabha of the Ali Dena Temple and Mr Bandara



Plate 8 Mr. Sugath Pemasiri, the Deputy Director of Planning Department in UDA

Plate 6 Members of the Dayaka Sabha of the Ali Dena Temple and Mr Bandara student



Plate 7 Mr. B.M.A. Bandara, S.P.H.I. from Kahathuduwa M.O.H



Plate 8 Mr. Sugath Pemasiri, the Deputy Director of Planning Department in UDA

VIII. GRIEVANCE REDRESS MECHANISM

A. GRM Process

155. The affected person(s)/aggrieved party can give their grievance verbally or in written form to the local site office of FOE site at Homagama. 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 with immediate effect which should be addressed within 7 days. If the matter cannot be resolved at the site level it will be referred to project coordinator of UOSJP PIU. In event that it is not solved within 7 days by the PIU (Project Coordinator), it will be brought to the Grievance Redress Committee (GRC) which will be appointed by the PMU of the MHECA. The GRC will comprise of State Secretary of MHECA, Project Director, religious leader from village, Grama Niladari, and community leader from village. Complaints shall be submitted to the Project Director to be presented at GRC.

156. The GRC will take up any issues during its monthly meeting and provide a solution within two weeks. If the matter is not resolved by GRC at PMU level within stipulated time, it shall be referred to Land Use Committee of the region. 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.

157. Any aggrieved party may access the country's legal system at any stage. Legal redress can run parallel to the GRM and is not dependent on the negative outcome of the GRM.

B. Registering Complaints

158. The PIU and 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-subproject site. The complaint will be registered by the aggrieved party by duly filling the form provided, (refer Annex 12) PIU established a public response center (PRC) helpline specifically addresses the issues arising out of subproject implementation. Complainant can be registered via any of the following means: Through Public Response Center Help Line.

Land Line Number:

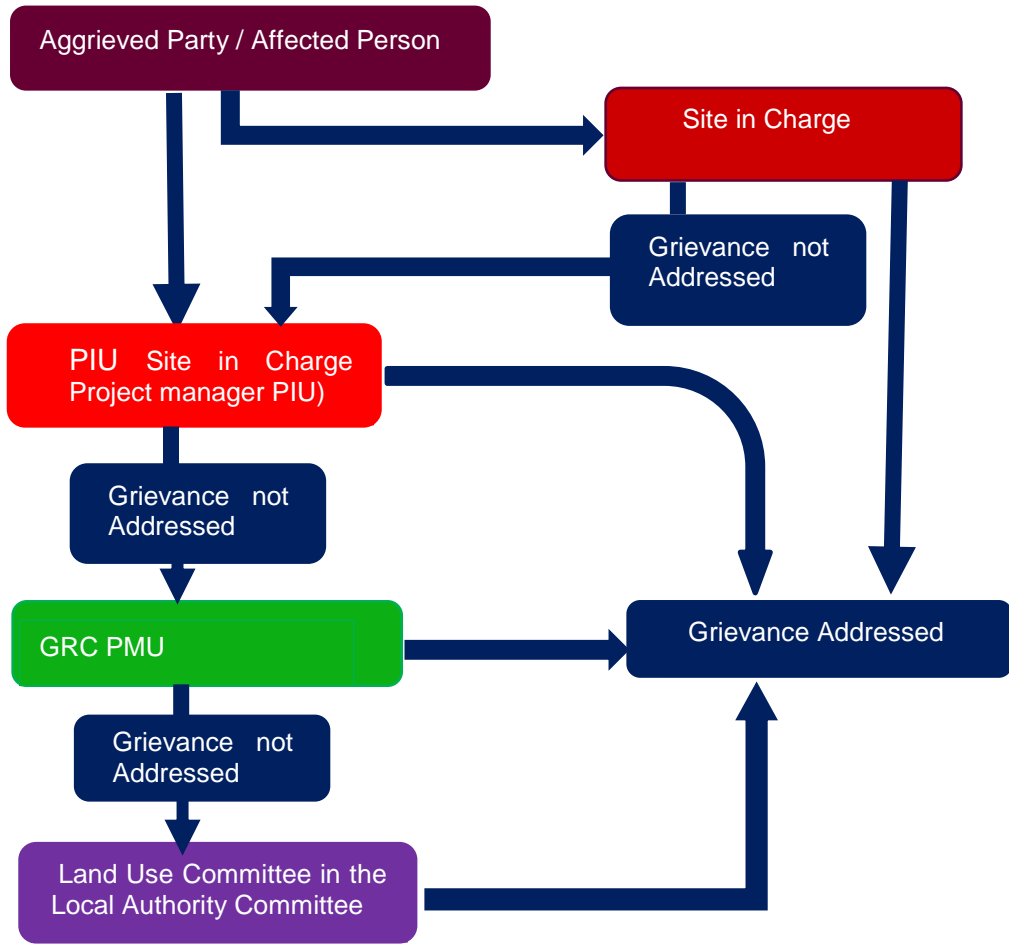
Mobile No:

WhatsApp:

E-mail:

159. In the event that the complainant is illiterate, the complaint will be recorded with the assistance of site in charge. The cost for functioning of GRC will be accounted for by PMU of MHECA. The GRC mechanism may need further review once the implementation sets in. Figure 17 show the GRM implementation structure.

Figure 17: Grievance Redress Mechanism of UOSJP



IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan

160. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels (refer Part III). The EMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between MHECA, project management unit (PMU), project implementing unit (PIU), consultants and contractors. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (v) ensure that safety recommendations are complied with. The EMP 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.

161. 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 EMP; (iii) monitoring program as per SEP; and (iv) budget for SEP implementation. No work will commence prior to approval of SEP. A copy of the EMP/approved SEP will be kept at the site during the construction period at all times. The EMP 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.

162. 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. The Environmental consultant will carry out quarterly reviews against the EMP. The contractor shall allocate budget for compliance with these SEP measures, requirements and actions.

B. Implementing Arrangement

163. MHECA 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 central Project Management Unit (PMU) attached to MHECA will be responsible for implementing the Technology and Human Resource Development Project. The PMU will be supported by Program Implementation Units (PIUs) such as UOSJP 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.

164. Project Management Consultant (PMC) centrally located at 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 subproject design and due diligence studies including bidding process is centralized at the PMU. PIU of UOSJP will provide necessary support to PMU in preparation, and will play main role in supervising the construction process.

165. The PMU of, MHECA has no capacity to manage the associated environmental impacts. Therefore, they will need to recruit an environmental safeguards consultant to carry out the reporting and monitoring process. The terms of reference (TOR) of the Environmental Safeguard Consultant is drafted and enclosed as Annex 13. This will ensure that MHECA will comply with the requirements of the Government and ADB. PMU of MHECA will prepare a draft TOR for environmental safeguard consultant and send it to ADB for comments before loan negotiations.

166. The PMU will continue to monitor and measure the progress of EMP implementation. The monitoring activities will be corresponding with the subproject's risks and impacts identified in the IEEs for the subprojects. The PMU and PIU will continue to undertake site inspections, document review to verify compliance with the EMP and progress toward the final outcome and recording information of the work, deviation of work components from original scope. PMU will submit environmental safeguard reports to ADB. PMU and PIU will review the environmental safeguard reports and take necessary action to mitigate issues.

167. Safeguards consultant will submit quarterly monitoring and implementation reports to the project director at PMU during the construction phase which will be sent to ADB on a bi-annual basis. For operational phase the reporting requirement to ADB will be annual. Regular monitoring will have to be carried out by the PIU to ensure the compliance with the EMP. The PMU will submit semi-annual monitoring reports to ADB according to a suggested monitoring report format agreed by ADB for subprojects.

168. EMP budgets will reflect the costs of monitoring and reporting requirements. Monitoring reports will be posted in a location accessible to the public. The executing agency will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. The MHECA will study the compliance with the action plan developed in the previous review. Compliance with loan covenants will be screened by the executing agency.

169. ADB will review project performance against the MHECA's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. Any changes on the IEE based on the detailed design and/or due to any change in design, location, unanticipated impacts identified during the project implementation will be subject to ADB review and disclosure on ADB website. ADB will carry out the following monitoring actions to supervise project implementation:

- Conduct periodic site visits for projects with adverse environmental or social impact;
- Conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impact;
- Review the periodic monitoring reports submitted by executing agency to ensure that adverse impacts and risks are mitigated as planned and as agreed with ADB;
- Work with executing agency to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate;
- Prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

170. The costs for environmental safeguard activities (see Table 18) which are responsibilities of the PMU and PIU are included in respective consultant packages. The cost of mitigation measures during construction stage will be incorporated into the contractor's costs. Thus, remaining costs related to environmental safeguards cover the following activities:

- Preparing and submitting reports and public consultation and disclosure
- EPL applications
- Conduct of environmental monitoring for baseline data and long-term evaluation of the infrastructure. See Table 19 for Monitoring Plan.
- Replacement and maintenance of trees, as necessary
- Conduct of environmental capacity-building lectures and workshop for improving awareness.

171. The budgetary provision for the implementation of the EMP of the subproject can be categorized in to two types and is presented below.

- Environmental Management Plan Works to be implemented by the contractor under civil works contracts
- Environmental Management Plan Works to be implemented by the FOE.

172. A capital cost provision of about US\$12500 has been kept towards implementation of the EMP. Summary of environmental budget is presented in Table 18.

Table 18: Summary of Environmental Budget

Item	Quantity	Unit Cost (US\$)	Subtotal Cost (US\$)	Source of Funds
Administrative Cost				
Public Consultations	Bi annually	1,000	4,000	Project Cost - PMU Costs (to be paid under incremental administration cost)
Environmental Monitoring			4,500	
Design Stage to establish baseline environmental data	Air, water and noise monitoring	1,500		Project Cost - PMU Costs (to be done under the guidance of PMC / by PIU staff and accounted under incremental administration cost)
Construction Phase	Air, water and noise monitoring	1,500		Civil Works Contractor Costs
O & M	Air, water and noise monitoring	1,500		PIU/PMU cost
Landscaping and tree-planting		2,500	2,500	
Capacity Building Expenses		1,500	1,500	On job training is done by PIU Any other workshops and/or sessions on these will be under Project Cost -PMU Costs and accounted under Capacity Building expenditure
Total Cost			12,500	

Table 19: Monitoring Plan for FCT for Preconstruction, Construction, and Operation Phases

SI No	Field environment attribute	Phase	Parameters to be monitored	Location	Frequency a	Responsibility
1	Air quality	During preconstruction	IFC-WB EHS standards in chapter 6	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	Preconstruction	IFC-WB EHS and SLSI standards in chapter 6	FT or RUSL groundwater	Once to establish the groundwater quality before construction	Contractor through approved monitoring agency
3		During construction Phase			Once in every three month during construction phase	
4		During operation phase			Once every year except during monsoon during two years	
5	Noise levels	During preconstruction phase	IFC-WB EHS standards in chapter 6	FT or RUSL construction site	Once in the preconstruction phase to establish baseline	Contractor through approved monitoring agency
6		During construction phase			Once in every 3 months (except monsoon season) during construction phase	
7		During operation phase			Once every season except monsoon season for first 2 year	

C. Environmental Monitoring and Reporting

173. The FOE of UOSJP will monitor and measure the progress of EMP implementation while supervising civil construction activities. PIU will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome. PIU will submit quarterly EMP monitoring and implementation reports to PMU of the MHECA, who will take follow-up actions, if necessary. The MHECA will review and consolidate the quarterly reports to prepare bi-annual monitoring reports to ADB during construction and thereafter, on an annual basis.

174. ADB will review subproject 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 subproject's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the subproject performance management system. ADB will monitor subprojects on an ongoing basis until a project completion report is submitted.

D. Consultation and Information Disclosure

175. Consultation. To ensure continued public and stakeholder participation in the FOE subproject life cycle, periodic consultations shall be taken up at regular intervals at site during implementation. This participatory process will ensure that all views of the people are adequately reviewed and suitably incorporated in the design and implementation process.

176. Once the IEE is approved by the ADB, an electronic version of the IEE will be placed in the official websites of ADB. Upon written request, any person seeking information can obtain a hard copy of the complete IEE document by paying for its photocopying cost. The PMU will issue notification on the disclosure mechanism in local newspapers, ahead of initiation of implementation of the subproject, providing information on the subproject, start dates, etc. The notice will be issued by the PMU in local newspapers 1 month ahead of the implementation works. This will create awareness of the subproject implementation among the public. In addition, any revisions to the IEE will be disclosed to the project stakeholders.

X. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

177. 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 most likely impacts during the construction phase are expected to be temporary in nature and could be mitigated with proper management and good practices. The GRM and EMP provide appropriate guidance for suitable environmental and social safeguards. Accordingly, the proposed subproject can be recommended for implementation with strict adherence to EMP and GRM provided in this IEE. Since the proposed subproject is likely to experience soil erosion, it is recommended that careful observations be made during the current rainy season on further design improvements and incorporated proper drainage.

