REDUCTION OF LANDSLIDE VULNERABILITY BY MITIGATION MEASURES PROJECT

Site Specific Environmental and Social Management Plan

Site No.104
Deniyaya Hospital
Matara District

November 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 **Matara Deniyaya Hospital** slope 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.104, Deniyaya Hospital slope failure mitigation site in Matara District

2.2 Location details

The proposed mitigation site falls under Ihalagama GN division of Kotapola DS division in Matara District of Southern Province.

GPS references of the site – 6.357274°N and 80.569019°E

Elevation – 1378ft AMSL (420m)

Nearest town to the site –Deniyaya town can be recognized as the nearest commercial and administrative town, which has about 3km away from the site.

Accessibility to the location

The mitigation site is located in Deniyaya hospital premises. When travel about 3-km from Deniyaya town via Galle – Deniyaya – Madampe (A17) road, the mitigation site can be found in the Deniyaya Hospital Premises. The accessibility to the location from Colombo is as follows. Ref. Figure 1 for the accessibility to the location.

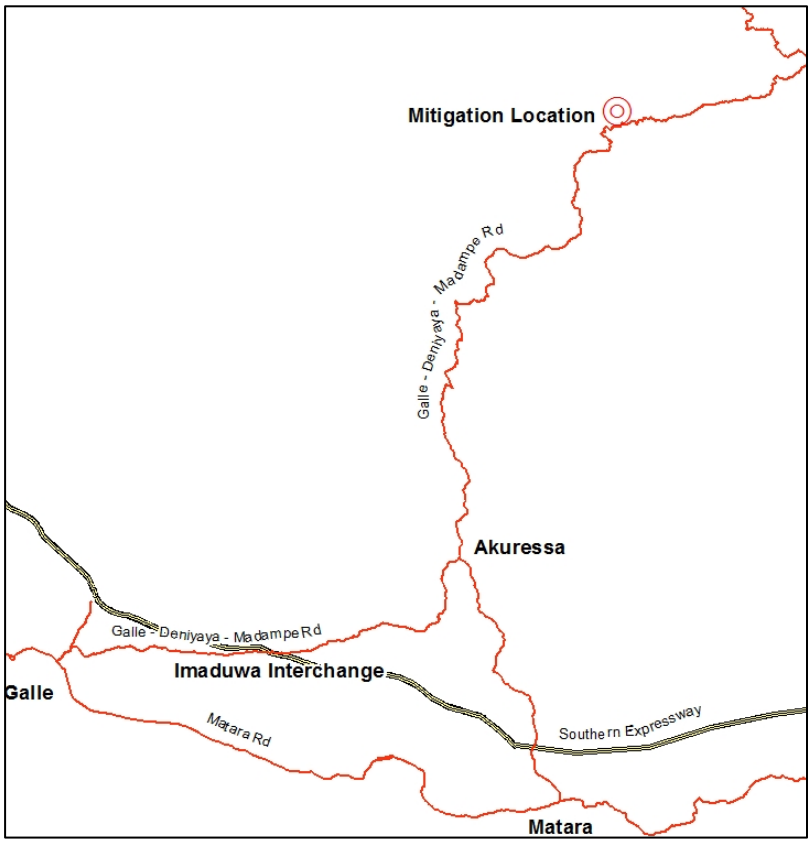

Figure 1: Accessibility to the location (Not in a Scale)

2.3 Topography and Land Ownership

The proposed mitigation site is located within Deniyaya hospital premises. The hospital is located on a hill top and therefore steep slope can be observed around the premises. The natural slope has been changed to several terraces to gain space for the construction of hospital buildings and road and therefore several cut slopes with 1.5 m to 4 m were created. Signs of previous cutting failures and slope failures are also observed at several places in the premises.

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

The extent of the land area of the mitigation site is about 5000 square meters. The land ownership is Ministry of Health.

