REDUCTION OF LANDSLIDE VULNERABILITY BY MITIGATION MEASURES PROJECT

Site Specific Environmental and Social Management Plan

Site No.70
Rathnapura Primary and Secondary Tamil School
Rathnapura District

March 2022

Prepared for:

ASIAN INFRASTRUCTURE INVESTMENT BANK

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Abbreviations

AIIB	Asian Infrastructure Investment Bank
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
DFC	Department of Forest Conservation
DS	Divisional Secretary
DWLC	Department of Wild Life Conservation
EH & S	Environmental Health & Social
E&SU of PMU	Environmental & Social Unit of Project Management Unit
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GN	Grama Niladhari
GOSL	Government of Sri Lanka
GSMB	Geological Surveys & Mines Bureau
LHS	Left Hand Side
NBRO	National Building Research Organization
RDA	Road Development Authority
RHS	Right Hand Side
SSE & SMP	Site Specific Environmental and Social Management Plan

1. Introduction

1.1 Project overview

The Government of Sri Lanka has received a loan from the Asian Infrastructure Investment Bank (AIIB) for mitigating/rectifying unstable slopes in high risk areas especially in 11 districts of 06 provinces of the country. The project requires to be implemented in accordance with environmental and social safeguards and mandates of the AIIB and that of Sri Lanka. Considering the nature of project actions and its implementation, an environmental and social management framework (ESMF) has been prepared as required by the AIIB environmental and social safeguard policy.

The purpose of the environmental and social management framework (ESMF) is to provide a guide for application of AIIB safeguards and national environmental and social mandates during the implementation of project actions. The project implementing agency (NBRO) is expected to ensure implementation of environmental and social management plans prepared under the ESMF during all phases of project implementation so that the impacts on the environment and community are minimum.

During the scoping exercise it was revealed that the environmental & social setting, and health & safety conditions are more site specific, and require to be addressed specific to site conditions. Therefore, the ESMF has recommended a site specific environmental and social assessments followed by Site Specific Environmental and Social Management Plans (SSE&SMP) for each site. The SSE&SMP gives planning, design, construction & operation phase environmental, social, and health & safety management measures to be considered in the project Implementation.

This is the site specific environmental and social management plan for **Ratnapura Primary and Secondary Tamil School** cutting failure mitigation site. This plan has been prepared by an in-depth environmental and social assessment to:

i. Identify sensitive environmental and social elements in the project influence area
ii. Identify significant environmental and social impacts due to project actions
iii. Propose mitigation measures
iv. Decide appropriate environmental and social monitoring requirements specific to this project
v. Study relevant environmental regulations and procedures to be followed during project implementation specific to the site

1.2 Intended users

The document provides an in-depth insight into site specific environmental and social issues associated with the proposed project and the mitigation measures and intend to be used by landslide mitigation design team, the PMU and the contractor in the implementation of ESMP component of the project. The SSE&SMP is published in NBRO website and can be viewed by wide range of interested parties (public, stakeholder organizations) can be utilized by the contractors for the project and will form the basis of site-specific management plans that will be prepared by the contractors as part of their Site Specific Environmental and Social Management Action Plans (SS- ESMAP) prior to commencing works.

2. Description of the project and site descriptions

2.1 Name of the project

Rectification of Site No.70, Ratnapura Primary and Secondary Tamil School cutting failure mitigation site Rathnapura District

2.2 Location details

The proposed mitigation site falls under New Town GN division of Rathnapura DS division in Ratnapura District of Sabaragamuwa Province.

GPS references of the site – 6.68647°N and 80.405953°E

Elevation – 190ft AMSL (58m)

Nearest town to the site –New town Rathnapura can be recognized as the nearest administrative town, which has about 2km away from the site.

Accessibility to the location

Ratnapura primary and secondary Tamil school is located within the town limits of Rathnapura. The cemetery can be found about 500 meters from Ratnapura town via Ratnapura - Wewalwatta road. The mitigation site can be found when traveling around 300m from the cemetery via Outer Circular road.

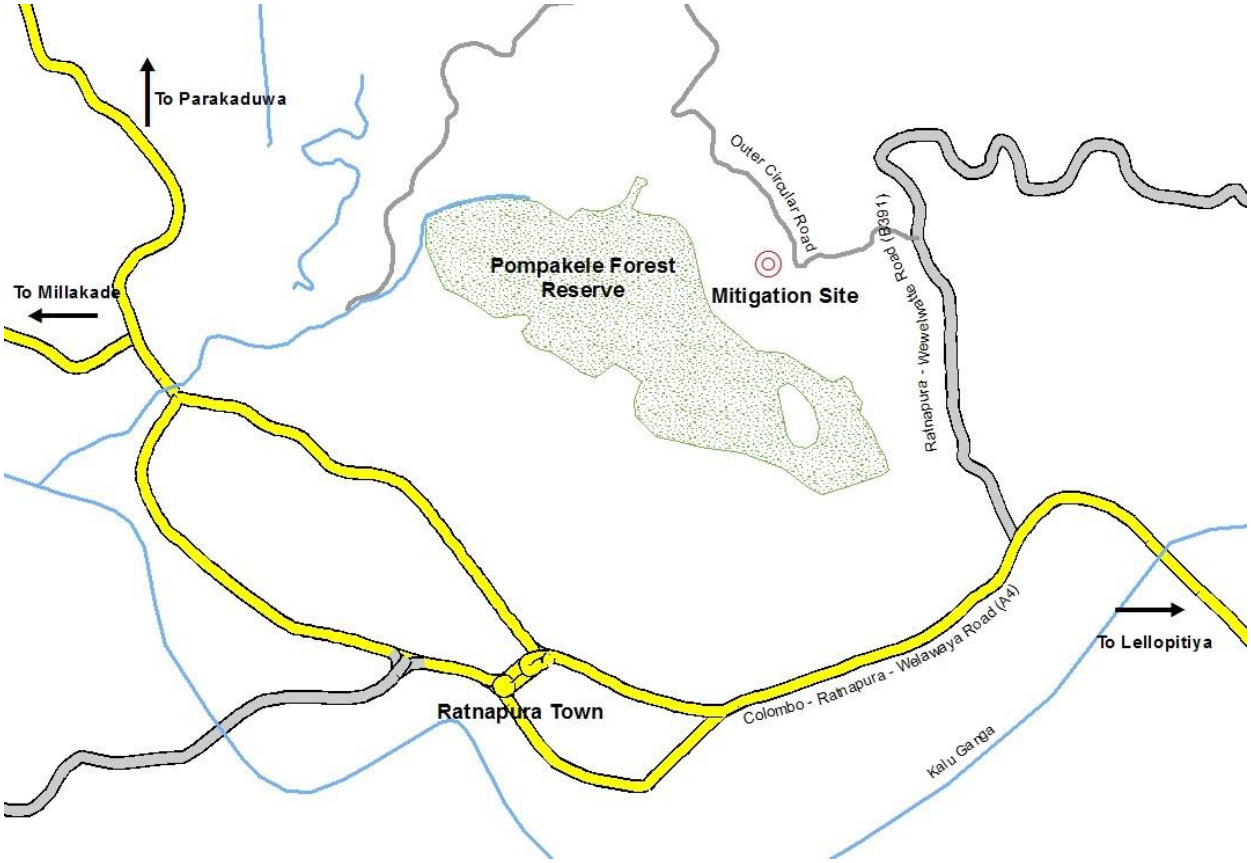

Figure 1: Accessibility to the location (Not in a Scale)

2.3 Topography and Land Ownership

The proposed mitigation site is located within the Rathnapura Primary and Secondary Tamil School premises. The Tamil school is located on the north-western slope of a mountain range extending to the north-west. The school land is located in a valley with a slope of 25-35 degrees. The natural slope has been changed to several terraces to gain space for the construction of school buildings. Therefore, several cut slopes about 5-6 m high have been created behind the school buildings.

