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Agriculture Modernization Project

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Ministry of Agriculture
கமத்தொழில் அமைச்சு

Environmental Screening Report

Strengthening Capacity to Enhance the Laboratory Facilities at Fruit Research and Development Institute- Horana

FRDI
HORANA

Project Management Unit
Agriculture Sector Modernization Project
January 2022

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ABBREVIATIONS

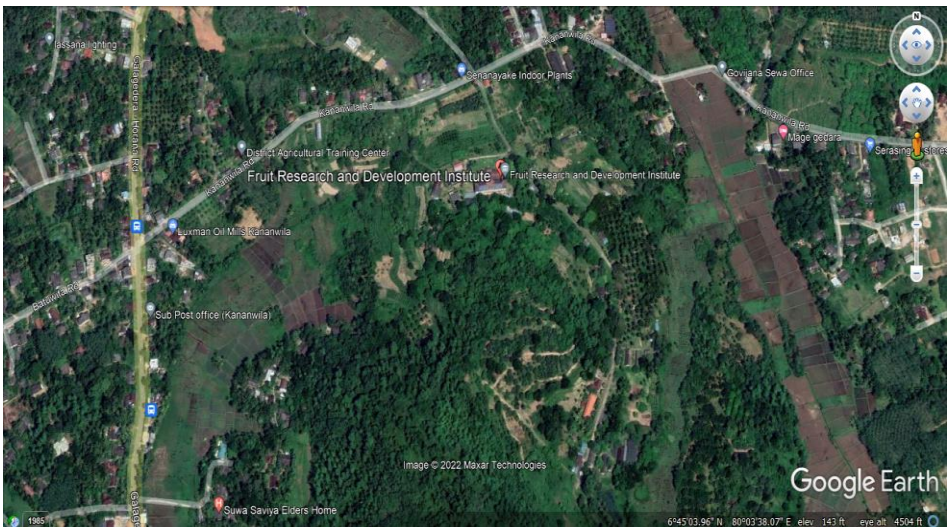
AI	Agriculture Instructor
ASMP	Agriculture Sector Modernization Project
ASC	Agrarian Service Center
ATDP	Agricultural Technology Demonstration Park
CBO	Community-Based Organization
DSD	Divisional Secretary Division
EMF	Environmental Management Framework
EMP	Environmental Management Plan
ESR	Environmental Screening Report
FO	Farmers Organization
FPO	Farmers' Production Organization
GAP	Good Agricultural Practices
GND	Grama Niladhari Division
GoSL	Government of Sri Lanka
IDA	International Development Association
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
LGA	Local Government Authority
MOA	Ministry of Agriculture
MOPI	Ministry of Primary Industries
NIRP	National Involuntary Resettlement Policy
NGO	Non-Governmental Organization
OP	Operational Policy
PAP	Project Affected Persons
PCR	Physical Cultural Resources
PMP	Pest Management Plan
PMU	Project Management Unit
SLRs	Sri Lanka Rupees

ENVIRONMENTAL SCREENING REPORT (ESR)

A. THE PROJECT IDENTIFICATION

Project Title	Strengthening Capacity to Enhance the Laboratory Facilities at Fruit Research and Development Institute- Horana
Project Proponent	Agriculture Sector Modernization Project (ASMP)
Purpose and scope of ESR	The purpose of the ESR is to provide viable mitigation measures against all identified environmental impacts during the screening process of the subproject. This ESR includes the basic information of the subproject, justification of the subproject selection, anticipated impact, and environmental condition of the subproject area, and stakeholder consultations and concerns on subproject identification, designing, and implementation, the implementation plan of the viable mitigation measures against the identified environmental impacts.

B. PROJECT LOCATION

Location	The subproject's activities will be mainly implemented in Fruit Research and Development Institute (FRDI)- Horana. FRDI is located in Kananvila 5.8 km away from the Horana city in Horana DSD of Kaluthara district in the Western Province Under this subproject, strengthening the research and laboratory facilities of the above research station will be implemented. The location maps are annexed as Annex 1.
Location (Google Map) $6^0$45'10.00" N $80^0$03'32.41" E	 Figure 1: Location of the FRDI- Horana
Definition of Project Area *(The geographical extent of the project & areas*	Fruit Crop Research and Development Institute is one of crop research institute of Development of Agriculture, Ministry of Agriculture, Sri Lanka. It was first established as a Fruit Crop Research and Development Centre on 6th October 2001 at DOA farm at Kananvila. The Centre was administratively under Horticulture Research and Development Institute