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 3,000 to 3,500 mm. The area receive highest rainfall in October - November and lowest rainfall in January – February period.
The average temperature varies from 18 to 31 °C, and there are high humidity levels

(Source: Weather atlas, https://www.weather-atlas.com/en/sri-lanka/deniyaya-climate)

3. Landslide hazard incident details

3.1 Account of incident

It could be observed small-scale slope instability situations in the area of the scar of landslide occurred in May 2003. Due to that, a negative impact could take place to the porch area of OPD building. Further, as that area is situated in the scar of the landslide, it can also affect the stability of the building. The slope situated in southern direction to the OPD building belongs to landslide risk area

According to Landslide Research and Risk Management Division of NBRO, District office Matara tension cracks had occurred due to a landslide situation in May 2003 adjacent to the building and were developed to western direction from the scar of landslide for a distance of about 20 m along the access road. These tension cracks in access road area for OPD of the hospital have been widened due to heavy rain occurred in 2013. RDA has applied tar on the tension crack. A slight land subsidence could also be identified along the tension crack. Several cracks could be observed in the pavement of the porch of the OPD building and they are located closer to scar of the landslide occurred in May 2003. Along the cracks, there is a vertical settlement of 0.25 inches, for a horizontal settlement of one inch (Opening). Further, several cracks could be observed which have been formed from top to bottom of the wall in porch area. In the access road of the hospital, in the area opposite to office buildings, there is an instability around the south bank and at that slope also, a tension crack has been developed and a slight land subsidence has also taken place. It could be observed that solid waste has been deposited in the sloppy area. It could be observed some cracks on the floor of the southern corner part of the building of Ward number 5. Those cracks are developed parallel and tangential to the slope. There is a cut slope with 2.75m height, situated with 4.5m distance to the southern direction to mentioned building and a random rubble wall is constructed there.

Ref. Figure 3: Risk elements and the special features of the location

Figure 3: Risk elements and the special features of the location

3.2 Effects and consequences of landslide

The access road to the hospital is permanently closed due to instability condition due to block of the stream near the shop. Further, slope failure has been occurred in 2020 behind the labour room and ward no. 02 building. Cracks are appeared in most of the buildings in this hospital and all of them are functioning under risk condition.

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. But, following remedial measures are recommended by NBRO in previously issued landslide investigation reports.

i. The flowing of rain water to the slope situated in southern direction to the OPD building should be minimized.
ii. Solid waste deposition should not be done in the slope area.
iii. Construction activities should not be done in the area near to the slope.
iv. A retaining wall should be constructed under Civil Engineering supervision for the cut slope developed due to new construction.
v. The scar of the landslide occurred in May 2003 should be stabilized with use of soil nailing.
vi. Sheet piles should be erected with a considerable depth in the sloppy area in between the new development and the right bank of the landslide occurred in May 2003.
vii. If soil nailing operation is unable to be performed, the porch area of OPD building should be demolished and removed from the main structure of the building.

3.4 Evacuations

No any project specific evacuation has been done for this site.

3.5 Resettlement (progress)

No any resettlement is required for this site.