The extent of the land area of the mitigation site is about 2000 square meters. The land ownership is Department of Education.

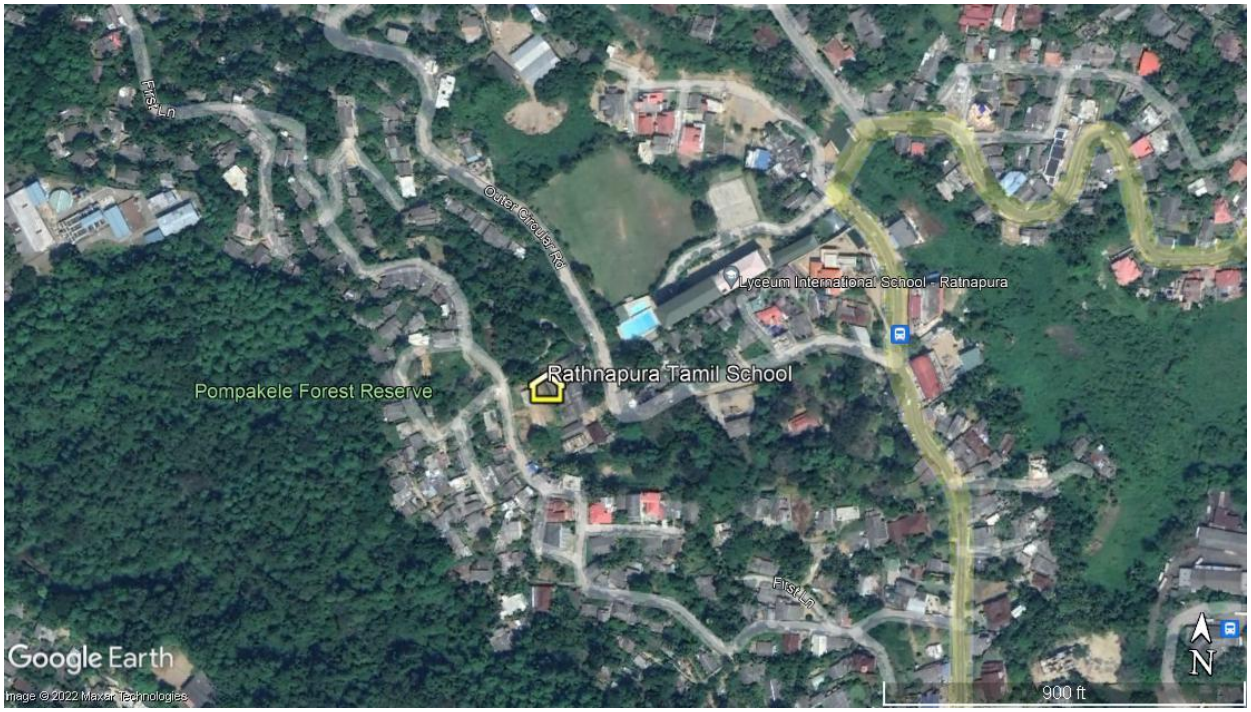

Figure 2: Google image of the proposed landslide mitigation site, the surrounding environmental features and service infrastructure.

2.4 Meteorology of the area

The average annual precipitation is about 4,000 to 5,000 mm. The average temperature varies from 24 to 35 °C, and there are high humidity levels

The flooding plain of River Kalu is in this division. The town experiences regular floods usually in the month of May.

(Source: Divisional Secretariat, Rathnapura http://www.rathnapura.ds.gov.lk/index.php/en/about-us/overview.html)

3. Landslide hazard incident details

3.1 Account of incident

According to the District office of Landslide Research and Risk Reduction Division of NBRO, the following site has been identified as an unstable slope directing to the school buildings. A cut slope failure had occurred at the slope behind the main hall in the year 2021 during high precipitation event in the area. The main causes of this failure are cut slope with unstable retaining wall and poor drainage system along the access way on the top of the gradient.

Cutting failures and unstable slopes had been identified at three locations in the school premises as given below.

Location 01 – Cutting failure of the slope behind the main hall

There was a 6m high and 30m long Random Rubble Masonry wall (RRM wall) behind the main hall and it could be observed that part of the wall has collapsed due to heavy rains in this area in May 2021. The under construction building has been totally damaged due to this collapse. The back fill of the RRM wall is unstable about 10 m from the wall and some tension cracks can also be observed.

Location 02 – Unstable cut slope behind the Grade 07 building

Grade 07 buildings and toilets are located about 15 meters from location 01 on the upper slope. Another cut slope could be observed behind this building about 5-6m height. This is set in 04 steps about 1.2m height. It was observed that ground water was leaking through the base of the cutting surface.

Location 03 – Unstable slope and rock fall threat behind the primary school buildings

Another unstable slope and rock boulders could be observed behind the primary school buildings as well.

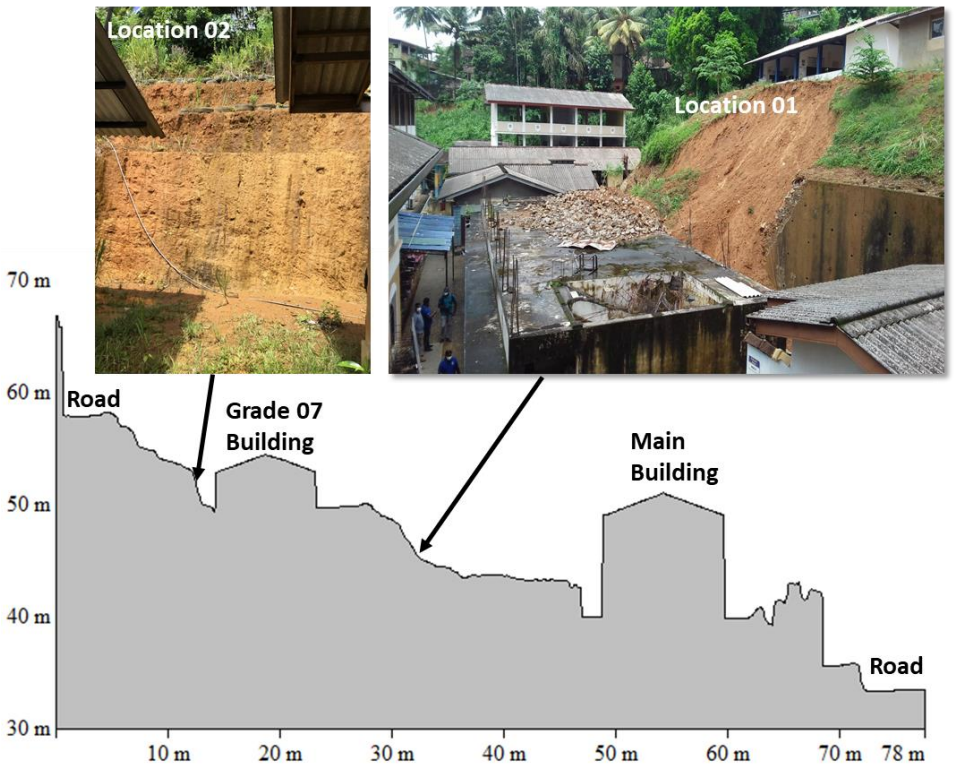

Figure 3: cross sections, land use, risk elements and the special features of the location