affected during construction)	at this time. In 2013, It become the 4th crop institute of the department and mandatory responsibility was conducting research and development activities for the uplifting of the fruit crop sector in the country. The area where the FRDI is located, belongs to agro-ecological zone- low country wet zone (WL1). The surrounding area is predominantly rolling undulated areas where the majority of lands are used as home gardens. Rainfed paddy cultivation is a scattered area but not on a commercial scale. There are small-scale plantation crop growers and Tea and Rubber are the main plantation crops that are grown by the farmers. Except for small-scale farmlands, plantation company-owned large extent land of the area is covered by plantation crops. The land extent belongs to FRDI- Horana is about 85 ha (212 acres) and a major portion of the research station is covered by perennial fruit-bearing trees. Meanwhile, the land plots close to research station premises have been utilized for the ongoing research trials.  Figure 2: Ongoing trail of fruit research at FRDI There are nine (9) sub-centers affiliated with FRDI and these sub-centers are specialized to conduct the area-specific fruit varieties researches and deliver other support services to the farmers and service seekers. The sub-centers are; 1. Fruit Crop Research & Development Station- Peradeniya 2. Plant Virus Indexing Centre- Homagama 3. Agricultural Research Station- Maduruketiya 4. Agricultural Research Station- Muthukandiya 5. Citrus Research Station- Bibile 6. Rambutan Research Unit- Eraminigolla 7. National fruit Variety Conservation Center- Kundesale 8. Sustainable Agriculture Research and Development Center- Makandura 9. Agriculture Research Station- Rahangala
Adjacent land and features	The total land extent under FRDI- Horana is about 85ha (212 acres) and it includes research station buildings, staff quarters, and cultivation area. The area where FCRDI is located belongs to Horana DS division of the Kaluthara district in Western Province. The area belongs to the low country wet zone. This research station mainly aims generation and primary dissemination of technologies to improve the productivity, quality, and profitability of fruit farming. The mandate of FRDI is the development and dissemination

	of appropriate technologies to increase commercial fruit production in the country and improve the living standard of farmers. There are no privately owned lands adjacent to FCRDI but it is surrounded by small-scale plantations, paddy fields, and home gardens. No commercial dwellings or other government institutes located adjacent area.

C. PROJECT JUSTIFICATION

Need for the project (What problem is the project going to solve)	ASMP has launched its activities in nine districts of seven provinces of the country. Project Management Unit (PMU) and Provincial Project Management (PPMUs) directly implement the two kinds of subproject activities that mainly consists with Productivity Enhancement and Diversification Demonstrations and the infrastructure development programs. The Department of Agriculture (DOA) acts as the main project partner agency of Productivity Enhancement and Diversification Demonstrations. DOA's activities consists with designing of subprojects, training farmers, monitoring subprojects' activities and involving the troubleshooting of the program. The agricultural research stations play remarkable role in ASMP's activities by providing technical inputs, and introducing new hybrid varieties to the farmers. Further, analyzing soil & crop samples of the farmers and giving recommendations for the fertilizer usage, and investigating pest and disease attacks of the crops and giving viable mitigation measures to overcome the issues timely are services provided by the agricultural research stations. Sri Lanka is an ideal location for tropical horticulture. The country can grow many types of tropical fruits throughout the year. Favorable natural conditions including its tropical sites, two monsoons a year, geographic, and good soil conditions would lead to year-round cultivation of these crops in different parts of the island. At present, in Sri Lanka, around 855,000 metric tons of fruit are produced annually (Department of Census and Statistics, 2012). Out of the total production merely 80, 595 metric tons of fruit are exported (Department of Customs, 2012). Agricultural exports as a whole generated 24% of Sri Lanka's export earnings (USD 2.3 billion) in 2012 (CBSL, 2013). Exports of Fruits and vegetables represented USD 32 million (<2 %) of total agricultural exports. However, the most significant aspect of this sector is the increasing trend of growth in exports. Meantime, Sri Lanka imports apples, grapes, pears, pomegranates, oranges, mandarin (Yellow), and many fruits as fresh fruits for local consumption. With current importation restrictions and government policies, there is good potential for enhancing fruit production for local consumption and the export market. ASMP together with DOA has implemented several fruit farming cluster programs and promoted the farmers' groups on the cultivation of passion fruit, pineapple, mango, yellow mandarin, soursop, etc. in the