178. As per the Government of Sri Lanka regulation, Environmental Clearance is not required for the proposed subproject under the National Environmental Act. However, EPL Clearance from CEA, Department of Agrarian Services and Development clearance, Homagama Pradeshiya Saba clearance, UDA green building certificate will be required before start of construction. Already UDA

zoning approval has been obtain for the establishment of FOE despite the fact that the area has been demarcated as a residential area under the zonation of Megapolis plan.

B. Recommendation

179. The EMP has been prepared incorporating various modern technologies and guidelines to reduce the environmental impacts of subproject constructions to make it a Green building. Therefore, it is recommended to follow the EMP and associated Guidelines during construction and operation phases of the subproject. Some of the key recommendations are listed below.

180. **Solid waste Management on site:** At FOE, currently there is no solid waste management plan. FOE should take measures at the inception of the construction of the building to consult with CEA and develop a proposal for solid waste management like other universities. As an engineering institution that is trying out modern technology they should develop a mechanism that is suitable for solid waste disposal that has no carbon foot printing and zero emissions.

181. 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 subproject as included in the EMP. Degradable solid waste can be composted while spoil material and other debris should be disposed at approved identified dump site. Until this is established it is recommended that UOSJP seek an agreement with the HPS to receive solid waste and dispose of it.

182. **Waste water management:** 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 FOE operation. A Bio Up-flow Anaerobic Floating Filter Technology could be adopted for the building and this would be a low-cost waste water management technology. Until a waste water treatment plant is established a mechanism should be in place for removal of sewage using gully bowers to avoid soil contamination. For this liaise with the secretary HPS.

183. **Monsoonal rains:** It is recommended that water drainage plan is developed for the site with proper drains. Preventive measures should be adopted by FOE to minimize soil being transported to the southern boundary where the canal is located. Current land development activities associated with the subproject has induced sedimentation transport to the agrarian canal (as reported be the Grama Niladhari). This erosion control plan should include measures to improve the soil condition.

184. HPS and the Department of Agrarian Services Development pay little attention on the subproject associated drainage system and the agrarian canal. Since these drainage systems play an important role in the hydrology of the subproject associated area, UOSJP should follow up with them and develop a schedule to clean and ensure maintenance. Funds within the FOE should be allocated for such management activities.

185. Detailed review of drainage plan should be carried out and engineering designs should consider to minimize the risk of soil erosion by adopting strategies within its design. These could be flooding ponds that will capture the excess water during the monsoonal rainy period.

186. **Clearances:** UOSJP FOE taken measures to initiate the Green building certification process with the UDA (Annex 07). UOSJP will be required to fill in the BIQ and obtain and EPL for the canteens if they are catering for over 50.

187. **Stability of the foundation:** Geotechnical report recommends that soft foundation be adopted in the detail designing of the subproject. However, the geotechnical report does not analyse with respect to the proposed master plan which details out the respective space allocations of the buildings and the expected load bearing of each building. Therefore, the load bearing capacity should be compared with recommended values given by ICTAD once the design plans are developed. It is recommended that the ultimate skin friction coefficient (f_u) be revisited once the design plans are in place and ensure that they are in line with the ICTAD guidelines (ICTAD/DEV/15).²²

188. **Provision of water supply:** The ground water quality of the subproject site needs to be investigated if it is to be used. It should be ensured that the construction workers are provided with drinking water from the onset of the construction phase. It is recommended that a water supply line from NWSDB to meet the requirement at the onset of the subproject.

189. **Habitat enrichment:** A rapid biodiversity assessment on site was not carried out. Several measures should be adopted to improve the habitat around the subproject site. Planting of recommended species along the reservation of the northern and the southern boundaries of the land with adequate provision to clean the canal and drains is important.

190. **Environmental monitoring:** Carry out the baseline monitoring of the environmental parameters in order to avoid or manage any environmental pollution associated with the subproject. The FOE PIU will be required to facilitate environmental monitoring and conduct stakeholder meetings during the operational phase of FOE. For the above purpose there should be proper funding mechanism in place at the FOE.

²² Geotechnical investigation for proposed building for faculty of computing and technology, University of Kelaniya. April 2018.

ANNEX 1: SITE REPORT
UNIVERSITY OF SRI JAYEWARDENEPURA, SRI LANKA, ENGINEERING FACULTY
DEVELOPMENT PROJECT BRIEF SITE INSPECTION REPORT

Site Description:

The site that is identified for the development of the new Engineering Faculty of the Sri Jayewardenepura University is located in Mattegoda. Originally the land was identified for development by the Prime land development which was later handed over to the Divisional Secretariat Homagama. The area identified is known as Kakunagahawaththa land has been handed over by the Divisional Secretariat of Homagama. The land is situated on the Polgasowita Road and is 2 km away from the Kottawa town.

Figure 1: Proposed site for faculty of Engineering in University of Sri Jayewardenepura, Sri Lanka



The proposed site is located in Maththegoda GND, Homagama DSD, Colombo District, Western Province. The land is known as Kakunagahawaththa and it consist 10 Acers. Northern boundary is composed of Prime Land cleared land for housing (Plan No 520009). The southern boundary is plan No 520008. To the extreme left of this boundary there are low income houses and they do not have an access road to the main road. The Divisional Secretariat has request that an

access road be given from the university property. Eastern border is bounded by a road that access Kottawa- Matthegoda and its maintain by Road Development Authority. On the western boundary is Plan No 5200029. On the western boundary lies the paddy cultivation

The site is cleared land composed few trees such as coconut and scrub vegetation. Most of trees would have to be removed during the site preparation as per the requirement of building designing and construction.

According to the information that we received the e infrastructural design of the faculty of engineering with adopt latest technology and design features.

As per figure 1 the proposed land has a narrow opening to the road, since faculty design will be planned to visualize a grand entrance from the road.

The proposed faculty building complex provides space and the modern facilities that would support spaces for learning and teaching with high – tech research laboratory. The new faculty design will ensure the use of renewable energy sources while maintaining with energy efficiency of the building. The design will follow the green building concepts such as:

- Urine - feces separation toilets
- Natural Air ventilation
- Waste water recycling plant
- Proper solid waste management system
- Rain water harvesting system
- Floral coverage on the surfaces exposing to the sun light
- Laboratory waste (Chemicals/ Materials) recycling plant
- Incineration facility
- Scrubber facility
- Solar panel system

According to proposed layout total floor area consist 28,340 square meters. based on the requirements of students, lectures, and other staff different types of functional areas have been defined. Those requirements categories as follows;

- Laboratories (9280m²)
- Teaching facilities(8470m²)
- Administration(2040m²)
- Recreational and Services (2400m²)

First intake of engineering undergraduates for the academic year 2015/16 was 120 students. The Proposed enrollment of engineering undergraduates for the 10-year period is given in table below.

	Year									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Annual intake	120	150	200	200	250	250	250	300	300	300
Accumulated number of students	120	270	470	670	800	900	950	1050	1100	1150

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. Therefore, there was no deed available at the time of our site visit. The Homagama divisional secretariat has granted permission to University of Sri Jayewardenpura, Sri Lanka to continue with the proposed development. (Refer Annex 12)

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, 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. Test for soil stability and suitable design
- c. Review of building design and layout to ensure conformity with environmental and social requirements.
- d. Management of various categories of waste (solid and liquid)

Recommendations to the University of Sri Jayewardenepura, Sri Lanka as preliminary activities:

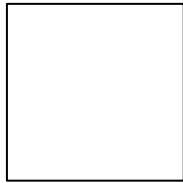
- a. Soil testing be carried out.
- b. Fill a BIQ (basic information and questioner) and submit it to the CEA (Central Environmental Authority) for assessment and evaluation locally.
- c. Discuss with the DS as to what alternative measures on access road could be given to the low-income families adjoining the property
- d. Develop a proper storm water drainage plan for the site

Site Photos



ANNEX 2: BIQ

Application No



Central Environmental Authority
BASIC INFORMATION QUESTIONNAIRE
**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 building for Faculty of Engineering University of Sri Jayewardenepura, Sri Lanka
- 1.2. Name of the Project Proponent: University of Sri Jayewardenepura, Sri Lanka (Company/Firm/Individual)
- 1.3. Details of the Project Proponent: Faculty of Engineering

Postal Address: University of Sri Jayewardenepura, Sri Lanka, Gangodawila, Nugegoda, Sri Lanka

Phone No: 077 1957194/ 2802853

Fax No:

E-mail Address: amsubasinghe@sjp.ac.lk

- 1.4. Details of the Contact Person:

Name: Dr Akila Subasinghe

Designation: Dean Faculty of Engineering

Phone No: 077 1957194

Fax No:

E-mail Address: amsubasinghe@sjp.ac.lk

2. PROJECT LOCATION DETAILS

- 2.1. Location of the project:
 - Province/s: Western Province
 - District/s: Colombo District
 - Divisional Secretariat Division/s: Homagama
 - Local Authority/s: Homagama Pradeshiya Saba

(Provide location in 1:50,000 scale Toposheet)

2.2. Physical scale or the extent of the project site (in ha): 4.0468564224 ha
(Provide Survey plan)

2.3. Does the project wholly or 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 Of1982		✓	
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):

Land use type	%	Land use type	%
Marsh/mangrove		Bare land	90
Water bodies		Paddy	
Dense forest		Tea	
Sparse forest		Rubber	
Scrub forest		Coconut	
Grass land	10	Built-up area	
Home gardens		Any other (Specify)	

3. **PROJECT DETAILS**

3.1. Objective/s of the project:

This project aims to increase the engineering-oriented work force which will contribute to transform Sri Lankans growing economy. Under this Project the University of Sri Jayawardhanapura (UOSJP) will build a new Faculty of Engineering (FOE) in Maththegoda Establishment of the FOE with training on subjects such as Civil Engineering, Computer Engineering, Electrical and Electronic Engineering, Mechanical Engineering, Interdisciplinary studies, etc. will improve the job security for these graduates in the local as well as global job market. Graduates from University of SJP Faculty of Engineering will have a competitive edge to secure jobs in the future. It will be geared to fill job in industries such as ICT, civil, electrical and electronics. This will ensure that these graduates will have a competitive edge to secure jobs both locally and internationally.

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

(i)	Pre-feasibility	✓
(ii)	Feasibility	Done
(iii)	Design	Completed
(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: The proposed FOE is composed of 04 storied Mechanical Engineering Department building (4625sqm²), 04 storied Electrical and Electronic Department building (5475 sqm²), 06 storied Computer Engineering Department building (4375sqm²), 06 storied Civil Engineering Department building (6225sqm²), 03 storied IS Department building (4245 sqm²), 04 storied Welfare and Recreation building (3225 sqm²), and a 04 storied Administrative Division building (6875 sqm²).

First phase–

Second phase– ICT lab and the civil engineering labs will be constructed in this phase

Total - 30420 m²

3.5. Major components of the project:

The proposed FOE Development project will involve construction of a new faculty with facilities to conduct lectures for Engineering students. The FOE will be with several storied buildings and will be constructed in two phases. It will include laboratory facilities for Civil Engineering, Computer Engineering, Electrical and Electronic Engineering, Mechanical Engineering, Interdisciplinary studies labs and etc. It will also include six computer labs that will train 120 students at a time

3.6. Project layout plan (Conceptual): Attached

3.7. Project process/s interms 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 & detailed design engineers and the PIU for details and fill in

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)	Laying 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:

Foreign: (ADB loan)	
Local:	
Phase 1	
Phase 11	12,700,000 USD

3.10. Proposed timing and schedule including phased development: need to develop by the PIU

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

(i) Roads/access(Specify): Kottawa – Polgasowita Road

(ii) Water (Specify): liters per day

(iii) Power(Specify): CEB grid and generator

(iv) Telecommunication(Specify): Sri Lanka Telecom

(v) Common waste water treatment facilities (To be filled by UOSJP):

Waste water will be directed to a waste water treatment plants and the sludge will be removed in determined intervals. Sewage will be emptied with emptied in gully bowsers with the assistance of the Homagama Pradeshiya Saba

(vi) Common solid waste management facilities(Specify): Develop a solid waste management plan for FOE and temporarily come to an agreement with the Homagama Pradeshiya sab until composting program or biogas plant is installed.

(vii) Any other (Specify): Development of proper water drainage network of the project site, clean and maintain the canal system associated with the project

3.12. Will the development result in displacement of people or property: (Quantify)? yes

3.13. Will the development result in change of way of life of local people? Yes. Project associated community could provide lodging and other services such as catering for students and provision of telecommunication facilities and photocopying.

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

Yes. The land would be fully utilized for development during the two phases of construction of FOE.