According to the landslide hazard investigation report of NBRO, the main cause of the slope failures and instability is poor land management within the school premises. The improper land use practices have caused the slope instability due to excessive infiltration of rain water. Several cuts too have been made in the sloppy lands within the school premises for buildings. This also has contributed to slope instability and cutting failures. The slope modifications have not followed engineering slope stability norms while drainage management on the slopes were poor. The cumulative impact had resulted cutting and slope failure behind the main hall and other two locations are posing high risk condition to the buildings and school children.

3.2 Effects and consequences of landslide

In 2011, the slope behind the main hall was collapsed and dislodged soil mass had moved towards the building and it was totally damaged. This damaged building has been evacuated and not in use at present. There were no damages school population due to the incident.

3.3 Description of any remedial measures already undertaken to reduce the potential risk

There were no any remedial measures has been taken to reduce the potential risk.

3.4 Evacuations

Damaged building was evacuated due to the risk and not in use at present.

3.5 Resettlement (progress)

No any resettlement for this site.

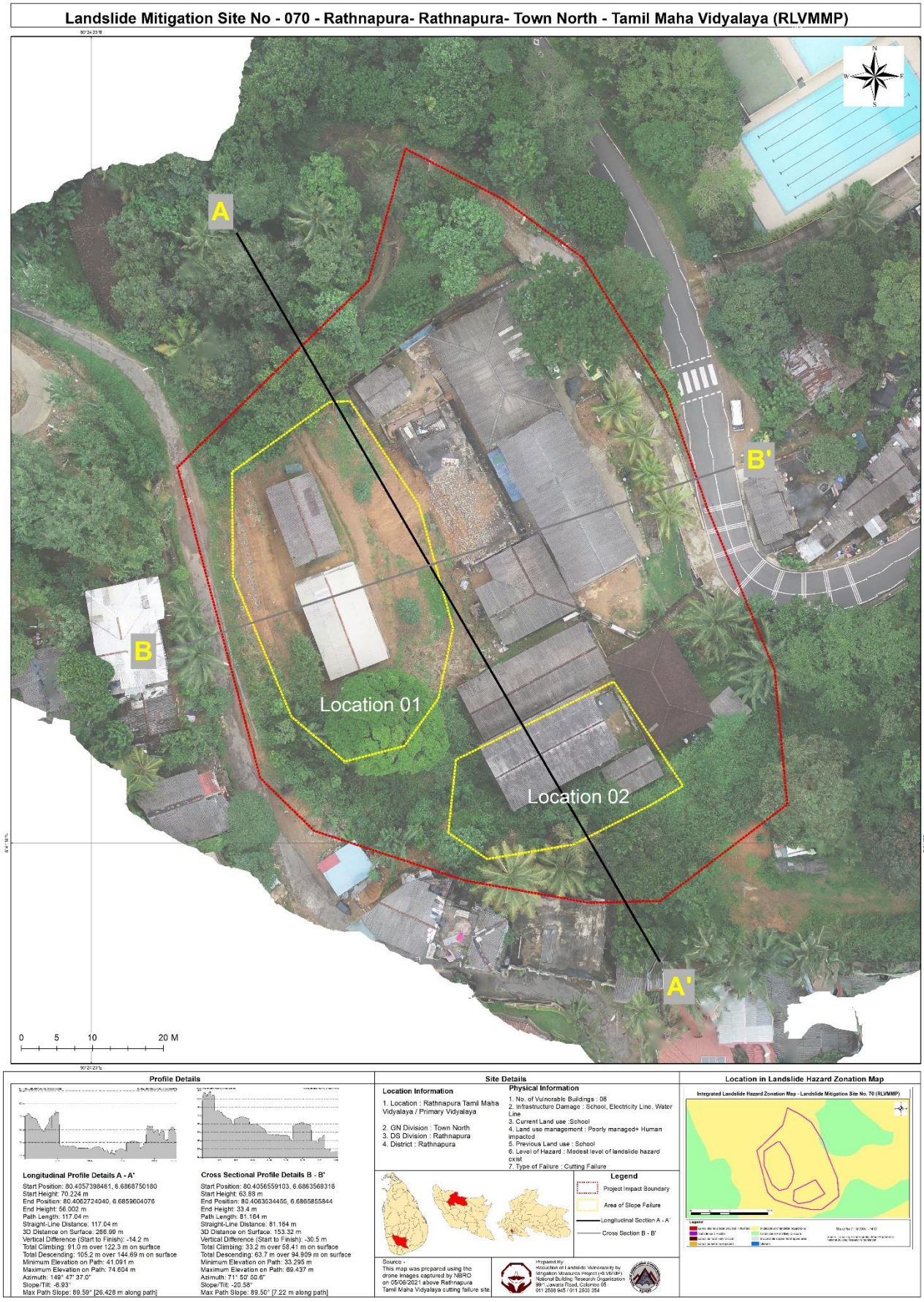

Figure 4: Cross Section, Land-use, Risk Elements and the spatial features of the location

4. Description of the area of the landslide/slope failure and areas adjacent to the landslide and current level of risk

4.1 Surrounding area of the slope failure

The area adjacent to the school is highly commercial area. Since the project site is located closer to the Ratnapura town area, dense settlements and its characteristics can be observed. When consider about the surrounding area of the site, dense settlement, home gardens, commercial areas and administrative buildings could be observed within 500m radius from the site. Pompekele forest reserve is located about 200m direct distance from the mitigation site. The Lyceum International School also located in front of the Tamil school.

There are about 10 buildings in the primary and secondary school premises. There are also three toilet complexes for school children and teachers. One building was already damaged by the slope collapse and is no longer in use. Two water tanks of the school are placed on the random rubble masonry wall. Water conveying lines of the school premises are running through this slope area. The school premises were not so densely wooded, but mostly grasses and shrubs could be observed.

4.2 Current level of risk

The almost vertical non-engineered slope cut will be at risk of future failure due to recurring extreme precipitation events. Due to this the school buildings, toilets, water supply lines and other school properties will be at risk due to slope failures. The school children, teachers, non-academic staff, and the surrounding properties will be at risk due to future slope failures.

5. Description of the works envisaged under the project

The proposed project aimed to combat further progressive failure of cut slope. The Ratnapura primary and secondary school is highly potential for cutting and slope failures; therefore, preventive measures such as reshaping, soil nailing, turfing with grass blanket on back fill slope, re-vegetation of slope and surface drainage management will be implemented as the mitigation measures. Environmental friendly mitigation measures are highly encourage in this site.

6. Brief description on the surrounding environment with special reference to sensitive elements that may be affected by the project actions

Following sensitive elements will be at risk due to project actions;

i. School children, Teachers and Non-academic staff
ii. Activities of the school
iii. School buildings and toilets
iv. Water tanks
v. Water supply lines

Ref. Fig. 5: Sensitive elements that may be affected by the project actions.