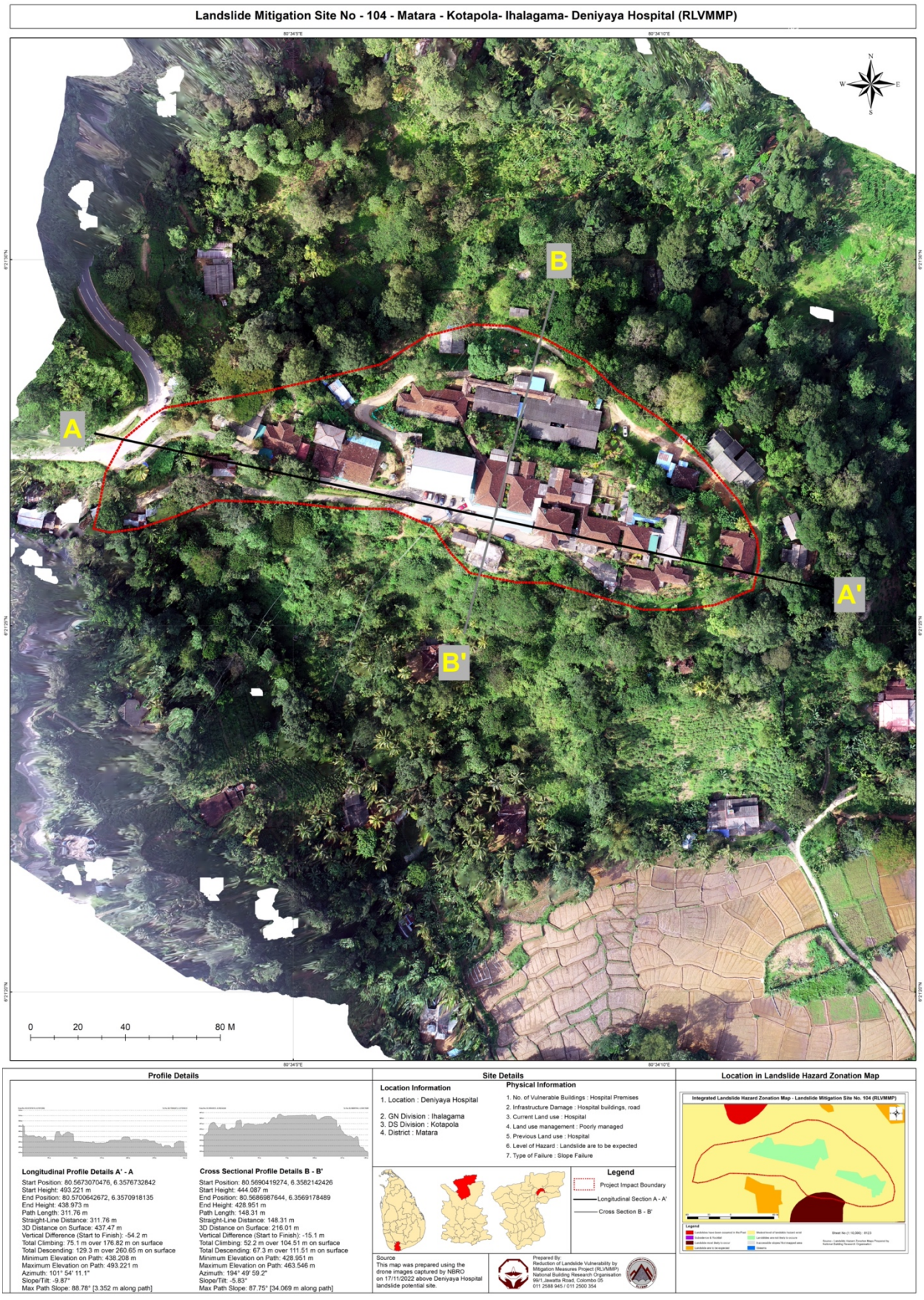

Figure 4: Cross Section, Land-use, Risk Elements and the spatial features of the location

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

This mitigation site is located in Deniyaya hospital premises. The hospital has a history of more than 100 years. Around 20 buildings are located in the hospital premises including hospital wards, administrative buildings, staff quarters and grocery shops. Few buildings in the hospital were constructed during the British period. 09 wards are available in the hospital including ICU and a maternity ward. Average 5,000 patients are getting treatment from OPD every month. There are 144 beds in the hospital and more than 80% of the beds are occupied daily. Total staff of the hospital is 223 including doctors, nurses, minor staff and administrative staff.

All the hospital buildings and its properties are located on top of the hilly area and surrounding slope areas consist with bushes and tree species. In the middle of the slope and lower area covered with scattered settlements, tea cultivation and paddy cultivation areas. Galle – Deniyaya – Madampe (A17) road runs at western direction of the site and there are two local access roads from major road to reach Deniyaya Hospital. , One access road is permanently closed due to instability condition of the road.

4.2 Current level of risk

If the site is not rectified to prevent future landslides and slope failures, it can be directly affected the old hospital buildings, administrative buildings, residents in downslope and the access road to the hospital. As this is a base hospital which having maternity ward and ICU facilities, a wide range of people avail services from this hospital. They would be affected during the rainy session if remedial measures are not taken immediately.