	previous rounds of ASMP. Now, the farmers' groups (clusters) are getting direct benefits from the cluster programs. During the implementation of the fruit cultivation promotion project, FRDI has played major roles in introducing high yielding area-specific varieties, giving fertilizer and other crop management recommendations, and involving to redress the issues in crop management (especially in Pest and disease management) The services of the research stations have extended to increase productivity and profitability of fruit crops farming, make available quality produces and resource conservation, and eco-friendly fruit farming. The main aims/targets of the research and the development activities of these research station are; • Increased productivity and profitability of fruit farming • Minimized seasonality thus avoiding gluts and lean periods in production • Increased the availability of quality produce for both local and export market • Resource conservation and eco-friendly vegetable farming • Minimized post-harvest losses and improved value addition The conventional farming techniques and the fruit crops varieties are not enough to produce the country's fruit requirement and supply the products for the export market. Promotion of fruit farming and production results in good health conditions through increasing nutrients level of people while it earns the foreign exchange by achieving the export market. The service of FRDI is a national requirement since it directly influence on the country's production and income. To achieve the above national aims and goals, FRDI have few main objectives. They are; • To make available improved fruit varieties with farmer acceptance • To make available associated technologies for high productivity and profitability • To make available eco-friendly plant protection technologies • To minimize post-harvest losses and enhanced value addition • To assure availability of quality seeds and planning materials for stakeholders • To popularize and aware stakeholders on fruit crop related technologies The need of this subproject emphasizes that productive enhancement, diversification, and practicing good agricultural practices in fruit farming under ASMP is an essential integral part of the agriculture modernization activities. But existing research and laboratory facilities of the station is not enough the cater to the farmers and the country requirements. Strengthening infrastructure and Technological/Technical capacities of the Department of Agriculture is an essential need to ensure provision services and

	follow-up support for the farmer production organization (FPOs) established under Component 2 of the ASMP. Enhancing the research and laboratory facilities of FRDI- Horana will be a sustainable solution for the continuing of modern technologies that are introduced to the farmers by ASMP. Hence, ASMP proposes to enhance the laboratory facilities of the above station. Therefore, launching of capacity building program to enhance the research and laboratory facilities of the fruit research and development institute is an essential and mandatory requirement of the agriculture sector modernization.
Purpose of the project (*What is going to be achieved by carrying out the project*)	The project will directly result the enhancements of laboratory facilities at FRDI- Horana. Ultimately, it gives the benefits to the farmers who have engaged in fruits cultivation in the country. The following purposes will be achieved by implementing the subproject. • Improving the laboratory and other related technological and technical capacities of the research station of excellence is imperative to achieve the objectives of the ASMP, especially in terms of sustainability through continuous interventions. • Providing continuous technical and technological such as soil testing, issuance of site-specific fertilizer recommendations, the introduction of new varieties suitable for different agro-ecological regions including their management packages to the farming communities in the project areas during and after completion of the ASMP. • Providing technical support to the farmers to improve crop productivity, especially in the established SL-GAP farms through the services provided by the Centers of Excellence and the Extension and Training arms of the DOA, and Provincial Departments of Agriculture. • Fruit quality assurance by auditing and issuing of SL-GAP certificate to the GAP farms established through the involvement of the Center of Excellence and with the assistance of the Seed Certification Service in the DOA, which regulates the auditing of SL-GAP farms. • Support the establishment of productive model farms, including GAP Model Farms, in the project sites through technological intervention from the Centers of Excellence, including the production of Orange, Pineapple, Guava, Passion fruit, and Banana. • Continuous laboratory monitoring programs to be carried out island-wide on pesticide residues, contaminants, and pollutants in the agriculture environment comprise of food, soil, and water and monitoring programs for periodic assessment of toxicity of pesticides to pests, natural enemies, and beneficial organisms for maintaining the sustainability of model farms

	The ultimate effort of the ASMP is to establish good agriculture practices (GAP) in the farming activities by introducing new technologies.
Alternatives considered (*Different ways to meet the project need and achieve the project purpose*)	The existing agricultural fruit crops laboratory services of the government sector are half fulfilled the country's requirement. Even though there is private sector involvement, their services are very narrow and are limited to their own needs only. Hence, there is a gap to be filled and the government sector involvement is essential. The agriculture sector keeps trust in the government sector service since there is trustworthy service and DOA has improved human capital to deliver the service. Therefore, ASMP together with DOA have identified the need for a subproject and decided to enhance the laboratory services through the capacity building program. There is no alternative to be considered since there is well established system in the sector.