Figure 5a: Water tanks

Figure 5b: School Buildings

Figure 5c: Water supply line

Figure 5d:

Figure 5: Sensitive elements that may be affected by the project actions

7. Identification of social and environmental impacts and risks related to the works

Chart below summarizes the positive and negative impacts which are envisaged during project actions and their significance.

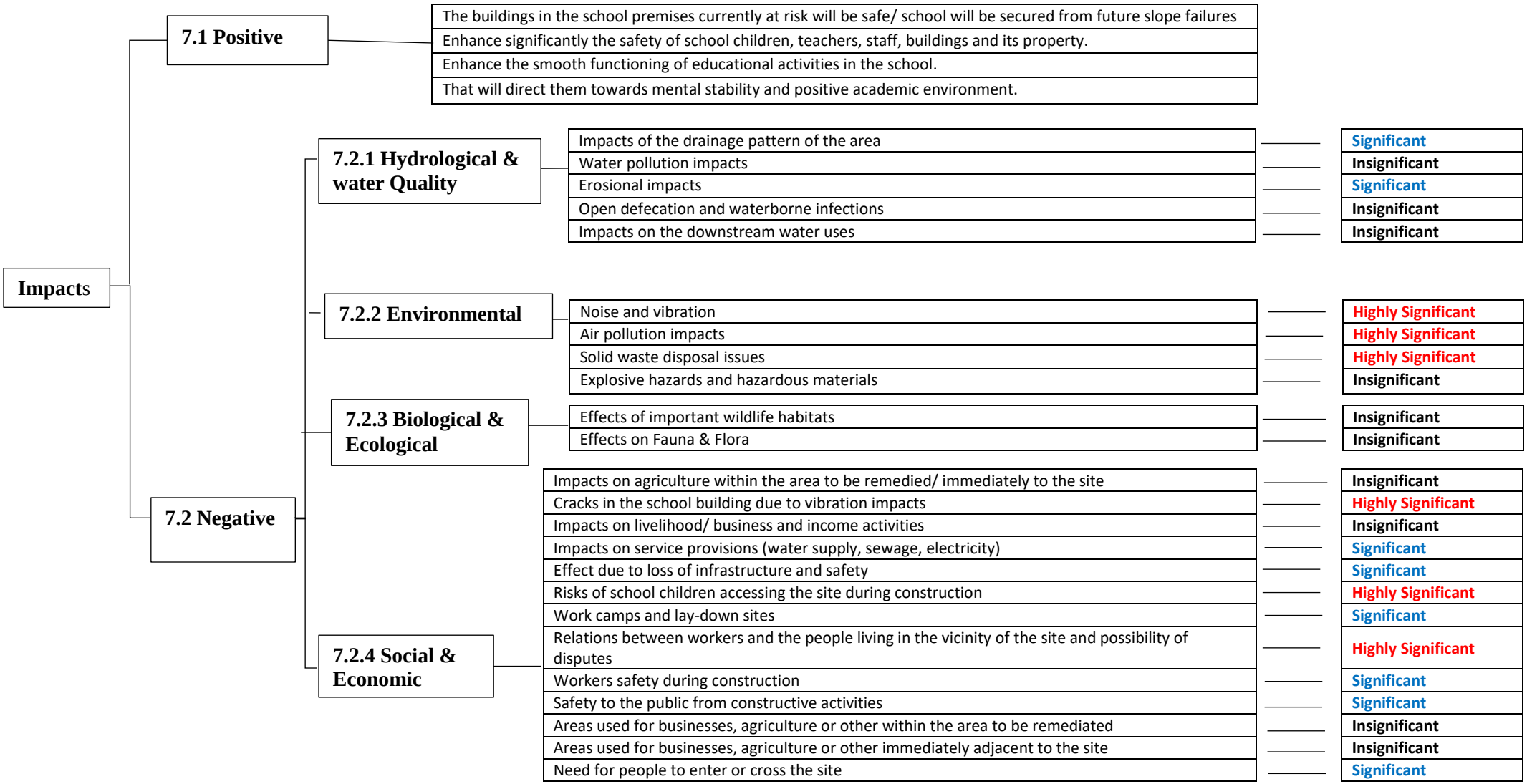

Figure 6: Summary of the impacts which are envisaged during project

7.1 Positive impacts

- The buildings in the school premises currently at risk will be safe, and the unstable areas of the school will be secured from future slope failures.
- The improved slope stability with the proposed structural mitigation will enhance significantly the safety of school children, teachers, staff, buildings and its property.
- Enhance the smooth functioning of educational activities in the school without disruption from future slope failures.
- This is the only main Tamil language school in the area which has Advanced Level school classes. Hence, it will protect the educational rights of the Tamil speaking children in the area by this mitigation project.
- Students can carry out their studies without any fear to landslides. That will direct them towards mental stability and positive academic environment.
- The water supply lines running through the sloppy area will be safe from discontinuing supply by future failures. The septic tank and toilet complex in the downslope area will be safe from future collapse.
- Reduction of short-term mitigation issues is one of major economic benefit adding after the completion of this mitigation.

7.2 Negative impacts

The mitigation works are generally confined to an area which is already unstable and highly potential for slope failures. Therefore, negative impacts are much localized and also limited to construction period.

Table 1: Negative impacts and their level of significance

Impacts during the construction period	**Level of Significance**
7.2.1 Hydrological and water Quality impacts	
7.2.1.1 Impacts of the drainage pattern of the school premises Disruption of existing surface and sub-surface drainage pattern in the area is envisaged due to the reshaping of the unstable slopes, removal of soils, and diversions of existing drainage and surface runoff flow paths. The mitigation works in this site will focus largely on the drainage improvement. Due to diversions, cut-off drains and increased sub-surface drainage, the premises will have increased flows at higher velocities in rainy periods. Also, while excavations and land clearings during the construction will cause continuous runoff of the surface water with mud downward the slope in rainy days.	**Significant**
7.2.1.2 Water pollution impacts There are no water streams close to the mitigation site	Insignificant
7.2.1.3 Erosional impacts A cutting/slope failure has been already occurred in this location and soil mass on the upslope has flowed to the building on downslope. Therefore, during rainy season, and during the construction period, these soil masses may be disturbed and eroded. When there is no proper covering of the slope or natural water paths are deviated due to construction activities, erosion would be high.	**Significant**