5. Description of the works envisaged under the project

The proposed project aimed to ensure further progressive failure of slopes are prevented. The proposed mitigation works will be largely concentrated on unstable area near the OPD building and unstable road area. Therefore, preventive measures such as toe walls, soil nailing for main scar, surface drainage management, sub-surface drainage management system and constructing of culverts will be implemented as the mitigation measures.

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. Old and new buildings of Deniyaya hospital
ii. Staff of the hospital and their activities
iii. Patients and visitors of the hospital
iv. Service providers Parking areas including Ambulance parking
v. Smooth activities of the hospital

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

Figure 5a: Hospital buildings

Figure 5b: Car park and ambulance park

Figure 5c: Access road

Figure 5d: Quarters

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

7.1 Positive impacts

- The buildings in the hospital premises currently at risk will be safe, and the unstable areas of the hospital will be secured from future slope failures.
- The improved slope stability with the proposed structural mitigation will enhance significantly the safety of patients, hospital staff, buildings and its property. This will lead them to have mental stability and a positive health care environment.
- Enhance the smooth functioning of health services in the hospital without disruption from future slope failures.
- This is the only main base hospital in the area which has maternity and surgery facilities. Hence, mitigation will be largely benefitted by the people who are obtaining health facilities in this area.

- 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 hospital 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. This will be adversely impacted to the residents who are living in downslope area and their cultivations.	**Significant**
7.2.1.2 Water pollution impacts A stream is running parallel to the slope at the edge of the hospital premises. The access road near to the stream will be one of mitigation location of this site. During rainy season fines, sediments, soil particles can contaminate storm water and may direct and contaminate this stream. During excavation, removal of debris can generate high sediment laden runoff there could be a possibility that contaminated runoff may enter this stream and pollute the water. Impacts on water quality and aquatic ecology in the natural stream will be high as the emissions will exceed the ambient water quality standards prescribed for designated uses such as drinking, bathing, and aquaculture and may violate even the minimum standards.	**Significant**
7.2.1.3 Erosional impacts During rainy season heavy flow of water is expected to be generated and enter the stream which is located at one of mitigation sites either through a culvert or directly the streams through step drains etc. This will result increased stream discharge causing stream bank erosion, stream bed scouring, and increased river load.	**Significant**
7.2.1.4 Open defecation and waterborne infections As the site is located within a hospital premises, possibility of open defecation is low	Insignificant
7.2.1.5 Impacts on the downstream water uses Some downslope houses use water from the stream. The possibility of contamination of water at upslope area and downslope spring is very high due to construction activities especially during rainy season. This will affect drinking, washing and bathing requirements of its users at the downslope area.	**Significant**
7.2.2 Environmental Impacts	

7.2.2.1 Noise and vibration impacts Construction noise can expect from machinery in site preparation and landscaping. This impact is significant as the construction is carried out in the proximity of the hospital complex. The noise generated from the machinery will disturb the smooth functioning of the health services and further it will be adversely impacted to the patients. Hence the impacts of noise are considered highly significant at this site. Most of the hospital buildings and quarters are constructed during the British period and therefore construction age of the buildings is over the 100 years. Cracks are also appeared in some buildings. If heavy machinery is operated the vibration can affect those buildings. As a result, structural deformations such as create new cracks, widen the existing 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 OPD and other admission wards are in close proximity to the mitigation locations, the air pollution impacts and dust fumes are significant. The effect is highly significant to patients, elders and especially pregnant mothers and infants who are highly vulnerable to air pollution impact.	**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 patients and staff of the hospital. 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 hospital premises and patients 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.	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 are no agricultural lands in the area because the site is located within a hospital premises.	Insignificant