3.15. Information on likely impacts of the project (Please tick the relevant category/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-Building department. EMP provides the mitigation that will be adopted (Refer volume III of the IEE)

3.17. Relationship with other existing /planned: developments:

The FOE graduates will be able to gain industrial training in satellite cities such as Malabe and the Colombo commercial hub and industrial zone. FOE is located in close proximity to Aviswella, Ratnapura, Badulla, Ampara, Batticaloa through High Level Road and the City of Kandy via Colombo, Hanwella, Pahathgama, Pasyala Road and to the coastal towns of Kalutara, Panadura, via Colombo, Horana, Bandaragama Road. The Kelani Valley Railway Line, running parallel to High Level Road is linked with Avissawella. With the construction of the Southern Highway, Homagama is linked to the Southern region (Galle and Matara Towns). The Science and Technology City is to be built on the Malambe Homagama corridor away from the new FOE. Homagama technology city project is in close proximity to the project site.

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

- Environment Clearance –EPL for the cafeteria that provides services for 50 students at a time
- Consent from relevant government agencies –Homagama Pradesiya Saba, Department of Agrarian Services and Development approval on the design plans and the proposed drainage system for flood water
- Green building certificate- UDA

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 in decision making.

Name:Designation:

Signature: Date:

For Office Only

1. Date of receipt of the application:
2. Payment of EIA administration fee: Date of payment:
Amount: Receipt No: Code No:
3. Site inspection information: Date of inspection:

Name/s of the officers:

Special comments regarding significant environmental concerns (based on the site inspection):

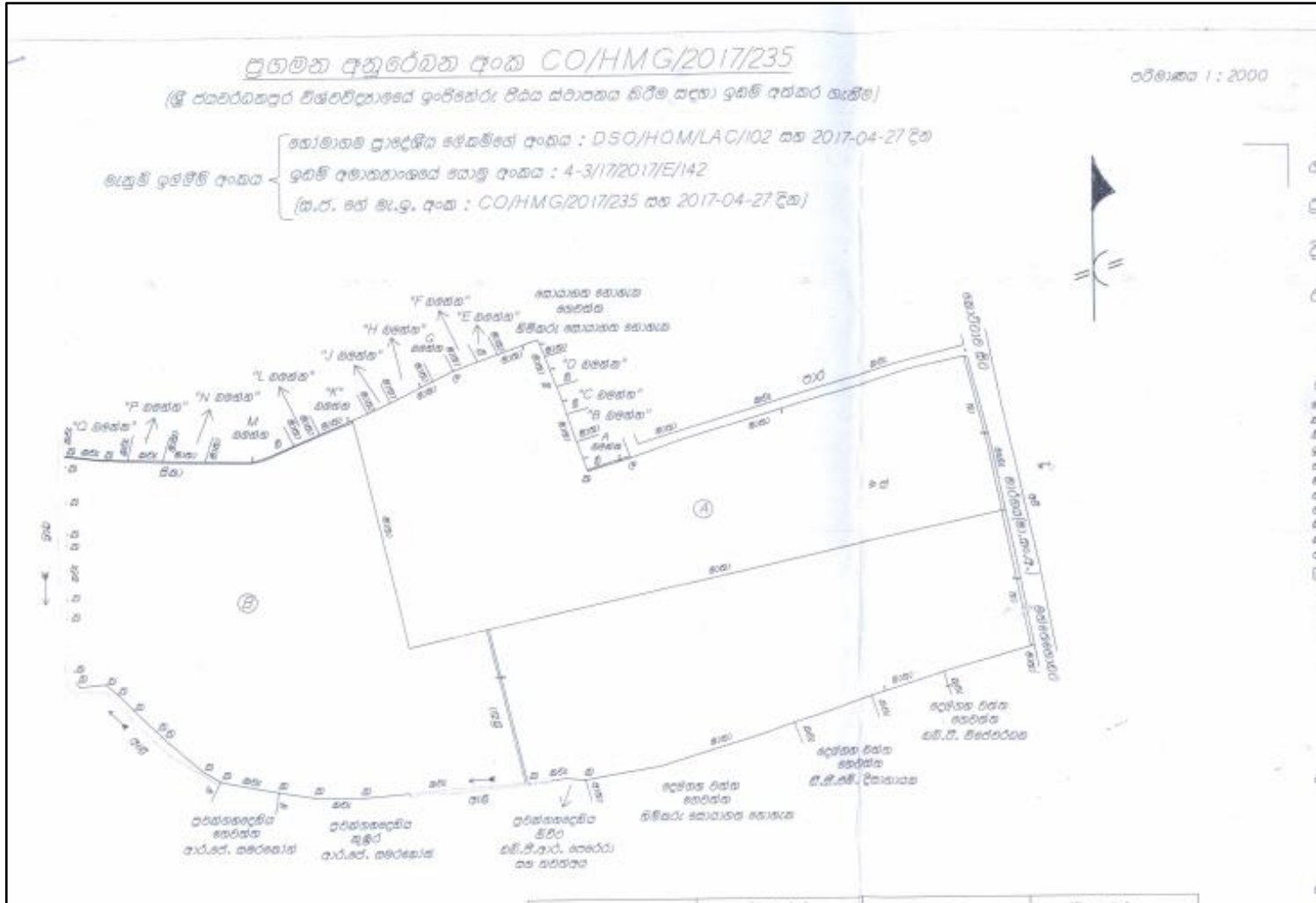
4. Required approval under Part IVC of NEA:

Yes	No

5. If need to go through the EIA process appropriate PAA:

6. Other remarks:

ANNEX 3: SURVEY PLAN





ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය

අති විශෙෂ

අංක 2002/2 - 2017 වසරේ මහ 16 වැනි කඳුදා - 2017.01.16

(විශේෂ අදාළව ප්‍රසිද්ධ කරන ලදී)

I වැනි කොටස: (I) වැනි ඡේදය - සාමාන්‍ය

ආණ්ඩුවේ නිවේදන

1978 අංක 16 දරන විවිධ විද්‍යාල පනත

උසස් අධ්‍යාපන හා විනෝදාස්වාද අමාත්‍යාංශයේ නිවේදනයට අංක 38, 1978 අංක 16 දරන විවිධ විද්‍යාල පනතේ 19 හා 21 වෙනස්වීම් (1) සහ (2) ක්‍රම බලපත්‍ර පවසන පුද්ගලයින්ට අදාළව විවිධ විද්‍යාලයන්ට ඉංජිනේරු සිටියා විවිද්‍රවීම් පදනම යටතේ උපාලිකාවන් වෙතට පත්වීමට අවස්ථා සෑදීමේ අවසාන සිට අවම අවකාශ සෑදීමේ අවකාශ 49(අ) වෙනස්වීමට අනුකූලව පවතින බවට සාධක සැපයීම.

උසස්වීමේ නිවේදනය,
උසස් අධ්‍යාපන හා විනෝදාස්වාද අමාත්‍යාංශය.

2017 වසරේ මහ 01 වැනි දින,
සමස්ත ශ්‍රී ලංකා,
අධ්‍යක්ෂ ජනරාල්, අධ්‍යාපන සේවා කොමසාරිස් ජනරාල්,
මහ නැවතුම් මහ බැංකුව,
8 වැනි මහලය,
උසස් අධ්‍යාපන හා විනෝදාස්වාද අමාත්‍යාංශයේ දී ය.

උපාලිකාව

විනෝදාස්වාද පදනමේ, පනවනු ලැබූ විවිධ විද්‍යාලයන්, විනෝදාස්වාද පනවනු ලැබූ විද්‍යාලයන්, අංක 38, 1978 වෙනස්වීම් සමඟින් ප්‍රති අදාළව විද්‍යාලයන් විනෝදාස්වාද පනවනු ලැබූ විවිධ විද්‍යාලයන් 500008 හි අදාළ 01 හි පත්‍ර අංක 03 හි දැන්වීමට අදාළව අංක 08 දරන පනවනු ලැබූ විවිධ විද්‍යාලයන් 15, 04 01, 02 හි 32.9 ක් ප්‍රමාණයකින් යුතු අවස්ථා.

- උදාහරණ: විද්‍යාලයක් පවත්වා ගැනීමේ විවිධ විද්‍යාලයන් අංක 520009 හි අදාළ 03
- අදාළව: පවත්වා ගැනීමේ විවිධ විද්‍යාලයන් අංක 520008 හි පවතින අංක 2, 3, 4, 5 හා 6 හි විවිධ විද්‍යාලයන් 02
- පනවනු ලැබූ විවිධ විද්‍යාලයන්: විවිධ විද්‍යාලයන් අධ්‍යාපන සේවා කොමසාරිස් ජනරාල් (විනෝදාස්වාද) විවිධ විද්‍යාලයන් 01
- විවිධ විද්‍යාලයන්: විද්‍යාලයක් පවත්වා ගැනීමේ විවිධ විද්‍යාලයන් අංක 520029 හි අදාළ 07

02-02

මෙහි පිටි වෙබ් අඩවියට පත්‍රය www.documents.gov.lk වෙබ් අඩවියෙන් බැහැර කළ හැක.



ANNEX 6: APPLICABLE ENVIRONMENTAL LEGISLATIONS

Applicable Environmental legislations

A. Environmental Impact Assessment

1. 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.

2. 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.

3. 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.

4. 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.

5. 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

6. 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).

7. 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.

8. 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.

9. 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.

10. 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

11. 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.

12. 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 or 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)

13. 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

14. 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

15. 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)

16. 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 cannot be 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

17. 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.

18. 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

19. 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.

J. Sri Lanka Land Reclamation and Development Corporation Act No 15 of 1968

20. 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.

K. Civil Aviation Act, No. 14 of 2010

21. 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.

L. Mines and Minerals Act No. 33 of 1992

22. 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.

M. Forest Ordinance, No 17 of 1907 (and amendments)

23. 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.

24. 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

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

25. 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.

O. Department of Agrarian Services act No46 of 2000

26. Department of Agrarian Services started on 01st of October 1957 with an idea of providing supply services that are initial for Agriculture schemes. In section 83 it mentioning the if the blocked up, obstructed or encroached upon or caused to be blocked up, obstructed or encroached upon, damaged or caused to be damaged, any irrigation channel, water course, bund, bank, reservation tank, dam, tank-reach or irrigation reserve make an order requiring such person to take such remedial measures as arc specified in the order by the commissioner.

27. In section 84nit mentioning the No person shall release, cause to be released, or allow the flow of, waste matter into any channel, canal, water course, irrigation reservation or paddy land. And in section 85 it mentioning that the No person shall dump any waste matter into any channel, canal, watercourse, irrigation reservation or paddy land.

P. National Policy for Rural Water Supply and Sanitation of 2001

28. The National Policy for 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 former town 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.

29. 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.

Q. Prevention of Mosquito Breeding, Act No. 11 of 2007

30. 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.

R. The Urban Development Authority, Law, No 41 of 1978

31. 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.

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

32. 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.

33. 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.

T. Land Acquisition Act No. 09 in 1950 and subsequent amendments in 1983 1st 1986

34. 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.

U. National Involuntary Resettlement Policy

35. 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 fair 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.

V. Land Acquisition Regulations, 2008

36. 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.

37. 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.

W. Ceylon Electricity Board Act (No. 17 of L969)

38. An Act to provide for the establishment of an electricity board for the development and co-ordination of the generation, supply and distribution of electrical energy; for the transfer to such board of the government electrical undertakings, and, in certain circumstances, of the electrical undertakings of local authorities; for the employment by the board of employees of the department of government electrical undertakings; for the entering into joint schemes by such board with any government department or approved body for the generation of electrical energy, the irrigation of lands, the control of floods or other like objects; and to make provision for all matters.

39. There are five parts in the act as follows:

Part 1: - Constitution, Powers and Duties of the Ceylon Electricity Board

Part 2: - Transfer to the Board of the Government Electrical Undertakings

Part 3: - Staff of the Board

Part 4: - Finance, Auditing and Annual Report

ANNEX 7: GREEN BUILDING APPLICATION

කාර්යාලීය ප්‍රයෝජනය සඳහා
ලියාපදිංචි අංකය :
යොමු අංකය :
දිනය :



නාගරික සංවර්ධන අධිකාරිය
හරිත ගොඩනැගිලි සඳහා අයදුම්පත්‍රය

සහායනී
නාගරික සංවර්ධන අධිකාරිය.