7.2.1.4 Open defecation and waterborne infections As the site is located within a school premises in an open area possibility of open defecation is low	Insignificant
7.2.1.5 Impacts on the downstream water uses There are no water streams close to the mitigation site	Insignificant
7.2.2 Environmental Impacts	
7.2.2.1 Noise and vibration impacts Construction noise can expected from machinery in site preparation and landscaping. This impact is significant as the construction is carried out in the proximity of the class rooms. The noise generated from the machinery will disturb the classes and other school functions. Hence the impacts of noise are considered highly significant at this site. If heavy machinery is operated the vibration can affect the school buildings and the toilets which is located very closer to the mitigation area. As a result, structural deformations such as cracks and collapse of walls etc. may happen. Hence vibration impacts at this site is also considered as highly significant.	**Highly Significant**
7.2.2.2 Air pollution impacts Potential impacts on the air quality will be due to the fugitive dust and the exhaust gases generated in and around the construction site due to vehicular movement and site clearance, storage and handling of construction materials such as sand, cement, etc. As the students in classrooms are in the close proximity to the mitigation locations, the air pollution impacts and dust fumes are significant. The effect is highly significant to school children who are highly vulnerable to air pollution impact and teachers if heavy air polluting activities are carried out during school hours.	**Highly Significant**
7.2.2.3 Solid waste disposal issues During the construction phase, two types of solid waste will be generated; spoils resulting due to construction activities and domestic refuse generated by the labour force engaged in construction work. Poor management of solid waste such as litter, food waste, and construction waste during the construction phase may lead to create inconveniences to school children. Further, it can block the nearby drains to make breeding grounds for water borne refection vectors and pathogens peril. Waste can pollute the soil, and leave various environmental impacts if proper disposal mechanism is not in place during the construction period. Since the mitigation site is located within a school premises and children are highly vulnerable to deceases, the environmental and health impacts of poor management of solid waste in this site will be highly significant.	**Highly Significant**
7.2.2.4 Explosive hazards and hazardous materials Since the affected area has no rock boulders, explosives may not be used and the rock blasting is not envisaged.	Insignificant
7.2.3 Biological /Ecological Impacts	
7.2.3.1 Effects of important wildlife habitats There are no forested/ wild-life reservation areas within the project influence area with high biodiversity, or habitat fragmentation. The Pompekele forest reserve located around 200m distance, still the impact level is very low due to the distance factor.	Insignificant
7.2.3.2 Effects on Fauna & Flora Majority of the trees found in the area are not endemic, threatened and identified in the red list of IUCN.	Insignificant

7.2.4 Social and Economic Impacts	
7.2.4.1 Impacts on agriculture within the area to be remedied/ immediately to the site There is no significant impact on livelihood, business or income activities of the area because the site is located within a school premises.	Insignificant
7.2.4.2 Cracks in the school building due to vibration impacts There are several buildings located in the proximity of the mitigation site. The main school building, technical laboratory, toilets and other class rooms are located close to the unstable slope. During the construction heavy machinery will be used and the vibration can cause cracks in these buildings and it can affect the stability of the nearby buildings immediate to the slope as well.	**Highly Significant**
7.2.4.3 Impacts on livelihood/ business and income activities There is no significant impact on livelihood, business or income activities of the area because the site is located within a school premises.	Insignificant
7.2.4.4 Impacts on service provision (water supply, sewage, electricity) Water tanks on retaining wall and water supply line runs through the mitigation site will be damaged during the construction works and when moving machinery.	**Significant**
7.2.4.5 Effect due to loss of infrastructure and safety During construction phase, Outer-Circular road; the access road of the school will be obstructed by frequently moving machinery, loaders, trucks etc. as the access road is very narrow. Therefore, most of the heavy machinery, trucks and loaders can obstruct the pedestrian passage and cause traffic during school times. Therefore, effect due to loss of infrastructure and safety is locally significant.	**Significant**
7.2.4.6 Risks of school children accessing the site during construction During the construction phase site may use excavation machineries, loaders, trucks etc. These machines and heavy vehicles etc. will be used in the school premises where school children and staff are moving. Site may use high voltage power for operation of certain machinery. Construction may use materials such as metal aggregates, steel etc. which can be injurious under improper storage and handling. The school children will be attracted to these machineries, materials and may even enter the site without proper awareness of the site staff. Ignorance of entry of school children and careless operation of machinery can cause fatal injuries and accidents to school children. The risk on school children at site is therefore highly significant.	**Highly Significant**
7.2.4.7 Work camps and lay-down site requirements The work camps will be established closer to the site or within the premises. If the camps site selected closer to the mitigation location, that will be selected in the neighborhood of community. If proper camp management is not in place it may result several labour issues, social issues with community, conflicts for shared resources with the community, nuisances, and management of waste etc. If temporary camps are built in the close proximity of the site, management of solid waste and sewage will be an issue. Therefore, the effects are significant.	**Significant**

7.2.4.8 Relations between workers and the school children / staff / people living in the vicinity of the site and possibility of disputes The mitigation site is located within school premises. The construction workers at this site will be from different social backgrounds and from different geographical areas often under poverty. Usually, they are with poor educational and social background. Such communities may have a wide range of social issues to cause dis-stress on the school staff and the children as indicated below. • Cause nuisance to smooth operation of school works • Unauthorized entry into school premises • Bulling and harassment to children • Quarrels with children and parents • Distracting children from education • Tempting children and parents towards offensive deals • Informal form of child labour • Use of sanitary facilities of school by the workforce • Sexual abuses for the children Although the workers who would engage in such issues will be rare, even few possibilities cannot be ignored. Therefore, issues indicated above at this site will be considered highly significant.	**Highly Significant**
7.2.4.9 Workers safety during construction The workers may be exposed to risk from falling. Fatal injuries may occur if the slopes fail. The heavy construction machinery may be used in limited work spaces. Risk of hazard from vehicles and construction machineries accidents is highly significant at this site. Contractor may engage under age workers (children) for construction work, which is risky and can results serious accidents and injuries.	**Significant**
7.2.4.10 Areas used for businesses, agriculture or other within the area to be remediated There are no areas used for business, specific agriculture practices or other within the area to be remediated.	Insignificant
7.2.4.11 Areas used for businesses, agriculture or other immediately adjacent to the site There are no areas used for business, specific agriculture practices or other commercial activities immediately adjacent to the site hence has no significant impact.	Insignificant
7.2.4.12 Need for people to enter or cross the site There is no special need for children and the staff to enter the site for other purposes. However, unauthorised entry of students and ordinary people may occur due to intentional or unintentional purposes and they may be at risk due to operating machinery, vehicles, electricity, and may be blasting materials.	**Significant**

8. Significant Environmental and Social Impacts

Environmental, social impacts or risks that will require special attention on the part of NBRO.

8.1 Priority Health and Safety Issues. Specific H&S concerns that require measures that go beyond the standard contractual requirements for contractors

The health and safety issues pertinent to this site is significant as the workers have to work on almost vertical unstable slope with a risk of slope collapse. The health and safety issues of workers safety is highly significant at this site. Such common E & HS issues have been discussed in the **ESMF**. Worker safety requirement in the construction site is more detailed under 2003 5: Safety equipment and clothing in the section 2003: Working conditions and community health and safety in the Bidding document.

8.2 Child labour & forced labour

Child labor & Forced labor is detailed under 2003.3 under section 2003: Working conditions and community health and safety in the Bidding document.

9. Environmental Social Management Plan (ESMP)

Measures to manage and or mitigate the impacts and risk, especially the significant impacts and risks identified in sections 7 & 8. This section will include the specific recommendations and requirements of the ESMP for design stage, construction phase and maintenance operation phase.

9.1 Resettlement action plan

There is no project based resettlement in this site. The buildings may have some impacts in the form of structural damage during the project actions due to ground vibration induced by heavy machinery operation. (The scheme of compensation, in case of damage to structures due to project should be arranged, (Refer 2002.2.17) utilities and roadside amenities in contracts requirement to ESMP.

9.2 Evacuation of people

During the construction period of the project it may require to evacuation of the school children from high risk buildings. Also, the mitigation area should be named as a "No Entry Zone" for the construction period.