7.2.4.2 Cracks in the hospital building due to vibration impacts There are several buildings located in the proximity of the mitigation site which are constructed during the British period. Cracks have also appeared in some buildings near the mitigation site. 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 are two small grocery shops close to the area and serve food and basic requirements to the people who are coming to hospital. The business activities of the shops may disturb during the construction. However, there will be positive impacts on the shops, because the workforce will seek their basic needs from this boutique.	**Significant**
7.2.4.4 Impacts on service provision (water supply, sewage, electricity) 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, one access road of the hospital will be obstructed due to mitigation actions. Further, frequently moving vehicles, machineries, trucks and loaders can obstruct the car park area and OPD building. Therefore, effect due to loss of infrastructure and safety is locally significant.	**Significant**
7.2.4.6 Risks of 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 hospital premises where patients and hospital 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. Ignorance of entry to the site and careless operation of machinery can cause fatal injuries and accidents to surrounding people.	**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 hospital premises. 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 staff / people living in the vicinity of the site and possibility of disputes The mitigation site is located within the hospital 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 patients, doctors, and other staff of the hospital as indicated below. • Cause nuisance to smooth operation of hospital works • Unauthorized entry into restricted areas in hospital premises • Bulling and harassment to patients • Quarrels with hospital staff and patients • Issues with female nurses • Tempting staff and community towards offensive deals • Informal form of child labour • Use of sanitary facilities of hospital by the workforce • Conflict with neighboring community for shared resources. 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 The shops located closer to the mitigation locations will be impacted from construction activities.	**Significant**
7.2.4.11 Areas used for businesses, agriculture or other immediately adjacent to the site Tea cultivation in downslope area would be affected during the construction period.	**Significant**
7.2.4.12 Need for people to enter or cross the site There is no special need for patients and the staff to enter the site for other purposes. However, unauthorised entry of staff 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 hospital 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 patients 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 hospital buildings, road or any other element of the hospital 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 hospital.

9.5 Public awareness and education- needed for following areas

Programs to inform and educate about the risks posed by landslide to specially the staff of the hospital. It is recommended to display awareness board for patients and general public.

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 hospital and people living in downslope usage such as gardening and sanitary activities.	High
v. Interruption to water supply lines and sewage lines Water lines supplying water to the hospital 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 hospital 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 hospital 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, and the staff. Therefore, design-based safety consideration such as berms, safety nets, safety fencing etc. should be considered specific to safety of patients, hospital staff 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 (patients/ hospital buildings)
2002.2 2)	Noise and Vibration	Highly Relevant (patients/ hospital building)
2002.2 3)	Cracks and damages to the buildings	Highly Relevant (hospital buildings)
2002.2 4)	Disposal of waste	Highly Relevant (hospital premises)
2002.2 5)	Disposal of refuse	Highly Relevant (hospital premises)
2002.2 6)	Dust control	Highly Relevant (hospital premises)
2002.2 7)	Transport of Construction materials and waste	Highly Relevant (patients/ 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 (patient/ staff)
2003.3	Child Labor and Forced Labor	Highly Relevant
2003.4	Safety reports and notification of accidents	Highly Relevant (hospital premises)
2003.5	Safety Equipment and Clothing	Highly Relevant (hospital premises)
2003.6	Safety inspections	Highly Relevant (hospital premises)
2003.7	First Aid Facilities	Highly Relevant (hospital premises)
2003.8	Health and safety information and training	Highly Relevant (hospital premises)
2003.9	Plant equipment and qualified personnel	Highly Relevant (hospital 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 hospital 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 hospital premises, he should carefully prepare a plan for management of construction activities inside the hospital 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 hospital management adequately aware on the construction plan. Necessary adjustments to the plan should be made after discussing with the DMO in order to minimize the disruption to healthcare activities with special attention to working hours minimizing nuisance.	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 patients and general public 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 patient, general public and staff of the hospital. As this mitigation site is located within hospital premises, proper safety measures should be included with warning signs and permanent trained watchmen.	Construction	E & S Unit of PMU contractor

iv. Noise and vibration control The noise and vibration generating activities may disturb the smooth flow of activities of the hospital. Vibration generating activities should be done very carefully and within the prescribed limits to avoid damage to hospital buildings since most of the buildings has constructed during the British period. 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
v. 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 hospital premises, slope areas or along the road at any circumstances.	Site preparation & construction	Construction Contractor
vi. Dust and aerosol control screens The dust particles generated during the construction period can highly influence the patients of the hospital. Special screens etc. should be used if heavy dust or aerosol generating activities are envisaged.	Site preparation & construction	Construction Contractor
vii. 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 hospital, they should be informed and the required permission should be taken. Further, assessment on water requirement should be done before obtain the water from water source of hospital. According to the administrative staff of the hospital, the available water will be not sufficient for the construction work and any deficiency will directly affect the functioning of the hospital.	Construction	Construction Contractor
viii. 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 general public.	Construction	E & S Unit of PMU contractor
ix. 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