D. PROJECT DESCRIPTION

Proposed Start Date (Duration)	March 2022 (02 Months)
Proposed completion Date	April 2022
Estimated total cost	SLRs 93.008 Mn
Present Land Ownership	FRDI-Horana is located on the state land that is under the purview of the DOA.
Description of the Project (*With supporting material such as maps, drawings etc. attached as required*)	This subproject is mainly focusing to purchase and supply the equipment that needs to strengthen the research facilities at FRDI- Horana and upgrade the laboratory facilities at FRDI. For strengthening research facilities at FCRDI- Horana, the following laboratories will be equipped by ASMP**.** • Plan Science Lab • Soil Science Lab • Biotechnology/Molecular Biology Lab • Plant Pathology Lab • Entomology Lab • Plant Breeding Lab • Food Science Lab For strengthening laboratory facilities at FRDI- Horana, the following equipment will be provided; • Water bath – digestion of samples (open bath) (1 unit) • Fully automated Kjeld Hal system – Nitrogen analysis (1 unit) • Water purification unit – making distilled water (1 unit) • pH Meter - measuring acidity/baseness of samples (1 unit)

	• Analytical Balance – weighing the samples (1 unit) • Top Pan Balance – weighing the samples • Ion meter with selective electrodes - To determine ionic The list of equipment that will be provided is annexed as Annex 2.
Project Management Team	A Project Management Unit (PMU) has been established under the Ministry of Agriculture to implement the proposed project activities. Contact Persons: **Project Director** Agriculture Sector Modernization Project Ministry of Agriculture No. 123/2 Pannipitiya Road, Battaramulla Tel: +94 112 877 550, Fax: +94 112 877 546 Email: projectdirectorasmp2@hotmail.com Web: https://www.asmp.lk/ **Environmental and Social Safeguards Specialist** Agriculture Sector Modernization Project Ministry of Agriculture No. 123/2 Pannipitiya Road, Battaramulla Tel: +94 112 877 550, Fax: +94 112 877 546 Email: sanjayadms@hotmail.com Web: https://www.asmp.lk/ **Nature of Consultations and Inputs Received** Consultations with Environmental and Social Safeguard Specialist/ PMU and field visits to the project site.

F. DESCRIPTION OF PROPOSED SUBPROJECT ACTIVITIES

1. Supplying Equipment to the Laboratories	
Existing Condition of the Facilities	There are nine (9) main divisions that come under FRDI- Horana. Out of nine divisions six divisions have its laboratory facilities within the premises and research activities have been undertaken by the well-experienced & qualified research staff that consists of Director, Deputy Director (Research), Principal Agriculture Scientist, Assistant Directors Agriculture (Research), Research Assistants, and Technical Assistants. As the main divisions, there are; 1. Agronomy Division 2. Soil Science Division 3. Biotechnology Division 4. Pathology Division 5. Entomology Division 6. Plant Breeding Division 7. Socio Economics Division 8. Farm Division 9. Training Division

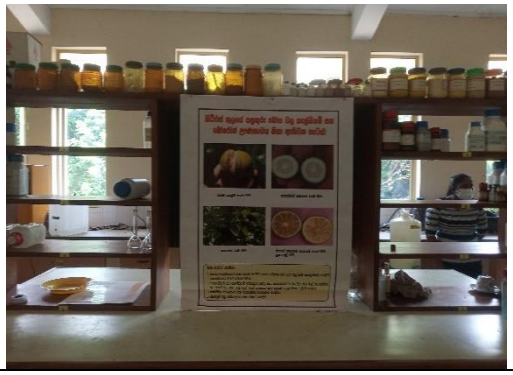
Apart from these research divisions, FRDI- Horana has eight (8) laboratory facilities that have been established to conduct research and experiments. Plan Science, Soil Science, Biotechnology, Molecular Biology, Plant Pathology, Entomology, Plant Breeding, and Food Science are the main laboratories that help to FCRDI activities.