9.3 Procedure for removal of damaged structures, facilities infrastructure (consent from owners to remove the articles)

This risk may not be triggered in this site.

9.4 Requirement for compensation for loss of property /uses due to project actions

It may require to compensate if any damages happen to the school buildings, toilets or any other element of the school premises during constructions. If the water line is disturbed during the construction, it may require to provide alternative water sources to maintain discontinuous water supply to the school.

9.5 Public awareness and education- needed for following areas

Programs to inform and educate about the risks posed by landslide to specially the school children, teachers and the parents of the school.

9.6 Design based Environmental/ Social Management considerations

Following environmental and social design considerations are recommended for this depending on its environmental and social relevance.

Table 2: Design stage Environmental & Social considerations

Design feature	Recommended level of consideration for this site
i. **Natural resource management and resource optimized designs** Project specific designs should be considered to eliminate mass clearing of vegetation and minimum number of removals of grown tree species. Sufficient emphasis should be made to consider conservation of trees if important tree species are found.	Low

ii. Site Planning During site planning it is necessary to be cautious on possible re-activation of slope failures and movements of soil masses. Hence vehicle parking sites, material storage and temporary shelters etc. should not be installed in the danger zones of the slides.	High
iii. Habitat connectivity and animal trails If large fractions of vegetation are required to be cleared in ecologically fragile habitats as for permanent structures or for access, or if deep drains etc. are to be made the designs should include habitat connectivity features, animal trails and vegetation strips and etc. even if the impacts are localized.	Low
iv. Conservation of water resources If extraction of water is involving as a mitigation measure, as the extracted water is in a good quality and yield it can be considered as a source of water for school usage such as gardening and sanitary activities.	High
v. Interruption to water supply lines and sewage lines Two water tanks are located in the mitigated slope and water lines supplying water to the school runs through the unstable slope. The design should consider these elements and should try to minimize the impacts by selected design considerations.	High
vi. Aesthetically compatible design considerations The designs in aesthetically sensitive school environment should consider structures that blend with natural environment to keep the visual pollution to minimum. Service of landscape architect may be important for the design of suitable mitigation structures.	High
vii. Consideration of green environmental features As many of the mitigatory works are carried out in well maintained school premises with green landscape, it is recommended to consider green environmental designs as much as possible in the designs e.g.: use of local vegetation species for erosion control, combination of plants to sustain species diversity in the environment, avoiding inclusion of potentially invasive species & etc.	High
viii. Workers and community safety Activation of slide may occur during construction phase and may pose threat to workers, school children and the staff. Therefore, design based safety consideration such as berms, safety nets, safety fencing etc. should be considered specific to safety of school children should be considered.	Very high
ix. Erosion control structures During rainy season the flow in the drainage structures can be significantly high. During rainy season the heavy flow of surface runoff can be expected through the unstable slopes. This water should be conveyed to nearby storm water drains. Hence the design should adequately consider flow speed breakers to reduce erosive flows of slopes.	High
x. Low post maintenance and operation designs The mitigation should consider passive techniques such as gravity drains for drainage management. Correct pipe diameters, pore diameters and laying angles should be considered to avoid clogging of drains. Low maintenance structures and designs such as designs to withstand erosive forces, sediment trapping systems etch should be considered if drain water is expected be directed to natural streams. The materials used for structures and should be chosen carefully so as to withstand weather conditions with high durability. Designs should specially consider corrosion prevention techniques if steel structures are used.	High

9.7 Mitigation of impacts during the construction phase

9.7.1 Construction contractors' requirement to comply with environmental and social management during the construction phase

Measures to manage and to mitigate the environmental and social impacts are generally common to all landslide mitigation sites. Such impacts are largely attributed to activities in the construction phase. The mitigation of impacts therefore becomes an obligation of construction contractor. NBRO has prepared a comprehensive document on "***contractors' requirement to comply with Environmental and Social Health and Safety (ES & HS) management during the construction phase"*** to be included in construction contractors' bid document. The main sections are summarised below (Table 3) indicating the degree of relevancy for this site. For details ESMP for construction contractors should be referred.

Table 3: Contractor requirement to comply with ES & HS

Reference No. as per construction contractor's obligation to ESMP	**Item**	**Relevant to the project**
2002. Environmental and Social Monitoring		
2002.2 1)	Storage on site	Highly Relevant
2002.2 2)	Noise and Vibration	Highly Relevant (school children/ building)
2002.2 3)	Cracks and damages to the buildings	Highly Relevant (buildings)
2002.2 4)	Disposal of waste	Highly Relevant (school premises)
2002.2 5)	Disposal of refuse	Highly Relevant (school premises)
2002.2 6)	Dust control	Highly Relevant (school premises)
2002.2 7)	Transport of Construction materials and waste	Highly Relevant (school children/ pedestrian)
2002.2 8)	Water	Relevant
2002.2 9)	Flora and Fauna	Low Relevance
2002.2 10)	Physical and cultural resources	Low Relevance
2002.2 11)	Soil Erosion	Highly Relevant
2002.2 12)	Soil Contamination	Relevant
2002.2 13)	Borrowing Earth	Relevant
2002.2 14)	Quarry Operations	Not Relevant
2002.2 15)	Maintenance vehicles and Machinery (pollution)	Highly Relevant
2002.2 16)	Disruption to public (school children)	Highly Relevant
2002.2 17)	Utilities and roadside amenities (road)	Relevant
2002.2 18)	Visual environment enhancement	Relevant
2002.5. Environmental Monitoring	Baseline surveys (air, water, noise, vibration, crack surveys)	Refer site specific monitoring plan
	Surveys during construction (air, water, noise, vibration, crack surveys)	Refer site specific monitoring plan
	Surveys during operation phase	Refer site specific monitoring plan
	Reporting and maintenance of records	Relevant
2003. Working Conditions and Community Health and Safety		
2003.2	Safety organization and communication	Highly Relevant (school children/ staff)
2003.3	Child Labor and Forced Labor	Highly Relevant (school children)
2003.4	Safety reports and notification of accidents	Highly Relevant (school premises)
2003.5	Safety Equipment and Clothing	Highly Relevant (school premises)
2003.6	Safety inspections	Highly Relevant (school premises)
2003.7	First Aid Facilities	Highly Relevant (school premises)
2003.8	Health and safety information and training	Highly Relevant (school premises)
2003.9	Plant equipment and qualified personnel	Highly Relevant (school premises)
Relevant: *The section is relevant to the site as a common ESMP applicable to any site*		

Highly relevant: *The contractor should pay special emphasis in the preparation of environmental method statements to ensure that the relevant ESMP is implemented specific to the site*
Possibly relevant: *This ESMP will be triggered if the site come across with relevant aspect during project implementation*
Not relevant: *The section may not be relevant to this site under disclosed conditions*
Optional: *require to be implement if needed only*
Refer site specific monitoring plan*: Contractor is obliged to carry out monitoring as specified in the site-specific monitoring plan in addition to monitoring requirement indicated in contractors ESMP*
Reference: Contractors Obligation for implementation of ESMP

9.7.2 Site Specific mitigation

Given below is the site-specific mitigation measures that the project is expected to implement during the construction period.