01. ඉල්ලුම්කරුගේ තොරතුරු :-

ඉදිකිරීමට යෝජිත ගොඩනැගිල්ල අයත් ආයතනය : මුහුදුකර්ම දිවිය
ශ්‍රී ලංකා රාජකාරි සේවා බුද්ධි උපාය
 ලිපිනය : හාගර්ගාඩොලො, හුණර්ගාඩො
 ආයතනය අයත් අමාත්‍යාංශය : ලියනි, පුබුදාපන, පුමුණර්ගාඩො
 ඉදිකිරීමට යෝජිත ගොඩනැගිල්ල සම්බන්ධ වගකීම් දරණ නිලධාරියාගේ
 නම : මහාචාර්ය සමරසේන දිසානායක මහතා
 තනතුර : ලියනි උපාය නිලධාරී
 දුරකථනය අංකය : 011 2801604, 011 2803474

02. ගොඩනැගිල්ල ඉදිකිරීමට යෝජිත ස්ථානය පිළිබඳ තොරතුරු :-

ස්ථානය : හුණර්ගාඩො
 පළාත් පාලන ආයතනය : පුබුදාපන, හුණර්ගාඩො, පුබුදාපන, මහලියකර
හාගර්ගාඩො, හුණර්ගාඩො
 ලිපිනය : 120, මහර්ගාඩො, හොලොවිට
 යෝජිත භූමියට පිවිසිය හැකි මාර්ගය පැහැදිලි සටහනකින් දක්වන්න :

03. ඉඩමේ විස්තරය :-

ඉඩමේ ප්‍රමාණය : අක්කර 10
 ඉඩමේ මුල් / වර්තමාන භාවිතය : -
 යෝජිත ගොඩනැගිල්ලේ ස්වභාවය : -

➤ ඉහත සඳහන් කර ඇති තොරතුරු වලට අනුව ඉදිකරනු ලබන ගොඩනැගිල්ල හරිත ගොඩනැගිලි සංකල්පයට අනුව ඉදිකිරීමට බලාපොරොත්තු වන බැවින් ඒ සඳහා අවශ්‍ය උපදෙස් හා මගපෙන්වීම ලබා දෙන මෙන් ඉල්ලා සිටිමි

දිනය : 09.05.2018
 ආයතන ප්‍රධානියාගේ / බලාපොරොත්තුවන නිලධාරියාගේ අත්සන
 මහාචාර්ය සම්පත් අමරසේන
 උපකුලපති
 ශ්‍රී ලංකා රාජකාරි සේවා බුද්ධි උපාය
 කුණේගොඩ

මහනගර හා බස්නාහිර සංවර්ධන අමාත්‍යාංශය
 Ministry of Megapolis & Western Development
 ආර්ථික නගර සංවර්ධන අමාත්‍යාංශය
 Ministry of Urban Development

දුරකථන
 Telephone
 2875916-20 2873651-2
 2873644 2873647
 2873649 2875333
 2797200

වෙබ් අඩවිය
 Web Site
 www.uda.lk

22 MAY 2018

CHANCELLOR'S OFFICE
 NUGEGODA

නාගරික සංවර්ධන අධිකාරිය
 Urban Development Authority

06 හා 07 වන මහල, සෝමපොය, බත්තරමුල්ල
 6 හා 7 වන මහල, සෝමපොය, බත්තරමුල්ල
 6 & 7 Floors, Sethsiripoya, Battaramulla

මගේ අංකය : 23 / E / 02 / 155,
 2018 මැයි මස 22 වන දින.

මහාචාර්ය සම්පත් අමරතුංග මහතා,
 උපකුලපති,
 ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලය,
 ගංගොඩවිල, නුගේගොඩ.



එස්.එම්. / ඉංජිනේරු
 විශාල නළාගාමනරා
 [Signature]

ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලයේ ඉංජිනේරු පාඨමාලාවේ ගොඩනැගිල්ල - හරිත ප්‍රමිති මට්ටම ලබා ගැනීම අදාළ කොරතුරු

ඉහත ගොඩනැගිල්ලට හරිත ප්‍රමිති මට්ටමක් ලබා ගැනීම සඳහා යොමු කරනු ලැබූ 2018.05.09 දිනැති අයදුම්පත හා බැඳේ.

02. එම ව්‍යාපෘතිය ලියාපදිංචි කර ගැනීම සඳහා අදාළ ශාස්තුව පහත පරිදි වේ.

• හරිත ගොඩනැගිලි සඳහා ලියාපදිංචි ශාස්තුව	-	රු. 5,000.00
• NBT බදු (2.04%)	-	රු. 102.00
• VAT බදු (15%)	-	
(ලියාපදිංචි ශාස්තුව හා NBT වල එකතුව සඳහා)	-	රු. 765.30

මුළු මුදල	-	රු. 5,867.30
		=====
• ප්‍රවාහන ශාස්තුව		
බත්තරමුල්ල සෙන්සිටිවයේ සිට ගොඩනැගිල්ල ඉදිකෙරෙන ක්ෂේත්‍රය වෙත යාමට හා නැවත ප්‍රමිතීමට		
- කිලෝමීටරයක් සඳහා රු.35/- බැගින්.		
කිලෝමීටර් 14 x 2ක් සඳහා	-	රු. 980.00

03. ඒ අනුව, ඉහත ලියාපදිංචි ශාස්තුව NBT ,VAT බදු මුදල් හා ප්‍රවාහන ශාස්තුව වන රු. 6,847.30 ගෙවා යෝජිත ගොඩනැගිල්ල හරිත ගොඩනැගිලි සහතිකකරණය සඳහා ලියාපදිංචි කර ගැනීමට කටයුතු කරන මෙන් දන්වා සිටිමි.

[Signature]
 චන්දනා කේ. ඊ. කලුපහන
 අධ්‍යක්ෂ (පරිසර හා භූ දර්ශන)
 නාගරික සංවර්ධන අධිකාරිය

ඇ/1/06
 FMA PL
 [Signature]

ANNEX 8: LETTER OF PERMISSION OF UDA

මහනගර හා ඔස්කාර් සංවර්ධන අමාත්‍යාංශය
 பாரிய நகரம் மற்றும் மேற்கத்திய அபிவிருத்தி அமைச்சு
MINISTRY OF MEGAPOLIS & WESTERN DEVELOPMENT

දුරකථන
 தொலைபேசி
 Telephone

2875916-20 2873651-2
 2873644 2873647
 2873649 2875333
 2797200



නාගරික සංවර්ධන අධිකාරිය
 நகர அபிவிருத்தி அதிகார சபை
Urban Development Authority

06 හා 07 වන මහල, සෙත්තිරිපාය, බත්තරමුල්ල
 6 மற்றும் 7ஆம் மாடிகள், செத்திரிபாய், பத்தரமுல்லை
 6 & 7 Floors, Sethsiripaya, Battaramulla

වෙබ් අඩවිය
 இணையத்தளம்
 Web Site

www.uda.lk

ෆැක්ස්
 தொலைநகல்
 Fax

2873637

Ref. No. 01/94

25th August 2016

Mr. Madhawa Waidyaratna,
 Additional Secretary (Megapolis),
 Ministry of Megapolis & Western Development.


Dear Sir,

LAND FOR PROPOSED ENGINEERING FACULTY OF SRI JAYAWARDENAPURA UNIVERSITY

This is with reference to your e-mail dated 25th August 2016 on the above subject.


I wish to inform you that UDA has not earmarked the above land for any future development under the Western Region Megapolis Planning Project and therefore UDA has no objection for the University of Sri Jayawardenapura to pursue with the proposal of establishing their Engineering Faculty in the said land.

Yours sincerely,




Eng. S. P. Rathnayake
 Director General
URBAN DEVELOPMENT AUTHORITY

Original Received.



M. Parackrama Bandula
 Senior Assistant Accountant
 University Grants Commission
 No 20, Ward Place,
 Colombo 07.

Copies to : (i) Dr. Akila Subasinghe, Dean, Faculty of Engineering, University of Sri Jayawardenapura.
 (ii) Chairman, UDA.
 (iii) Director (Lands), UDA.



ANNEX 9: SOIL REPORT

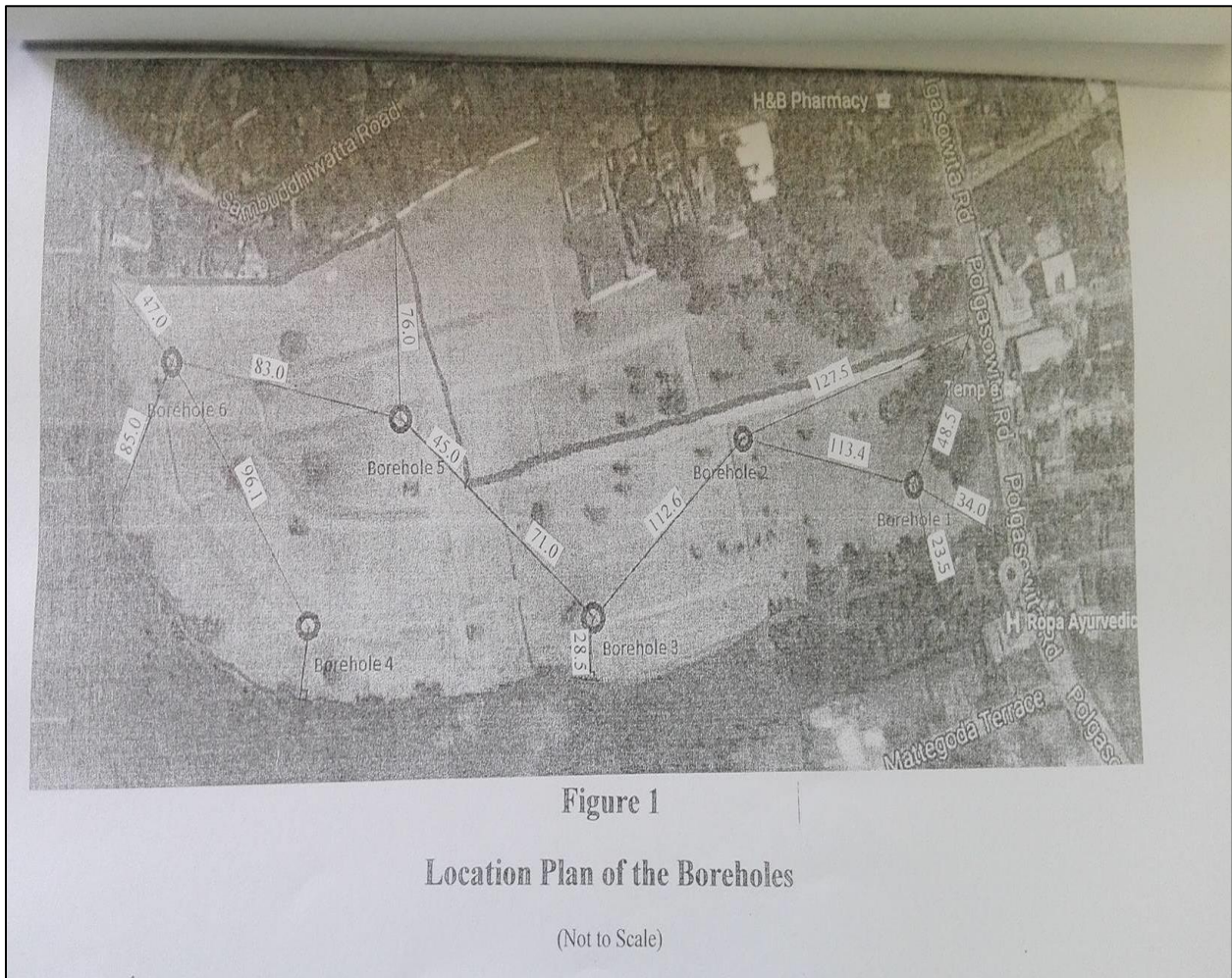


Table No. 7 Geotechnical Models at Each Borehole Location

Table No. 7.1 BH 1

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	2.00	Depositional, dense - very dense, clayey gravelly sand.	24
2	2.00	9.15	Residual, dense - extremely dense, silty gravelly sand / silty sand.	>50

Table No. 7.2 BH 2

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	0.95	Residual, dense, clayey gravelly sand.	23
2	0.95	17.50	Residual, stiff - hard, gravelly sandy clayey silt / gravelly sandy silty clay.	25
3	17.50	24.55	Residual, extremely dense silty sand.	>50

Table No. 7.3 BH 3

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	3.50	Depositional, very loose - medium dense / medium stiff, gravelly clayey sand / gravelly sandy clay.	5
2	3.50	7.65	Residual, medium stiff - very stiff / dense, sandy clayey silt / clayey silty sand.	17
3	7.65	13.60	Residual, extremely dense / hard, silty sand / sandy clayey silt.	44

Table No. 7.4 BH 4

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	2.00	Residual, Medium dense - dense / medium stiff, clayey gravel sand.	14
2	2.00	7.60	Residual, medium stiff - stiff / medium dense, sandy silty clay / sandy clayey silt / clayey silty sand.	10
3	7.60	9.50	Residual, extremely dense silty sand.	>50

Table No. 7.5 BH 5

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	1.50	Residual, medium dense - dense, gravelly sand / clayey gravelly sand.	18
2	1.50	3.00	Residual, stiff - very stiff / medium dense - dense, gravelly clayey silty sand / gravelly clayey sandy silt.	14
3	3.00	3.50	Residual, dense, clayey gravelly silty sand / clayey gravelly sandy silt.	25
4	3.50	5.75	Residual, stiff, gravelly sandy clayey silt.	22
5	5.75	6.90	Residual, very dense, silt sand.	43
6	6.90	13.60	Residual very stiff / extremely dense, sandy clayey silt / silty sand.	23

Table No. 7.6 BH 6

Layer No.	Depth (m)		Description	Average SPT "N"
	From	To		
1	0.00	1.45	Residual, medium dense - dense, clayey gravelly sand.	15
2	1.45	7.90	Residual, stiff - very stiff, gravelly sandy silty clay / sandy clayey silt.	15
3	7.90	11.50	Residual, stiff - hard, sandy clayey silt.	24
4	11.50	17.00	Residual, extremely dense, silty sand.	50

- 12 -

2. The extremely weak strength conditions of the sub soils down to a depth of 4.0m in BH 3 area.
3. The service loads on the columns of the proposed building to be constructed.