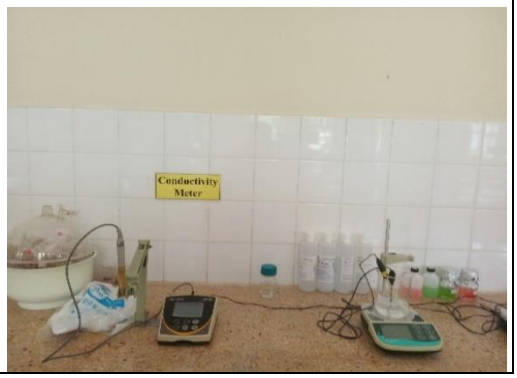
Under the separate divisions, the following services are been delivered;

- Development of new varieties of high yielding improved varieties of fruit suitable for irrigated and rainfed conditions with pest, disease and drought resistance quality.
- Development of plant protection strategies to minimize crop losses due to pest and diseases
- Identification of pest and diseases attacks for the fruit and develop the suitable management practices
- Development of improved agronomic practices to reduce the cost of production, to increase the productivity of agricultural lands and crops.
- Testing the adaptability of new improved varieties and technologies.
- Minimizing the post-harvest losses and improve the value addition of fruits
- Developing Improved soil and water conservation methods and soil fertility management practices

More ever, the soil science division of FRDI conducts analytical tastings to check the nutrient contents of the compost fertilizers. These samples are sent by the farmers, private companies, and other government institutions more than previously since the government has taken the policy decision to promote organic agriculture. The lab records revealed that FRDI has conducted more than 2,000 compost fertilizer analyses during last year (2021). Further, the Soil Science division of the research center is continuing research to produce high nutritional value compost fertilizer with crop characteristics such as susceptibility to pests and diseases. Already they have proven success in the research. This is an additional service provided by the FRDI on the current national need of the country.

DOA annually allocates funds for the recurrent expenditures of the laboratories. But existing equipment and the facilities are not enough to expand the labs' services. These labs should be equipped to expand their service to produce hybrid varieties of the fruits and other services.





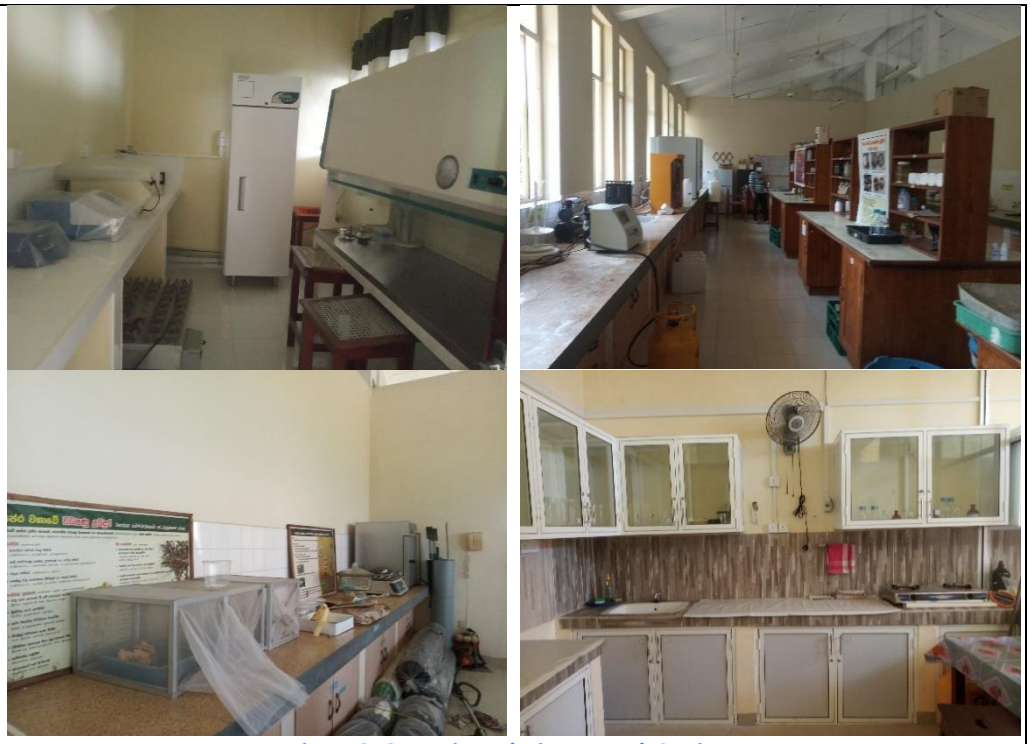


Figure 3: Operating Labs in Research Station

As the subproject, there are no civil works or cultivation activities are listed as the subproject's activities. Supplying equipment to enhance the laboratory facilities is the main activity of the subproject. Further, there is a well-established system for the present labs' operations. Hereafter will discuss the matters linked to the lab operation stage.