x. Interruption to water supply lines of the Hospital premises 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 hospital management should be consulted during project mobilization to inform the requirement to shift the water lines to a safe location.	Construction	Construction Contractor
xi. Use of sanitary facilities of contractor's workforce Separate sanitary facilities should be arranged for the contractor's workforce.	Construction	Construction Contractor
xii. Working hours The construction activities should be in accordance with hospital 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 hospital management.	Construction	Construction Contractor
xiii. 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
xiv. During construction good housekeeping should be maintained to minimize visual pollution	Site preparation & construction	Construction Contractor
xv. Workers code of conduct Possible disputes between the labor force and the patients, staff, general public and community 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	Once*
	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	During high air pollution generating time*
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	**Stream water quality –** Comparison with National Environmental (ambient water quality) regulations, no.01 of 2019 **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 hospital premises. Hence, the administrative staff off the hospital were consulted during the field visit as directed by District Medical Officer. According to the Mr. Maduranga, Development Officer of administrative division of the hospital mention that this hospital is the main hospital in the area with having ICU and labour ward in the area. Hence, the mitigation of this school is very valuable to people who are living in the area. Further he is aware about the mitigation activities and funding mechanism. He agreed to give any support to success this project.

Further, Chairman of the Kotapola Pradeshiya Sabha Mr. Dayananda also consulted during the field visit and aware him about the proposed mitigation project. He mentioned that, the hospital was suggested to relocate in safer area due to slope failure, but they are in a problem with releasing the suitable, safe lands for this purpose. Hence, this mitigation project is very

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 IMMUNITY ENHANCEMENT GUIDELINES FOR COVID -19 and DENGUE, CIDA Health Guidelines for Construction Industry Version 4(Revised) CIDA, January 2021.

12. Labor Management

Sound worker-management relationships, treating workers in the project fairly and providing safe and healthy working conditions is required. Responsibility is lies with the PMU and the construction contractor.
The Objectives are;

- To promote safety and health at work.
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers.

- To protect project workers, including vulnerable workers such as women, persons with disabilities, children and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labor and child labor.
- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national laws.
- To provide project workers with accessible means to raise workplace concerns.

13. 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
13.1 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 Kotapola Pradeshiya Sabha
13.2 Approval from the state lands owners relevant to the project	
Central Environmental Authority	Consent from District Central Environmental Authority is required.
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).
Kotapola Pradeshiya Sabha	Approvals from Kotapola Pradeshiya Sabha 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.
13.3 Consent/ no objection/ legally bound agreement from the private land ownerships	
Land owner (Ministry of Health)	Signing a legally bound agreement between the land owners (Ministry of Health) 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, Ministry of Health, Kotapola Pradeshiya Sabha Submission of application Project briefing Respond to comments Approvals								
Other approvals CEA GSMB								
Consent/ no objection from the land ownership (Hospital Management/ Ministry of Health)								

14. Grievance redress mechanism for this site

The PMU ES officer is responsible for establishing the grievance redress mechanism for this site for impact communities; (Reference: Environmental and Social Management Framework for recommended procedure for establishment of grievance redress mechanism).

All complaints regarding social and environmental issues are received either orally/ telephone communication or in writing by the following person/ location.

- Project Director/ RLVMMP
  - Tel : +94 112 559 869
  - Fax : +94 112 502 611
  - Email : pd.rlvmmp@gmail.com
  - Web : rlvmmp.lk
- District Offices/ NBRO or
- Site Offices/ RLVMMP
- Online Grievance Redresses Mechanism System (https://rlvmmo.lk/grms)

15. 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, DMO, 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, DMO, 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

Consultation of shop owner and hospital staff

Old building near to mitigation site

Cracks of the hospital building

Hospital buildings