Under the above circumstances a shallow type of foundations such as pad, strip or raft footings can be adopted for any structure, provided that the foundation stress does not exceed the ABC of the sub grade.

However, it is recommended that a detail investigation should be carried out specifically demarcate the lateral extension of the weaker sub strata of the shallow elevations of the soil in the BH 3 area.

6.5 Stability of the Slope.

Simple slope stability analysis indicates that the site is quite stable and no rapid movements of the soil mass are expected.

6.6 Unit Weight of the Sub Soil.

The average unit weight of the soil throughout the overburden under the saturated condition can be considered as follows.

Very loose / medium stiff soils :	1.6 Tons/m ³ .
Dense - very dense / stiff - very stiff:	1.75 Tons/m ³ .
Very dense - ex dense / very stiff - hard :	2.0 Tons/m ³ .

Conclusion & Recommendations.

1. The locations of the test points are given under Annexure A to the Report, as Figure 1.
2. The soil / rock profiles of the test locations at site are given as BH logs under the Annexure B to the Report.
3. The results of the laboratory tests are enclosed under the Annexure C to the Report.
4. The geotechnical model of the soil overburden, on which the ABC values are evaluated, is given in Table No. 4.
5. The allowable bearing capacity for shallow elevations of the sub soils in the Site are given in the Table No. 5 and 6.
6. The other necessary strength parameters of the sub soils are given in Table No. 7
7. The ABC and the ultimate skin friction of the bedrock at the Site area is given in Table No. 8.

Table No. 4: Strength Properties of Subsoils

BH No.	Layer No.	Depth (m)		Ø (Deg)	C (kPa)	FF	EM (kPa)	Earth Pressure Factors			MSR (V) (Kg/Cm)	Unit Skin Friction (kPa)
		From	to					Active	Passive	At rest		
BH 1	1	0.00	2.00	30.0	5	1.50	12,500	0.279	4.780	0.500	6.0	10
	2	2.00	9.15	36.0	0	2.00	20,000	0.235	7.440	0.750	15.0	75
BH 2	1	0.00	0.95	30.0	0	1.50	19,000	0.279	4.780	0.500	3.7	25
	2	0.95	17.50	31.0	25	1.75	10,800	0.274	5.157	0.600	7.0	0
	3	17.50	24.55	36.0	0	2.00	20,000	0.235	7.440	0.750	15.0	75
BH 3	1	0.00	3.50	25.0	5	1.00	6,400	0.361	3.480	0.400	1.5	5
	2	3.50	7.65	28.0	10	1.25	6,600	0.316	4.207	0.550	4.5	10
	3	7.65	13.60	35.0	0	1.75	13,800	0.245	6.930	0.700	12.0	50
BH 4	1	0.00	2.00	28.0	5	1.25	9,275	0.316	4.207	0.550	2.2	15
	2	2.00	7.60	27.0	5	1.10	4,500	0.334	3.920	0.600	2.5	5
	3	7.60	9.50	31.0	25	2.00	16,500	0.274	5.157	0.600	15.0	25
BH 5	1	0.00	1.50	28.0	0	1.50	16,500	0.316	4.207	0.550	2.9	15
	2	1.50	3.00	28.0	10	1.25	10,000	0.316	4.207	0.550	3.5	10
	3	3.00	3.50	30.0	0	1.75	9,000	0.279	4.780	0.500	6.5	10
	4	3.50	5.75	30.0	25	1.75	8,100	0.279	4.780	0.500	6.0	5
	5	5.75	6.90	35.0	0	2.00	14,400	0.245	6.930	0.700	12.0	25
	6	6.90	13.60	35.0	25	1.50	8,100	0.245	6.930	0.700	6.0	15
BH 6	1	0.00	1.45	28.0	0	1.25	15,000	0.316	4.207	0.550	2.3	15
	2	1.45	7.90	28.0	10	1.25	5,400	0.316	4.207	0.550	4.5	5
	3	7.90	11.50	30.0	25	1.75	9,300	0.279	4.780	0.500	6.0	10
	4	11.50	17.00	34.0	0	2.00	16,500	0.254	6.420	0.700	15.0	25

ABC Allowable bearing capacity
 Ø Angle of internal friction
 C Cohesive strength
 FF Friction factor against Concrete surface
 EM Elasticity modulus
 MSR Modulus of subgrade reaction
 (Angle of Internal friction of effective angle in case of sands and total angle in case of clays)

- 13 -

- 8. Shallow type of foundations can be considered for the proposed structures depending on the loading conditions of the structures.
- 9. The unit weight of the sub soil is given in Par 6.6.

S. K. Jayawardana

S. K. Jayawardana
BSc.(Hons), MSc., CEng.(Lond), MIMM(Lond).

15.11.2017

Date

**ANNEX 10: SUMMARY OF STAKEHOLDER CONSULTATION MEETING
(HELD ON UNIVERSITY OF SRI JAYEWARDENEPURA, SRI LANKA)**

Date – 17th May 2018. **Time** – 2.15 Pm – 04.00 Pm.

Location – Faculty of Graduate Studies, University of Sri Jayewardenepura.

Invitees: Government officer & Private Sector representatives

- Mr. Sugath Pemasiri the Deputy Director of Planning Department in UDA
- Miss Sujeewa Samarathna Director Engineering in Consultancy Department in UDA
- Mr. K.P.I.R. Perera Deputy Director of RDA
- Mr Rohan Senanayake Project Director of Ministry of Megapolis
- Miss. Buddhi Tharanga Karunasena and R.M.B. Rajapaksha from Homagama DS Office
- Mrs. Nadeeka Nelum Kumari Technical Officer from Homagama Pradeshiya Sabha
- Mrs. K.L. Nilani Liyanage from the Kahathuduwa agrarian center
- Mr. B.M.A. Bandara S.P.H.I. from Kahathuduwa M.O.H. Office
- Mrs. K.L. Olaboduwa GN Officer of Maththegoda West
- Mrs. P. Manjula Development Officer from Development Officer's Office in Maththegoda West
- Mr. Rumindu General Manager of the Prime Lands (Pvt) Ltd.
- Mr. Anura Chief Assistant of the Prime Lands (Pvt) Ltd

University of Sri Jayewardenepura Representatives

- Professor Sampath Amaratunga Vice Chancellor
- Dr. S.A.A.M. Subasingha Dean of the Faculty of Engineering
- Dr. K. M. C. Konthesingha Head of the Department of Civil Engineering
- Dr. C. de Alwis Head of the Department of Electrical and Electronic Engineering
- Dr. M. Mohamed Head of the Interdisciplinary Studies
- Ms. Damayanthi Pemasiri Legal Officer of UOSJP

Student representatives

- B.M.T.M. Bandara
- D.C.P.V. Jayasooriya
- G.D.N. Wickramarathna
- R. Tenaransl
- N.P.I.M. Samaranayake
- R.J.T. Nishavi
- M.B. Dinesha
- H.A.D.T.N.S. Hathurusingha
- R.G.L.R. Bandara
- K.H.R. Fernando
- C.N.J. Samaranayaka
- K.A. Apsara Shalindi

Representation from the Community

- Sugathananda thera from Sri Jayasumanaramaya Maththegoda
- D.K. Udawatta

- K. Malinga
- E.A.D. Ajith Priyantha
- S. Amarathunga (Welfare Society)
- B.M. Balasooriya
- Sirima Hettiarachchi
- T.W. Wimalasiri
- P.T. Perera
- H.A. Samantha Jayalath
- P. Rasika Tharanga
- E.B.O. Jagath
- K.N. Ajith Amarasingha
- E.A.D. Pushpa kumari
- Hemapala Alwitigala
- B. Somapala Munidasa
- D.S. Perera
- R.A.C. Priyadarshani
- Padma Malani Hewagama
- P.S. Kaushalya Perera

Consultant firm representatives

- Director of TMS Company – Dr. Sithara Atapattu
- Environmental Compliance Consultant ADB – Charmini Kodituwakku
- Project Administrative Officer – Champika Priyadarshani

Matters Presented at the Meeting

- a) Good introduction about the University of Sri Jayewardenepura, Sri Lanka with historical context.
- b) Brief introduction presentation about the Faculty of Engineering and the proposed Faculty design was provided.
- c) Discussion within the Stakeholders

Section (a) was presented by Professor Sampath Amaratunga, Vice Chancellor of the University of Sri Jayewardenepura, Sri Lanka. Section (b) was presented by Dr. S.A.A.M. Subasingha who is Dean of the Faculty of Engineering. Section (c) was started by Dr. Sithara Atapattu and joined by Mrs Charmini Kodituwakku, ADB safeguards consultants.

Method of information dissemination and collection:

- Notes were taken on the discussion
- Discussion made as round table and the hall discussion

Common issues and concerns raised at public consultation meetings

Dr. Sithara Atapattu started the meeting by appreciating the efforts made to ensure a very successful and representative turnout of stakeholders. She then requested all participants to be open and to put any issues on the table. She explained the purpose of the meeting being as a forum where we all sit together and resolve any issues so that we can move forward together.

Dr Sithara asked after the design of the development. Dr. S.A.A.M. Subasingha replied that now they have only a conceptual design, but it is still not finalized. He informed that ADB will give a consultant from Singapore who will help with the final plan and design according to the requirements.

1. Mrs. Charmini asked about the Green Building Certificate. Dr. S.A.A.M. Subasingha said that they have sent the filled application and when start the 2nd phase of designing, they can go for a Green Building Certificate.
2. Mrs. Charmini asked if there are any issues/problems for the Homagama Pradeshiya Sabha regarding this project and they replied as none. Mr. Sugath Pemasiri, the Deputy Director of Planning Department in UDA said that when approving a project of this nature, UDA will decide the requirements and application of approval should come through them and then they will direct to any other relevant authorities for clearances. The Green Building certificate is awarded by UDA as well he added.
3. Mrs. Charmini mentioned that there was a bit of confusion on the status of approvals as this project already has approval from the Ministry of Megapolis and Western Development. Then, is it necessary to get approval from UDA also? Project Director of Ministry of Megapolis, (Mr Rohan Senanayake), said according to the Megapolis plan for the project area was identified for residential purposes, but since this was a national requirement, approval was given to establish the Faculty here. However, the University needs to go ahead with the approvals through UDA.
4. Miss Sujeewa Samarathna, Director Engineering in Consultancy Department in UDA said to make an initial application for clearance and thereafter they would provide the guidelines and other requirements that would have to be followed
5. Dr. Sithara said that under normal conditions a construction of this nature does not require IEE/ EIA under the local regulations. But in securing ADB financing, any form of construction will require atleast an IEE.
6. Mrs. Charmini said that it is the university should initiate the clearance process with UDA without delay. She also asked about how the foundation would be according to the soil report. Dr. S.A.A.M. Subasingha said currently they decided 8m for the foundation.
7. Mrs. Charmini asked after the plan to manage the wastewater and solid waste disposal of the faculty. Dr. S.A.A.M. Subasingha said that they going to establish a wastewater treatment plant and also, they are going to have renewable energy at the 2nd phase (such as solar & wind).
8. Mrs. K.L. Nilani Liyanage, officer from Agrarian Services said that a reservation has to be kept alongside the paddy field when constructing the Faculty. Solid waste should not be disposed to the paddy lands. She also said that the university needs to get an approval from the Colombo District office of Agrarian Services regarding water discharge.
9. Mrs. Charmini asked as to how much paddy is there in the surrounding area. Mrs. K.L. Nilani Liyanage responded that there are 10 Acres of paddy lands immediately near the

boundary of the site which part of a larger 40acre system. At the moment paddy is cultivate upstream of the middle canal area (Mada Ella).