All the lab operations are followed by the standard operating procedure (SOP). SOP is a set of written instructions that describes, in detail, how to perform a laboratory process or experiment safely and effectively. Labs have written SOPs when work involves the use of hazardous materials (chemical, radioactive, and biological) or physical hazards.

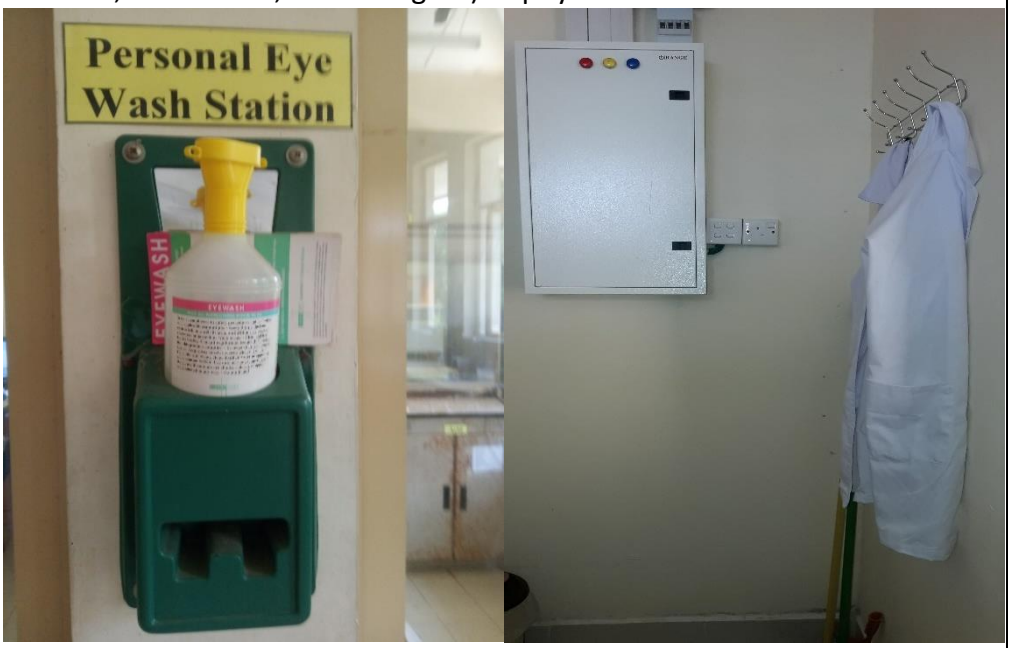
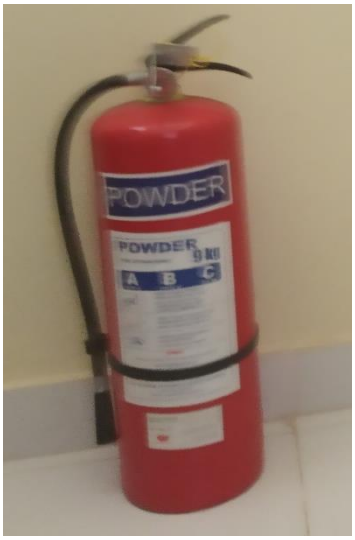


Figure 4: The safety measures adopted in the laboratories

2. Other factors

Solid waste	No solid waste is generated due to implementation of the subproject activities since there is no construction works.
Wastewater	The station has constructed waste water pits for proper management of labs' waste water but no waste water discharge is expected by supplying of the laboratories equipment
Fire Exhausting Mechanism	Fire exhausting mechanisms have been established in each unit of labs in all the research station.  Figure 5: Fire exhausting appliances installed at labs