Table 4: Site specific ES & HS mitigation measures

Mitigation item	Project implementation phase	Responsibility
i. Minimize erosional impacts during construction The mitigation works are carried out in a school premises and unstable slope area. Therefore, It is recommended that mitigation works involved with site clearance, slope reshaping, removal of debris etc. are avoided during rainy season. It is imperative that site works in upslope mitigation are carried out in the dry season and avoid such activities on upslope area in the wet season as much as possible. This should be considered in project planning stage. Silt traps should be introduced to cut down sediment laden runoff.	Site preparation & construction	Construction Contractor
ii. Planning project activities inside the sites As contractor has to operate mitigation actions within the school premises, he should carefully prepare a plan for management of construction activities inside the school premises. This should include careful selection of material storage as vehicle parking, mixing of concrete, cleaning activities etc. which considering the safety and optimization of space. The contractor should discuss scales of project operations with a time plan and should make the school management adequately aware on the construction plan. Necessary adjustments to the plan should be made after discussing with the principal in order to minimize the disruption to school activities with special attention to working hours minimizing nuisance to during conducting classes, special school events etc.	Site preparation & construction	Construction Contractor
iii. No Entry Zone The PMU should make a detailed assessment on possible risk of slope destabilization in the site during construction phase. "No entry zone" may require to be declared to ensure that school children do not enter the danger zone. Also mitigate the risk of accidents from moving vehicles operational machinery construction activities, electrical leakages etc. should be given high priority in the health and safety management plan especially considering potential high risk on school children. As there	Construction	E & S Unit of PMU contractor

is a school premises within the site proper safety measures should be included with warning signs and permanent trained watchmen.		
iv. Machinery and material transportation Separate access roads need to be used for machinery, materials and vehicle transportation for these mitigation locations during construction phase. However, there is no proper paved access road to the mitigation locations from the front gate. Therefore, contractor have to use available small spaces between school buildings. Therefore, extreme care should be taken as possible accidents and damages to the road and school buildings are high. The Principal and management of the school should aware if any areas in school premises require for shifting machineries.	Construction	E & S Unit of PMU Contractor
v. Noise and vibration control The noise and vibration generating activities may disturb the smooth flow of activities of the school. Vibration generating activities should be done within the prescribed limits to avoid damage to school buildings, technical laboratory, toilets and other structures. Cracks in the buildings should be monitored before, during and after completion of the project. Suitable compensation should be made if cracks from the damages or cracks enlarge due to construction work.	Construction	Construction Contractor
vi. Disposal of construction waste The contractor should pay special attention with respect to disposal of construction waste. This site is located within a school premises with a pleasing and clean environment. Therefore, such waste if generated should store properly without getting washed off and dispose according to approved procedures by the PMU. Construction waste should not dispose within the school premises or along the road.	Site preparation & construction	Construction Contractor
vii. Dust and aerosol control screens The dust particles generated during the construction period can influence the school children and the staff members. Special screens etc. should be used if heavy dust or aerosol generating activities are envisaged.	Site preparation & construction	Construction Contractor
viii. Water and electricity for construction Water for construction should be obtained only from approved places. If the Contractor intends to use water and electricity from the school, they should be informed and the required permission should be taken. As per the principal of Secondary School, water can be obtained from the school water supply system.	Construction	Construction Contractor

ix. Priority Health and Safety Issues As the workers in the site have to work in high risk conditions, it is imperative to implement recommendations given in section 2003 of contractors' obligation on ESMP under "working conditions and community health and safety". These recommendations should be followed carefully in a proper organization and safety monitoring system. i. Additionally, work should be discontinued for sufficient time period during rainy period as working on unstable slopes will be highly risky in the rainy season. ii. A good warning system and fulltime watchmen is highly recommended for this site for both worker and school children's safety. iii. Safety barriers and safety nets should be installed at places of risk to protect workers and school children from boulder falling risk iv. Proper emergency management unit for other accidents (first aids facilities, safety items, hospitalization facilities and transportation facilities) should be maintained for this site.	Construction	E & S Unit of PMU contractor
x. Safety structures/sign boards During construction phase adequate safe fencing should be established to prevent potential falling risk of workers from upslope areas. Warning sign boards indicating slope instability risk should be placed at the unstable slope area. As the risk is high during the rainy season where there is no construction work it is mandatory that safety signs boards are displayed even during the no project period as well.	Construction	E & S Unit of PMU contractor
xi. Traffic Management and Safety A good traffic control should be implemented in the construction stage. As there is a sharp bend on Outer-Circular road adjacent to the location 2, proper road safety measures should be included with warning signs and permanent trained watchmen, luminous sign boards indicating slope instability risk and road obstruction signs. Night lamps etc. are strongly recommended at this site. Sometimes, the access road of the school will be obstructed by frequently moving machinery, loaders, trucks etc. Hence, this kind of activities should be restricted during school start and end time to ensure the protection of school children and parents and to reduce the traffic congestion.		
xii. Interruption to water tanks and school water supply lines The water lines currently running across failed slope need to be installed properly without being affected during the construction phase. Necessary arrangements should be taken to provide alternative water supply in case of an interruption to water supply. The school management should be consulted during project mobilization to inform the requirement to shift the water lines to a safe location.	Construction	Construction Contractor
xiii. Use of sanitary facilities of contractor's workforce As per the principal of the Secondary School, the workforce can use sanitary facilities of the school during the construction period.	Construction	Construction Contractor

xiv. Working hours The construction activities should be in accordance with school management. If night time operations are required to achieve project targets such works should be carried out with adequate safety measures and the consent from the school management.	Construction	Construction Contractor
xv. Need for people to enter or cross the site Possible unauthorized access to the site should be avoided by awareness, warning signs and vigilance by the contractor's full time watchmen.	Construction	Construction Contractor
xvi. Safety of School Children The school management should be made adequately aware of possible issues detrimental to school children as indicated bellow i. Expose school children towards narcotics, alcohol, sex abuse, smuggling, and various criminal offenses and a wide range of unsuitable habitual behaviours ii. Unauthorised entry into school premises iii. Bulling and harassment to children iv. Quarrels with children and parents v. Distracting children from education vi. Tempting children and parents towards offensive deals vii. Informal form of child labour The PMU ES unit should engage in meaning full consultation with school management regarding above mentioned issues. Each issue should be properly communicated and adequately discussed with the school management. Also, it is advised that PMU request from the school management on the following i. Make students and parents aware of the project ii. Possible social issues that will have impact on children iii. Establish a system of vigilance to monitor the behaviour of children with the workforce and the movement of workforce during construction phase iv. Establish a confidential information receive system in the school premises to receive any complains pertinent to the project v. Enforce a system to punish or remove troublesome workers The PMU should made contractor aware on all potential issues with contractor workforce and school children that should be properly managed. Following are recommended for contractors' workforce i. Proper awareness, education, monitoring and punishing. ii. Define project activity zone beyond which workers cannot enter iii. Workers cannot use water sources of the school iv. Workers cannot use sanitary facilities of the school v. The contractor should not use children for any form of project related works (direct/indirect)	Construction	E & S Unit of PMU contractor

vi. The heavy machinery operators should be extremely cautious in operation of machinery as possible accidents will be high. vii. Full time watchmen should be kept in the risk area to ensure safe movement of heavy machinery and vehicles		
xvii. During construction good housekeeping should be maintained to minimize visual pollution	Site preparation & construction	Construction Contractor
xviii. Workers code of conduct Possible disputes between the labor force and the students, staff and the parents, commuters and pedestrians should be prevented by maintaining the agreed code of conduct by the contractor.	Construction	Construction Contractor

9.7.3 Monitoring requirements specific to the site

Following monitoring plan is strongly emphasized during the construction phase specific to this site. In addition to this, monitoring procedure indicated in the contractors' obligation to ESMP should also be implemented by construction contractor. The contractor is expected to indicate in the bid the ESMP procedure to be implemented along with relevant proofs of his competency. The cost for ESMP will require to be indicated as a separate pay item. The environmental and social management method statement is expected to be submitted by the selected construction contractor and to be approved by the PMU unit.