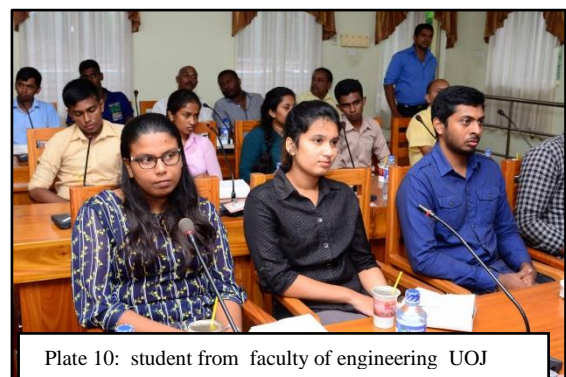
10. Dr. Sithara asked if the University has discussed with the Local Authority about the solid waste collection. Dr. S.A.A.M. Subasingha said not yet.
11. Mrs. Charmini asked from Prime Lands whether there is a drainage plan for the drainage of rainwater for the adjoining land plots. Mr. Rumindu, General Manager of the Prime Lands (Pvt.) Ltd, said that there is a drainage plan within the 5acres they developed. There is a drain that is built by the Homagama Pradeshiya sabha which also goes through the University land and finally drains to the paddy field.
12. Mrs. Charmini asked from the University what the anticipated positive impacts would be. Dr. S.A.A.M. Subasingha answered that there will be a lot of job opportunities such as boarding places, bookshops, food stalls, grocery shops and etc. Currently, in this Campus there are 1600 of students and approximately 700 – 800 students are boarded in surrounding houses etc. Professor Sampath Amaratunga added further details to this discussion and he said that they can open up new job opportunities for surrounding people in several ways. As example he said that they could offer the the three-wheelers near to the university premises with some permits or certificates. This will ensure the safety of the student and provide an employment opportunity for the villagers That way the residents in the area get a chance for hiring three-wheelers. The drivers who having the three-wheelers can registered with the university. That is one example of job opportunities.
13. Professor Sampath Amaratunga also said because of the high number of students coming to the faculty, the local residents can provide boarding places and food outlets. He said that they already have rented 44 houses in the current campus location paying higher than normal rents. If the residents request for jobs from university or the faculty, then they can arrange those job opportunities also when vacancies come up (nonacademic staff). Even at the Campus at Wijerama, previously there were some problems between the university and the residents. He added that these problems were resolved. Dr. S.A.A.M. Subasingha added that for service sector such as security and janitorial local people will be recruited.
14. Mrs. Charmini asked the residents close to the proposed area to speak up. The nearest resident who are living next to the land boundary Mr. K.N. Ajith Amarasingha and his wife Mrs. E.A.D. Pushpakumari got the chance to deliver their ideas. Mr. Ajith said that the Prime Lands (Pvt.) Ltd. has granted a land for them. But still they didn't start the construction because of the economic difficulties they are facing. And he said if the government will help to build their house in new place which is granted from Prime Lands, then they can move to the new place quickly. Till then they requested for electricity and water on a temporary basis at the current location.
15. Dr Sithara pointed out that they will have to move soon as they will not have access once the University puts up the boundary wall. Otherwise this is the forum to discuss and figure out how we move forward.
16. If the university constructs a wall, then Mr. Ajith said he will not have road for access. So, they said that they need nearly 01-year time period to settle down at the new place.

Because of that reason they requested a road currently for their access if not they requested for economical help from the university to settle in new place.

17. In that situation Mr. Rumindu the General Manager of the Prime Lands (Pvt.) Ltd. they had granted both the occupants a land with title deeds. Both these families were awarded SLRs 500,000, This 05 lacks was granted to Mr. Ajith towards building their new home by Prime Lands Finance. The other family in the adjoin house was also granted the same compensation.
18. Professor Sampath Amaratunga said that if they are not going to move out soon, the University will give a foot path for access. Then Mr. Ajith can return the land given by Prime lands and the SLRs. 500000 that was given by the Prime Lands Finance.
19. Mr. Rumindu pointed out that the current land that Mr. Ajith is living in does not belong to him whereas the land which Prime Lands granted will have his ownership. Mr. Ajith then agreed with Mr. Rumindu and he agreed to settle down in new granted land.
20. Professor Sampath Amaratunga said that he and the students in the Engineering faculty will help Mr. Ajith at least to supply the building materials such as cement, sand and etc. He said they can provide further assistance to build the house with 02 bedrooms, bathroom and kitchen, within 06 months. In the meantime, he said that they would arrange a house for leased accommodation for the six months until construction of the new house. But he said that all this was only possible if Mr Ajith agreed to move within two week.
21. Mr. Ajith thanked Prime Lands and the University for the generous offer and he agreed to move from the current location within 2 weeks.
22. Mrs Charmin asked from the student whether they would have any grievances that they would like to share Mr. R.G.L.R. Bandara (2nd year student of Faculty of Engineering) said that currently they haven't got enough space for their academic work Currently there are 240 students and at the end of this year another 120 will be admitted to the Faculty of Engineering. He said that with the volume of students there is a resource constrain of laboratory etc. So, he urged that the new development process is initiated. Currently there are 240 students and end of this year (2018) there will be another 120 students for the Faculty of Engineering. There is a lack of resources and laboratories. So, he requested to start new development as soon as possible.
23. Then the president of the Dayaka Sabha of the Ali Dena Temple (local Temple) said that it is good project that the Faculty is coming to their area. He feels it will contribute to the progress of the temple also. For the progress of the temple he hopes that the Faculty will help, and he was very happy about the Faculty coming in soon. On behalf of the community he pledged his fullest support.
24. Mr. B.M.A. Bandara, S.P.H.I. from Kahathuduwa M.O.H. Office said there were no extraordinary issues associated with the area. But there can always be issues once construction starts, but that will have to be monitored at that time. Main cause for concern is Dengue with water collection due to various construction activities.

25. Mrs. Charmini pointed out that in final part of the IEE, the EMP warrants environmental monitoring. This will help minimize the impact on the environment and avoid and health and social issues.
26. Professor Sampath Amaratunga pointed out that the University can offer community intervention through the medical faculty at the university. He pointed out the university had a department specially devoted for community medicine and there was specialist in dengue studies. He said that already the university is assisting the community at Gangodawila with their health by organizing health camps. Furthermore, he mentioned that there were two P.H.I. officers dedicated to the University of Sri Jayewardenepura, Sri Lanka. There are several doctors dentists, psychiatric doctors, infectious diseases doctors, etc within the university who can be engaged for assistance. He also said that the University is carrying out a mini-hospital for the villages. He said that these services will be extended to the new Faculty as well...
27. Dr. Sithara Atapattu brought up the need to keep a fund for the environmental and social monitoring work during construction and implementation. She said that there will be cost of transport, holding stakeholder meetings, carrying out water quality, air quality, noise testing, etc. The reason is when doing the environmental monitoring they have to visit once in two weeks. To check the environmental parameters, they can use inhouse capacity if available (cheaper option). Dr. S.A.A.M. Subasingha agreed to that idea.
28. The Mrs. K.L. Olaboduwa who is the GN officer of the Maththegoda West GN division said that land is located in her GN divisions and the resident houses to be shifted is in Kithulahena GN division (overlooked by another officer) who was not present at the meeting.
29. Miss Buddhi Tharanga Karunasena representing the Homagama DS office said that they have to be provided with all the information on compensation by Prime Lands for the land acquisition process. And also, she requested the University respond promptly to any issues that crop up as all complaints usually come there during construction activities. Issues could be related to dust, noise and etc.
30. Meeting was ended and Professor Sampath Amaratunga gave the vote of thanks to all the participants.





THE KEY INFORMANT MEETING

Report: On 1st of June 2018 at 12.00pm Mrs. Charmini contacted the Mrs. Nilanthi Agrarain services officer assigned to the area. She pointed out that as a result of the land development activities by Prime Land there was considerable amounts of soil being washed on the sloppy terrain to the middle canal in the paddy fields. Due long-term soil erosion the canal is shallow and needs proper maintenance or else it will flood. She requested the university authorities contact assistant commissioner Department of Agrarian services and request to demarcate the reservation limits for the building and the boundary wall. She said that the areas covered by the Middle canal (Mada ella) is about 40 acres and the paddy field were under 30 owners. There was no state land. Therefore, waste water disposal at the university premises would have to be regulated and treated before discharged or else it may impact the agrarian system downslope.

On 4th of June 2018 at 1.00pm Mrs. Charmini contacted the **Grama Niladari Mrs. Damayanthi** who oversees the Kirigampamunuwa Land. She informed me that Mr. Ajith Amaersinghe at No 12/A Kithulaheana has already made steps to move from the premises and was happy with the settlement. However, she said that Mr. Wasantha who is a resident of No 519/1 Kithulahena who has an ownership over the land is not willing to leave. She said that he is a drug addict who is not willing to leave the house despite the compensation offered by Prim Land. Therefore, she informed that the university will need to take measures to evict him.

Invitation letter of the Stakeholder meeting

Office of the Dean
Faculty of Engineering
University of Sri Jayewardenepura



10/05/2018

Eng. Sumedha Rathnayaka
Urban Development Authority
6th Floor
Sethsiripaya
Battaramulla

Dear Sir

Stakeholder Consultative meeting for the proposed Engineering Faculty building complex at University of Sri Jayewardenepura

This has reference my letter dated 08th May 2018 on the above Subject.

I regret to inform you that the Stakeholder meeting has been postponed to the 17th May 2018 @ 02.00PM due to unavoidable circumstances.

I sincerely apology for the any inconvenience caused.

Your presence for the above meeting is highly appreciated

Thank you,

A handwritten signature in black ink, appearing to read 'Subasinghe'.

Dean
Faculty of Engineering

Dr. S. A. A. M. Subasinghe
Dean
Faculty of Engineering
University of Sri Jayewardenepura

No 41, Lumbini Avenue, Ratmalana, Sri Lanka.

Email: dean_foe@sjp.ac.lk

Tel: +94 11 273 1581

Fax: +94 11 273 1582

Stakeholder Meeting - 17th May 2018
Faculty of Engineering
University of Sri Jayewardenepura

No.	Title	Name	Designation	Work Place	Address	Telephone No (Office)	Telephone No (Mobile)	E - mail Address
41.	Additional officer	Damayan Pees	Legal Officer	Uypp		-	0718 265987	
42.								
43.								
44.								
45.								
46.								
47.								
48.								
49.								
50.								

ඉංජිනේරු පීඨය ඉදිකිරීම සම්බන්ධ සාකච්ඡාව - 2018/05/15

ඉංජිනේරු පීඨය
ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලය

අ.න. අංක	නම	ලිපිනය	දුරකතන අංකය (ස්ථාවර)	දුරකතන අංකය (ජංගම)
21.	D.K. Madawatha	No-166/1, Dehamawantho mottige	011-2781615	
22.	K. Maliniga	No 107/1 "	011278267	
23.	F.A.D. අර්ථ දැක්වීම	240/3/B මන්නෙරම් මාර්ග	0115346394	0715346394
24.	සුනාමිබල සවිභවය	මන්නෙරම් මාර්ග		
24.	සුනාමි, 426 වන	121/11 මාතලේ මාර්ග, මන්නෙරම්	0112178759	
25.				
26.				
27.				
28.				
29.				
30.				

ඉංජිනේරු පීඨය ඉදිකිරීම සම්බන්ධ සාකච්ඡාව - 2018/05/15
 ඉංජිනේරු පීඨය
 ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලය

අනු. අංක	නම	ලිපිනය	දුරකතන අංකය (ස්ථාවර)	දුරකතන අංකය (ජංගම)
11.	වි. දිසානායක	නො: 100/1, මහලොහොට	0771022157	
12.	කි. පී. එම්. චන්දනාචාර්ය	144/16, මන්නාරම	0718387112 0477950850	
13.	ඒ. ඩබ්ලිව්. චන්දන	137/12, මල්වත්ත, මන්නාරම	0112847197	
14.	පී. ජී. චන්දන	137/2/බී, මල්වත්ත, මන්නාරම	0771256757	
15.	H. A. මහේෂ්වරයා	N0131 මන්නාරම නිවුස්ටන්	0112845605 07719206529	
16.	P. ජයවර්ධන	228, මන්නාරම මාර්ගය	0716396657	
17.	F. G. S. Jayath	132 Mattegoda rd Mattegoda	0773484744	
18.				
19.				
20.				

ඉංජිනේරු පීඨය ඉදිකිරීම සම්බන්ධ සාකච්ඡාව - 2018/05/15
 ඉංජිනේරු පීඨය
 ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලය

අනු. අංක	නම	ලිපිනය	දුරකතන අංකය (ස්ථාවර)	දුරකතන අංකය (ජංගම)
01.	කේ. එම්. ජයවර්ධන	12/A, බෙල්ලොව, කිතුල්හේන, මන්නාරම	077181036	0112842192
02.	ඊ. එම්. ජයවර්ධන	12/A, බෙල්ලොව, කිතුල්හේන, මන්නාරම	0775276341	
03.	K. L. චන්දන	මුලතිව් මාර්ගය, 587 මන්නාරම මාර්ගය, මන්නාරම	077134	0713491925
04.	P. චන්දන	සන්නාරම මාර්ගය, 587 - මන්නාරම		071-8223829
05.	චන්දන චන්දන	මන්නාරම මාර්ගය, මන්නාරම	0775224887	
06.	චන්දන චන්දන	මන්නාරම මාර්ගය, මන්නාරම	0772783286	
07.	චන්දන චන්දන	මන්නාරම මාර්ගය, මන්නාරම		0726857954
08.	R. A. C. චන්දන	114, මන්නාරම මාර්ගය, මන්නාරම	0112781419	0714125998
09.	චන්දන චන්දන	මන්නාරම මාර්ගය, මන්නාරම		
10.	චන්දන චන්දන	මන්නාරම මාර්ගය, මන්නාරම	0774-62060	


ඉංජිනේරු පීඨය ඉදිකිරීම සම්බන්ධ සාකච්ඡාව - 2018/05/15

ඉංජිනේරු පීඨය
ශ්‍රී ජයවර්ධනපුර විශ්ව විද්‍යාලය

Students.