E. DESCRIPTION OF THE EXISTING ENVIRONMENT

1. Physical features – Ecosystem components	
Topography and terrain	Geologically, the Horana area belongs to the Highland Complex of Sri Lanka and the elevation is below 25m AMSL. Generally, the area is having a rolling and undulating terrain with a moderate slope (slope 30%). The project site falls into wet zone low country of Sri Lanka and the features of this area is a combination of WL1 Agro-ecological zones
Climate and Meteorology	Climatically the area belongs to low country wet zone and the average temperature is 27.6ºC and maximum and minimum are 32.7°C and 22.7°C respectively. The average annual rainfall varies from 1,900mm to 2,500mm and average 2,150mm. Relative Humidity varies from 71% during the day to 83% at night.
Soil (*type and quality*)	Two main soil group identified; i.e., Red-Yellow Podzolic soils is the soil types in this area (Source: soil map of Sri Lanka). The surrounding area is identified as landslide-prone areas as per the Soil Conservation Act of Sri Lanka. But the land area that belongs to FRDI is not identified as landslide-prone site.
Surface water (*Sources, distance from the site, local uses and quality*)	Many open water bodies such as small natural springs and drainage canals are located within the Horana DSD. One rainwater catch pit has been constructed within FRDI's farmland and it is utilized for the irrigation purposes of the center.

	Use: The main surface water sources of the area are small natural springs and drainage canals. The use of surface water for bathing & washing purposes, animals, and agriculture is common. **Quality**: The quality of surface water in the area is good
Ground water (*Sources, distance from the site, local uses and quality*)	The groundwater of the area is available. Generally, the groundwater table is located within 3-5m depth and many farmers and surrounding community of the area have constructed dug wells for the use of domestic, animals, and irrigation purposes. The groundwater table of the areas is recharged through the natural springs located within the area. The quality of groundwater present in this area is good in condition and use for washing/ bathing activities and drinking purposes. Most of the residents of the area have access to the pipe-born water supply by the National Water Supply and Drainage Board. The people use pipe born water for domestic purposes including drinking.
Air quality (*Any pollution issues*)	Any major pollution source near the three research stations area is not recorded
Noise	No any noise pollution sources in the vicinity of the stations.
2. Ecological features – Eco-system components	
Vegetation (*Trees, ground cover, aquatic vegetation*)	Scrubland and disturbed secondary vegetation type is prominent in the area. In addition, agricultural lands and river associated vegetation are common habitat types present in this area. The whole land belongs to research station except the built-up area is used for the cultivations and propagation houses (Polytunnels, net houses, etc.) The flora such as *Mimosa pudica* (Nidikumba), *Panicum rapens, Paniucum notatum* (Ginigrass), *Ricinious communis*, *Ageratum conyzoides* (Hulanthala), and *Lantana camara* (common lantana) are commonly observed in the surrounding area of the research station.
Presence of wetlands	No wetlands present in the area adjacent to research stations
Fish and fish habitats	Open water bodies such as small natural springs and drainage canals are water bodies that are ideal for fish habitat and also found with freshwater fish varieties.
Birds (*waterfowl, migratory birds, others*)	The research station area is closer to the waterways and agricultural lands and there is a possibility of recording bird species in these habitat types. The several bird species were observed such as the Crows, Parrots, Eagles and Egrets, Common mynah, Greater Coucal (*Centropus sinensis),* Brown-headed Barbet (*Psilopogon zeylanicus),* White-throated Kingfisher (*Halcyon smyrnensis),* Common Kingfisher (*Alcedo atthis),* Spotted Dove (*Streptopelia chinensis),* Rock Pigeon (*Columba livia),* Red-wattled Lapwing (*Vanellus indicus),* Intermediate Egret (*Ardea intermedia),* Indian Pond-Heron (*Ardeola grayii),* Oriental Magpie-Robin (*Copsychus saularis),* Red-vented Bulbul (*Pycnonotus cafer),and* Cattle Egret (*Bubulcus ibis)*. The species were recorded in this habitat are very common for this type of habitat

Presence of special habitat areas (*special designations and identified sensitive zones*)	No presence of special habitat areas is reported within a 5 km radius of the research station. According to the environmentally sensitive areas map of CEA, the surrounding areas of the research center is landslide-prone area but the research center land is not in a vulnerable situation
3. Other features	
Residential/Sensitive Areas (*E.g., Hospitals, Schools*)	All labs belonging to the research station are located separately from the other institutions and they do not impact sensitive areas such as hospitals, schools, etc..
Archeological resources (*Recorded or potential to exist)*	The labs are located on DOA owned lands and there is no archeological or Physical Cultural Resource (PCR) to record or potential to exist.