Table 5: Environmental and Social monitoring plan; construction phase

Monitoring requirement	**Parameters**	**Frequency**
i. Baseline monitoring	Water quality	-
	Pre-crack survey for the administrative buildings	Once*
	Ground vibration	Once*
	Air quality: particulate matter	Once*
	Background noise measurement	Once*
ii. During construction	Water quality	-
	Crack survey for the administrative buildings	Once*
	Ground vibration	During operation of drilling machinery, boring works, or any works that generate ground vibrations*
	Construction noise	Once a month during heavy noise generation times *
	Air quality particulate matter	Once a month *
iii. Vehicular Emission	All machinery/vehicles operational should have the emission control test certificate as applicable - should be checked by the site ES officer of the consultant	
iv. Monitoring agency	* A competent independent monitoring agency with registration of Central Environmental Authority for all parameters except crack surveys **Crack surveys should be conducted by competent agency acceptable to PMU	

v. Reporting requirements	**Pre-crack survey of the buildings** -Professional report **Ground vibration**-as per the interim standards on vibration for the Machinery, Construction activities and Vehicular movements, CEA **Background noise measurement** –Extraordinary Gazette No.924.1, May 23,1996, CEA **Air quality particulate matter**- The National Ambient Air Quality standards stipulated under the Extraordinary Gazette, No. 1562/22 August 15, 2008 -Central Environmental Authority of Sri Lanka.

10. Public And Stakeholder Consultation - the public consultations that have been and/or will be held

The mitigation site is located in a school premises. Hence, the principals of the primary and secondary schools were consulted during the field visit. According to the Mr. E. Ravi, the principal of the secondary school mentioned that this is the only main Tamil language school in the area which has Advanced Level school classes. Hence, the mitigation of this school is very valuable to Tamil learning children of the area. Further he is aware about the mitigation activities and funding mechanism. He agreed to give any support to success this project and agreed to share the resources (water, sanitary facilities) with the workforce during the construction period.

11. Preventive Measures for Covid-19 that was issued by Sri Lankan National Health Authority

COVID-19, the novel coronavirus infection has not been totally eradicated in the world. Therefore, to prevent/ control of the spread of infection also to prevent panic situations in the event of detecting a suspected case, all contractors are required to develop a COVID-19 Preparedness plan and need implementing in the site as per the "Health and Safety Guidelines for Sri Lankan Construction Sites to be adopted during COVID 19 outbreak" Guidelines given by Construction Industry Development Authority CIDA 29th April 2020.

12. Clearances, no objection, consent and approvals required for the implementation of the project

Table 6: Clearances, no objection, consent and approvals

Requirement / Approval / Institution	**Relevance to the project**
12.1 Project implementation	
Approval from the District Secretariat	The approvals will be required and the proposals need to be presented at the District Coordinating Committee, to which chief minister and stakeholder agencies in the district will also participate. The Officer of PMU will present the project, disclose the project details and various concerns including environmental and social issues will be discussed at this meeting. The issues arrived will be addressed in the ESMP, the decisions and recommendations taken up at this meeting will be considered in the ESMP.
Approval from the planning committee	The approval from the planning committee of the Rathnapura Municipal Council
12.2 Approval from the state lands owners relevant to the project	

Central Environmental Authority	Consent from District Central Environmental Authority is required as Rathnapura District is under the sensitive area under Soil Conservation Act 25 of 1951.
Department of Forest Department of Wildlife Conservation	As there are no forest reservations and wildlife habitats; Department of Forest and Department of Wildlife Conservation approvals are not needed
Geological Surveys and Mines Bureau	Approval will be obtained for for extraction of materials, transportation and disposal of earth, rocks and mineral debris. (if necessary, only).
Rathnapura Municipal Council	Approvals from Rathnapura Municipal Council will be obtained for the disposal of waste and plant litter.
Ceylon Electricity Board	Approvals from the regional office of Ceylon Electricity Board will be required to replace the standing transformer on the unstable slope.
12.3 Consent/ no objection/ legally bound agreement from the private land ownerships	
Land owner (Department of Education)	Signing a legally bound agreement between the land owners (Department of Education) and the project implementing authority allowing no-objection to remove the structures, access the land, implement construction works, and engage in long-term maintenance works.

The tentative timeline for getting approval is given in the table 7.

Table 7: Tentative timeline for getting approvals

Approvals	Month 1				Month 2			
	W1	W2	W3	W4	W1	W2	W3	W4
Project implementation ***Approval from the District Secretariat*** Submission of application Project briefing Respond to comments Approvals								
Approval from planning committee Submission of application Project briefing Respond to comments Approvals								
Approval from CEB, Department of Education, Ratnapura Municipal Council Submission of application Project briefing Respond to comments Approvals								
Other approvals CEA GSMB								
Consent/ no objection from the land ownership (School Management/ Department of Education)								

13. Grievance redress mechanism for this site

The PMU ES officer is responsible for establishing the grievance redress mechanism for this site for impact communities, school children, staff, pedestrian and commuters; *(Reference: Environmental and Social Management Framework for recommended procedure for establishment of grievance redress mechanism)*

14. Information disclosure

It is the responsibility of the PMU to disclose the ES information to following agencies and organizations by indicated modes as a minimum as given in the following table.

Table 8: Proposed scheme of information disclosure

Information	Proposed agencies	Mode of information disclosure
i. Project plan (site details, design implementation arrangements)	District CEA, District Secretariat, Divisional secretary, Principal, Other district levels Agencies, NBRO district office, AIIB	Meetings, District coordination committee, submission of relevant report to sign agreements, approvals and consents.
ii. Environmental and Social Management plan	District CEA, AIIB	Meetings, District Coordination Committee, submission of relevant report to sign agreements, approvals and consents
iii. Monitoring reports (baseline and during construction)	District CEA, AIIB and relevant parties as appropriate	Progress meetings, special meetings, submission of relevant reports
iv. Site inspections for environmental conformance workers health and safety	District CEA, Divisional secretary, District Office NBRO, AIIB and relevant parties as appropriate	Written and verbal communications, submission of relevant reports
v. Decisions taken and progress review meetings pertinent to ES matters	District CEA, Divisional secretary, District Office NBRO, AIIB and relevant parties as appropriate	Meetings, submission of relevant reports
vi. Grievance redress mechanism	Relevant parties, AIIB	Meetings, written and verbal communications

Annexure I: Images of the site condition and the consultation

Cut slope in location 01 (behind the grade 07 building)

Slope failure occurred in location 01 (behind the main hall)

School buildings

Rock boulders behind the primary school building (Location 03)