අනු. අංක	නම	ලිපිනය	දුරකතන අංකය (ස්ථාවර)	දුරකතන අංකය (ජංගම)
41.	R. G. L. සේනාරත්න	7/0/1, ආලෝකයාගේ පාර, කොළඹ 05.	038-2289341	076-9611941
42.	K. H. R. Fernando	167/14, ත්‍රිලිංගර හන්දල පාර, කලුතර, කොළඹ 05.	011-2516007	0771984382
43.	C. N. J. ඉමරනසිංහ	4-16, ඔක්කලමල්ල, මොණරාගල	033-2289812	0775998094
44.	K. A. අමරසේන ආලික්ඛි	නො: 147, බියගම පාර, පිටිය, කලුතර	011-2916243	0717095596
45.				
46.				
47.				
48.				
49.				
50.				

ANNEX 11: MEGAPOLIS APPROVAL LETTER

	<p>මහානගර හා බස්නාහිර සංවර්ධන අමාත්‍යාංශය பெருநகரம் மற்றும் மேல் மாகாண அபிவிருத்தி அமைச்சு MINISTRY OF MEGAPOLIS & WESTERN DEVELOPMENT</p>		
මගේ අංකය எமது இல My Ref	MMWD/MPD/CCEM	ඔබේ අංකය உமது இல Your Ref	දිනය திகதி Date
			30.08.2016

Secretary
 Ministry of Highways & Higher Education

Land for Proposed Engineering Faculty of the University of Sri Jayewardenepura


This has reference to the minutes of (no.10/08/2016/18) Cabinet Committee on Economic Management Meeting held on 10th August 2016 regarding the above.

In term of the Western Region Megapolis Master Plan, the zone in which the land under reference is located in a core area where high density residential & related activity affiliated to the university is allowed for development.

Accordingly this Ministry has no objection for the University of Sri Jayewardenepura to pursue with the proposal of establishing their Engineering Faculty in the said land in compliance with the above.

Madhawa Waidyaratna
 Additional Secretary
 For Secretary

Cc: Vice Chancellor, University of Sri Jayewardenepura - f.i.pl



ලිපිනය, 17 මහල, බණ්ඩාරනායක E-mail : megapol17@mah.gov.lk කොළඹ, 17 වන මහල, බණ්ඩාරනායක	දුරකථන } 0112864770 தொலை பேசி } 0112864447	ෆැක්ස් } 0112871394 தொலை நகல் }
--	---	------------------------------------

ANNEX 12: COMPLAINTS FORM

Sample Grievance Registration Form (To be available in Sinhala and English)

The _____ Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date	Place of registration	Project Town Project		
Contact information/personal details				
Name	Gender	* Male *Female	Age	
Home address				
Place				
Phone no.				
E-mail				
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:				
How do you want us to reach you for feedback or update on your comment/grievance?				

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)		
Mode of communication: Note/letter E-mail Verbal/telephonic		
Reviewed by: (Names/positions of officials reviewing grievance)		
Action taken:		
Whether action taken disclosed:	Yes No	
Means of disclosure:		

ANNEX 13: TERMS OF REFERENCE FOR ENVIRONMENT SAFEGUARDS CONSULTANT

Project	SRI 50275-002: Science and Technology Human Resource Development Project
Professional Group	C
Job Level	5
Expertise	Environmental Management
Expertise Group	Environmental Science, Environmental Management, Natural Resource Management
Source	National/International

OBJECTIVE AND PURPOSE OF THE ASSIGNMENT

The Science and Technology Human Resource Development Project in Sri Lanka is being proposed for Board approval in September 2018. During implementation, technical support is required in ensuring safeguards policy compliance in preparing environmental monitoring reports for the 4 universities. The Environmental Safeguards Specialist will provide support in ensuring that the Project complies with ADB's Safeguards Policy Statement, 2009 (SPS) for environmental safeguards, and national laws and regulations.

SCOPE OF WORK

During implementation, the Specialist will support executing and implementing agencies (EA/IAs) and their project implementation units (PIUs) in preparing environmental monitoring reports in accordance with categorization based on SPS. The Specialist will review compliance with IEE and its EMP with ADB's Safeguards Policy Statement, 2009 (SPS) for environment safeguards and national laws and regulations. The Specialist will guide the EA/IAs in incorporating the EMP, IEE, and relevant environmental clauses in bidding documents.

The Specialist will monitor EMP implementation ensuring compliance with SPS; loan agreement; and national laws and regulations. The Specialist will guide EAs/IAs in conducting monitoring, conduct verification of monitoring reports—and provide reviewed reports to ADB. The Specialist will revise the monitoring reports, as necessary. Based on the Project Administration Manual, monitoring will be done on a semiannual basis during construction phase and annually during construction phase.

DETAILED TASKS AND/OR EXPECTED OUTPUT

The Specialist will carry out the following tasks:

1. Conduct tailored capacity building training sessions on environmental safeguard for PIUs, university staff and contractors and prepare guides/forms/training proceedings to ensure EA/IAs comply with the SPS, and national laws and regulations. Documentation will be included in monitoring reports.
2. Guide the EA/IAs in updating existing IEEs: based on detailed design and/or due to any change in design, location, alignment, unanticipated impact/s identified during project implementation) as required, including leading its preparation in the initial stages of project implementation to ensure that EA/IAs are compliant with the PAM, SPS, loan agreement, and national laws and regulations.
3. Guide EA/IAs and ensure that environmental safeguards are incorporated in bidding documents in accordance with the loan agreement and SPS.
4. Guide the EA/IAs in determining compliance with the loan agreement with regard to

ensuring contracts and contract award. The Specialist will devise a checklist for EAs/IAs and their PIUs to ensure subprojects comply. The documentation will be included in monitoring reports.

5. The Specialist will conduct field visits for subproject sites/locations verification, discussions with PIUs, technical experts, design and supervision consultant, other consultants, and/or design engineers.
6. The Specialist will guide EA/IAs and their consultants in conducting monitoring, conduct verification of monitoring reports—and provide reviewed reports to ADB. The Specialist should ensure that monitoring reports provide detailed information, flag non-compliance including any safeguards related grievances, and recommend corrective actions agreed by the EA/IAs.
7. Prepare environmental awareness materials and organize environmental awareness workshop/training for EAs/ contractor/community.
8. Perform other activities as required by ADB, EA/IAs on mutually-agreed arrangements.

Reporting

The Specialist will report directly to the ADB in RM/HQ counterpart. The consultant will provide direct support to relevant EA/IAs and their PIUs, including design and supervision consultants. Overall framework and direction will be provided by the ADB project officer in consultation with the EA/IAs, PIUs, and other government officials. The Specialist is expected to perform independently and take initiatives to inform or consult with the ADB project officer on problem areas and major constraints, and ways forward to achieve intended objectives of the assignment.

Minimum Qualification Requirements

Master's degree in Environmental Management, Natural Resources Management, Engineering, or related field with at least 10 years' experience in environmental safeguards, particularly preparation of Initial Environmental Examination (IEE) and Environmental Management Plan (EMP). Good understanding of ADB and Sri Lanka's environmental policies and legislation. Past experience in safeguards work with ADB or World Bank projects preferable. Experience on environmental management of education projects will add value.

Minimum General Experience: 15 Years

Minimum Specific Experience: 10 Years
(relevant to assignment)

Regional/Country Experience: Required

Deliverables

The Specialist will provide ADB with the following documents:

1. Inception Report and Timebound Work Plan;
2. Updated IEEs, as necessary;
3. Environmental awareness materials;
4. Verified monitoring reports; and
5. Training plan and training materials.

ENVIRONMENTAL MANAGEMENT PLAN

Activity Title: Proposed Faculty of Engineering Building Complex of University of Sri Jayewardenepura, Sri Lanka, Mattegoda West.

District: Colombo

Local Authority: - Homagama Pradeshiya Saba

Implementing Partner: Ministry of Higher Education and Cultural Affairs /University of Sri Jayewardenepura, Sri Lanka.

Issue for concern	Environmental Impact	Mitigation measure(s)	Monitoring indicator(s)	Responsible party (ies) I-Implement M-Monitoring	Funds for Implementing Mitigation Measure	Time Frame
PLANNING						
Clearances for the project	<p>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.</p> <p>Site is bordering paddy land, so unregulated and untreated waste water may degrade the habitat.</p>	<p>Obtain clearances and approvals before commencement of construction:</p> <p>(a) Ministry of Megapolis and Western Development</p> <p>(b) UDA –will guide to other necessary agencies. Green Building application also be carried out through them.</p> <p>(c) Homagama Pradehsiya Saba</p> <p>(d) Department of Agrarian Services for release of water to paddy fields.</p>	<p>Clearance obtained from the relevant authorities. Green Building Application process commenced with availability of guidelines.</p>	PIU(I)	Project cost	Before construction
Structural considerations for sustainability of project.	<p>Lack of sufficient planning to assure long-term sustainability of the improvements and ensure protection of the Faculty.</p>	<p>(a) Findings of geotechnical investigations should be considered in building design (carrying capacity, skin friction, etc).</p> <p>(b) Incorporate Green Building Design.</p>	<p>Verification of the design parameters Geo technical and topography report in place</p>	PIU (I)	Project cost	Before construction

Utilities	All utilities such as water and electricity are in place, so no disruptions expected regarding those.	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.	Contingency plan for services disruption.	PIU (I&M) Contractor (I)	Contactora	Preconstruction
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/PMU (M & I)	Project cost	During Preparation of IEE report. Once in 6 months during construction .
Disaster management	Extreme climate events such as intense rainfall (flooding), cyclone 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 and stairways in the building in case of fire or another emergency. (c) An emergency alarm system has to be in place in all the buildings.	Disaster Management Plan in place for the Engineering Faculty.	PIU (M) Contractor (I) Maintenance	Project cost	Before construction
Loss of access	Once boundaries of the Faculty premises are secured, there will be loss of access to 2 low income temporary households situated outside of the premises.	(a) Households should be relocated, or alternative access provided. (b) Establish and secure periphery boundaries at the onset.	Letters of acceptance of resettlement. Review of IR DD Report.	Prime Lands (I) PIU (M)	Prime Lands and SJP welfare project.	Prior to construction .

DESIGN

<p>Integration of energy efficiency and energy conservation programs in design of project components. Noncompliance of green building guidelines</p>	<p>Unsustainable, energy inefficient, and uneconomical unviable building 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.</p>	<p>The detailed designs for the project should ensure environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc.:</p> <ul style="list-style-type: none"> - 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. 	<p>Specifications for rain water harvesting structures, electrical fixtures, details of water heating system Observations Check whether energy efficient lighting systems are installed</p>	<p>PIU (I) Project Architect/engineer.</p>	<p>Project cost</p>	<p>During finalization of detailed designs of the buildings PMU</p>
<p>Solid and liquid waste</p>	<p>Lack of properly designed disposal mechanisms for solid and liquid waste may lead to contamination of surface and ground water resources</p>	<ul style="list-style-type: none"> (a) Design and develop a solid waste management plan. (b) Incorporate solid waste storage area in the plan. (c) Consult CEA on Pilisaruru program on composting inhouse. (d) Design a waste water treatment plant. Wash water recovery technologies for the WTP to reduce effluent to be discharged should be considered. Wastewater treatment plant should be able to accommodate the waste generated for about 1700 persons. (e) Design and maintenance of the suitable sewerage system taking into account ground water table. 	<p>Review waste disposal plan. Review of the waste water treatment system and sewerage system designs. ADB approval obtained. Agreement reached with Local Authority on solid waste disposal.</p>	<p>PIU (M & I) Design architect (I)</p>	<p>Project cost</p>	<p>During finalization of detailed designs of FT buildings Before construction</p>

Safety of students and academic staff	Lack of safety measures within the design will lead to fire and increase occupational safety hazards during operation of laboratories, etc.	<ul style="list-style-type: none"> a) Plan for fire extinguishers, fire alarms and a staircase for emergency evacuations. b) Necessary cut-off switches and other safety measures incorporated into the design of especially the laboratories and workshops. 	Review of design plans for fire and operational safety.	PIU (M) Architect/Project engineer.	Project cost	At design stage and during construction .
Degradation of agrarian system	Since the land borders an agrarian system, construction activity and operation may lead to further deterioration of the system.	<ul style="list-style-type: none"> (a) Habitat enrichment should be adopted according to landscape design. (b) Use native trees and shrub species in the landscape design. 	Incorporated in design plan.	PIU/PMU (M) Landscape architect (I)	Project cost	Annually
CONSTRUCTION PHASE						
Site Clearance 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. (Current site was already cleared upon purchase of land.) Excavation activities may unearth "chance finds" that may have archaeologically or otherwise significant value.	<ul style="list-style-type: none"> (a) Permanent and temporary work should be undertaken to control soil erosion, sedimentation and water pollution. (b) Use of silt traps and erosion control measures close to water bodies is also necessary. (c) Construction activities including earth work and construction of cross drainages should be conducted during the dry season. (d) Follow ICTAD guidelines. (e) In event that a "chance find" is uncovered, all work should be stopped and site in-charge informed. He/she shall immediately inform the Department of Archaeology and the nearest police post if thought necessary. 	Site observation and reporting	PMU(M) Contractor (I) Project site Engineer from the Building Department (I)	Contractor cost	Weekly during construction

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 of the bordering wetland. Noise generated from construction vehicles, equipment, and vehicle traffic has the potential to disturb breeding, foraging, and migrating behavior of wild species	(a) Awareness programs should be organized for the workforce about the importance of the ecology of the wetland. (b) Contractor should especially be aware not to introduce any alien species during construction related activities. (c) Saplings for tree planting program should comprise of native species. Please get advice from the Agriculture Department or Agrarian Services for compatible plants species.	Site observation and reporting Check for the CEA and Agrarian Services recommendation letters.	PIU(M) Contractor (I) Project site Engineer (I)	Project cost	During construction
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 demarcated areas for construction zone (b) Conduct base line monitoring in respect of ambient air quality, water quality, and noise levels as per monitoring plan. (c) Baseline monitoring for water quality, air quality and noise, will be audited prior to the start of construction and thereafter carried out during the life cycle of the subproject.	Records and photographs	PIU (I&M)	Project cost	Once prior to construction and thereafter quarterly.
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 amounts of Carbon monoxide, Nitrogen dioxide and particulates from construction activities and vehicles may compromise	(a) Wet down and spray water at construction site, quarries if required. (b) Dust emissions during transportation of construction materials should be controlled by enforcing speed limits on the vehicles close to site (c) Take steps to avoid dust emissions during loading and unloading of construction	Observations – controlled dust emissions. Dust screens in place. Construction material stored properly. Review air quality monitoring results.	PIU(M) Contractor (I) Air quality monitoring to be carried out by PIU.	Contactor Fee except for air quality monitoring (Project Fee)	Regularly during the construction phase. Air quality monitoring and vehicle emission test to be carried out and

	health of the workers and surrounding community.	<p>material. Tarpaulin covering is mandatory on trucks/lorries which are used for transporting materials.</p> <p>(d) All filling works are to be protected or covered in a manner to minimize dust generation.</p> <p>(e) 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</p> <p>(f) 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</p> <p>(g) The air quality monitoring will be conducted as per the plan.</p> <p>(h) The air quality monitoring will be conducted as per the plan in Chapter 9 and will follow IFC-WB EHS standards as it overrides the national standards.</p>	Review of vehicle emission tests according to the standards issues under CEA.			reviewed six monthlies.
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.	Observation	PIU(M) Contractor (I)		Weekly by Engineer

		<ul style="list-style-type: none"> (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 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) The air quality monitoring will be conducted as per the plan in chapter 6 and will follow IFC-WB EHS standards. This is in line with the SPS 2009 requirements. (f) Noise level monitoring will be carried out as per monitoring plan. 				
<p>Drinking water availability at construction camp and construction site</p>	<p>Non-availability of drinking water for labours will result in dehydration and health risk.</p>	<ul style="list-style-type: none"> (a) Sufficient supply of potable water to be provided and maintained at the site for the workers. The drinking water will be stored in a suitable size storage tank to ensure uninterrupted availability. (b) 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. (c) If tube-wells are to be bored, from the polluted water table to supply the water required for construction, a prior approval of 	<p>Water supply source and availability of water identified. Water availability plan.</p>	<p>PIU (M) Contractor (I)</p>	<p>Contractor Fee</p>	<p>Regularly during construction phase</p>

		the NWRB has to be obtained by the Contractor.				
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	<ul style="list-style-type: none"> (a) The contractor shall provide a list of locations and type of sources from where water for construction shall be acquired. (b) Water supply through NWSDB will be secured. 	NWSDB line secured Review water sourcing plan	PIU/PMU (M) Contractor (I)	Contractor fee	Regularly during the construction phase
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.	<ul style="list-style-type: none"> (a) Adequate provision should be made on site to mobilize the construction equipment. (b) Selection of land for construction material storage should be done carefully if it becomes necessary, avoiding conflict with Homagama Pradeshiya Saba approval. (c) Siting of the construction camp shall be as per the guidelines provided by ICTAD. (d) Construction camp sanitation facilities shall be adequately planned. (e) Selection of local un-skilled and skilled workers for the proposed construction activities can reduce the requirement of land for labour camps. (f) Use local materials as much as possible to reduce the need for storage space. 	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.	Contractor (I) PIU Project site Engineer (M)	Contractor	At the time of establishment of the construction camp and finalizing the storage areas.

Transport of construction material	<p>Transportation of construction materials on road network can cause damages to the access roads.</p> <p>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.</p>	<p>(a) The Contractor should obtain permits from LAs to use local roads prior to transportation of construction materials, machineries etc.</p> <p>(b) Construction materials shall not exceed the carrying capacity of the local road network.</p> <p>(c) If it is likely to cause damage to public roads, provision should be made for their repair as part of the contract.</p> <p>(d) Construction materials and machinery should not be placed in a manner that blocks any roads, paths or local accesses;</p> <p>(e) Accidents while transporting of materials should be avoided by transporting material in fully covered method.</p> <p>(f) Loading and unloading of material should be done according to proper safety guidelines.</p> <p>The above should be in line with ICTAD guidelines.</p>	<p>Check for contractors' permits from LAs to use local roads.</p> <p>Check and observe whether construction materials are carried beyond the carrying capacity.</p> <p>Observations on unloading and storage.</p>	PIU/PMU (M) Contractor (I)	Contractor Fee	During construction
On Site housekeeping	<p>Lack of solid waste, sanitation management, and storage of material on site can lead to lack of general cleanliness and impact on ecology, public health and scenic beauty.</p>	<p>(a) Pre-identified waste disposal site by the contractor should exclude areas which are close to public and sensitive environment (including adjoining wetland –paddy land).</p> <p>(b) A solid waste management plan will be prepared by the contractor in consultation with Local Authorities</p> <p>(c) Make arrangements with the local authority on disposal of solid waste generated during construction</p>	<p>Waste disposal sites identified.</p> <p>Solid waste management plan in place with storage areas identified.</p> <p>Agreement for disposal of waste with the Homagama Pradeshiya Saba in place.</p>	PIU (M) PHI (M) Contractor (I)	Contractor fee	Regularly during the construction phase (Weekly)

		<ul style="list-style-type: none"> (d) 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 (e) The environmental specialist of PIU shall approve these disposal sites after conducting a joint inspection on the site with the contractor (f) 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 (g) 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 (h) 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. Garbage bins should be provided to all workers-based camps, and construction sites. 	<p>Observation on cleanliness at the construction site.</p> <p>All construction solid waste cleared at end of construction.</p>			
<p>Occupational Health and Safety</p>	<p>Unless worker safety is complied with, it can lead to injury and other health risks.</p> <p>Absence of emergency plan may lead to death to the worker and economic cost to the project</p>	<p>(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</p>	<p>Review of health and safety plan.</p> <p>First aid available onsite (appropriately equipped).</p>	<p>PIU (M) Contactor (I)</p>	<p>Contractor fee</p>	<p>Regularly during the construction phase.</p> <p>Meetings on emergency actions to</p>

		<p>treatment will be made available for all injuries likely to be sustained during work.</p> <p>(b) Develop and implement comprehensive site-specific health and safety plan on Occupational Health and Safety</p> <p>(c) The contractor will conform to all anti dengue instructions given to him by the PHI and the PIU.</p> <p>(d) Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective goggles.</p> <p>(e) Workers engaged in welding works will be provided with welder's protective eye shields.</p> <p>(f) 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 the contractor.</p> <p>(g) 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</p>	<p>Observations on safety attire of workers. Regular jobsite safety inspections being conducted.</p> <p>Data on available personal protective equipment.</p> <p>Emergency plan for minor accidents and mishaps in place.</p> <p>Worker insurance.</p>			<p>be held once in 6 months</p>
--	--	--	---	--	--	---------------------------------

		<p>warning signs should be adopted.</p> <p>(h) 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.</p> <p>(i) First aid provisions available on site and personnel trained on use.</p> <p>(j) The construction site will be properly barricaded using barricading tapes or appropriate material.</p> <p>(k) Onsite emergency management plan will be prepared by the contractor with the consultation of the PIU.</p> <p>(l) Insurance facilities for the workers in place including indemnity.</p>				
<p>Clearing of construction camp and restoration</p>	<p>Unless site is cleared it will not be visually pleasing and would lead to health risk.</p>	<p>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 expense, to the entire satisfaction of PIU.</p>	<p>Restoration plan and records of preconstruction of temporary sites</p>	<p>PIU (M) Contractor (I)</p>	<p>Contractor fee</p>	<p>End of construction phase</p>

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.	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 plan through an approved monitoring authority.	Monitoring results and relevant standards	PIU (I) CEA/ Homagama Pradeshiya saba (M)	Project operation cost (SJP)	As per the monitoring plan
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.	Site observation of congested drains and reporting	Maintenance engineer at SJP (I) Homagama Pradeshiya saba PHI (M)	Project operation cost (SJP)	Once in 4 months
Solid waste management	Irregular collection of solid waste will increase the risk of solid waste piling up at the Faculty of Engineering premises. It can also lead to an increase in vector population and increase health risks.	(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) Have an agreement with HPS	Waste plan in place and implemented. Cleanliness and good housekeeping practices observed. Review solid waste management plan.	Homagama Pradeshiya saba (HPS) PHI(M) Maintenance engineer at SJP (I)	Project Cost (UOSJP)	Once in 3 months

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. 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.	Check the design plans for cesspits and soakage pits. Review wastewater treatment plant maintenance. Carry out water quality tests of the treatment plant effluent.	Homagama Pradeshiya Saba PHI (M) Maintenance engineer at UOSJP (I)	Project operational cost (UOSJP)	Once in 6 months or when need arises.
Sanitary facilities	Discharge of untreated or insufficiently treated sewage, and lack of maintenance of sanitary facilities may lead to: <ul style="list-style-type: none"> • Contamination of ground and surface water • 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. Approval has to be obtained from HPS. (d) Provide a suitable sump/ overhead tank, taking into account the daily requirement of water to ensure uninterrupted water supply for the sanitary facilities.	Observation on cleanliness and maintenance of sanitary facilities. Maintenance schedule in place. Continuous water supplies available in the toilets. The disposed waste water will conform to the waste water discharge standard stipulated under the SLSI and NEA.	Maintenance Engineer at UOSJP.	Project operational cost (UOSJP)	Bi-annually

Health and Safety of students:	Accidents during practical sessions in laboratories. Risk of accidental deaths due to negligence.	Train the students on occupational risk involved in handling the equipment. Train the students and teachers on managing risk and emergencies. - Provision of first aid kit and train the teachers on usage. - Emergency switches should be properly covered. - Fire extinguishers must be placed adequately, and they should be working at all times. - Discuss with RDA to place a pedestrian crossing with traffic lights to cross the Kottawa Polgasowita road.	Observations and safety reports. Pedestrian crossing and functional traffic lights in place.	RDA for pedestrian crossing and traffic light installation (I) UOSJP on the traffic light functionality. (M)	UOSJP operational cost or RDA cost for placement of pedestrian crossing and traffic lights.	Annually
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 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	UOSJP and the suppliers of the renewable energy systems (I)	UOSJP operation cost	During the entire operational phase
Onsite emergency plan for accidents and disaster management plan.		(a) The Faculty should have 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 and cyclones.	On site emergency plan and disaster management plan documented and in place.	UOSJP (I)	Project operational cost (UOSJP)	Mock drills carried out every quarter.

Adopt food safety guidelines for food handling in canteens.	If canteen staff don't maintain personal hygiene, it could be issue for the students and lecturers.	The conditions given below should be included in the contractual arrangement with the canteen operator: (a) Health checks of the canteen staff should be done annually (b) Prepare set of rules on personal hygiene should be displayed and followed. (c) Adopt food safety regulation imposed by the Ministry of Health. (d) Encourage regular hand washing during working hours. (e) Strike rules for canteen operators such as scalp hair be fully covered.	PHI Reports, observations.	Faculty head and the supporting staff at the university (I) Homagama Pradeshya Saba PHI (M)	Canteen operator cost	Bi-annual spot checks
Change in land use with unauthorized development	Likely change of land use due to squatter / encroachment within subproject land area and the surrounding.	(a) 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 UOSJP. (b) Squatter development along the subproject shall be strictly avoided by proper regulation and vigilance. UOSJP to coordinate with LA.	Observations	PIU/PMU (M) Homagama Pradeshya Saba (I)	UOSJP	Bi-annual

P.S. Note: PIU = project implementation unit; PHI = public health inspector (allocated to the area from the Pradeshya Saba Homagama); UOSJP = University of Sri Jayewardenepura, Sri Lanka; NEA = National Environmental Act.