G. SOCIO-ECONOMIC ENVIRONMENT

1. Stakeholders and Public consultation

Stakeholders' engagements

The Department of Agriculture is the main project partner agency of this subproject. The staff of the research stations jointly prepared their capacity needs and submitted them to the ASMP. Several discussions were undergone to finalize the subproject activities between the research stations' staff and the ASMP. For more transparency, the research stations' staff were represented the technical evaluation committee of this subproject.

The ASMP PMU staff conducted site visits, consultations with DOA's officials during subproject identification and designing stages.

Table 1: Responsible Officers in ASM Project Activities

SN	Name	Designation	Contacts
1	Mr. W.D. Lesley	Director	0711845221 doadfrd@gmail.com wdlesly@yahoo.com
2	Ms.K.A. Renuka	Principle Agriculture Scientist	0773 437412 karenuka43@gmail.com
3	Dr. Pradeepa Alahakoon	Principle Agriculture Scientist	0718 112774
4	Ms.A.K. Pushpakumari	Senior Scientist (Entomology)	0714 436795 shyamapk2003@yahoo.com
5	Mr. Indika Atapattu	Assistant Director of Agriculture (Research)	0713216955 indikaatapattu@yahoo.com
6	Ms.T.M.N.D. Thennakoon	Assistant Director of Agriculture (Research)	0714419327 nadika74@yahoo.com
7	Mr. S.D.D.N. Sandanayake	Farm Manager Agriculture Instructor	0718013561

Stakeholders' consultation

During the social and environmental screening process, the staff of FRDI-Horana were consulted. Meantime ASMP has taken actions to conduct the stakeholders' consultation starting from the subproject identification stage up to finalizing the subproject's design. It was a good tool to maintain transparency among the stakeholders. Due to the impact of the fruitful consultation process undertaken by the ASMP, the research station's staff is well aware of the subproject activities and their objectives. Meantime, they have negotiated and decided the real requirements that they want to enhance the research facilities of the stations.

Table 2: Consultation outputs

Locations / Sub Units / Fields Visited	Participants with Designations	Matters Discussed
FRDI at Horana on 11.01.2022		
Director's Office	Mr.W.D. Lesley- Director (Research)	Overall capacity building plan on strengthening laboratory facilities and

			infrastructure development for hybrid seed production and other services
	Soil Laboratory	Ms.K.A.Renuka- Principle Agriculture Scientist	Routine functions of the lab and overall environmental and social risks/impacts
	Pathology Laboratory	Dr. Pradeepa Alahakoon- Principal Agriculture Scientist	Routine functions of the lab and overall environmental and social risks/impacts
		Ms. Hansamala Jayawardhana- Program Assistant	
	Entomology Laboratory	Ms.A.K. Pushpakumari- Senior Scientist (Entomology)	Routine functions of the lab and overall environmental and social risks/impacts
		Mr. Indika Atapattu Assistant Director of Agriculture (Research)	
	Plant Science Laboratory	Ms. M.G.N.E. Mahagollage (Research Assistant)	Routine functions of the lab and overall environmental and social risks/impacts
		Ms. Ms. M.P.T.S. Karunasena (Research Assistant)	
	Molecular Biology Laboratory	Ms.T.M.N.D. Thennakoon Assistant Director of Agriculture (Research)	Routine functions of the lab and overall environmental and social risks/impacts
	Food Laboratory		
	Proposed water tank construction location	Mr. Tharindu (Assistant Farm Manager)	Locations of irrigation facility improvement and its socio-environment impacts
	Proposed agro well construction location		
	Field lake/pond to be expanded		

H. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
1	Are there any asset(s) that would be affected or acquired due to proposed project interventions such as: Land, Physical structure (Dwelling or commercial), Fruit trees/crops, Community Resource Property etc.?		√		Subproject includes only supplying of equipment for the laboratories of research center
2	Is the sub-project area adjacent to (less than 500m) or goes through any of the following environmentally sensitive areas such as: Cultural heritage site, protected area and/or of its buffer zone, Conservation Forest, reserve or a sanctuary, Mangrove, Estuarine, Wetland, including paddy fields, water bodies, PCRs, Landslide-prone areas etc.?		√		No such sensitive areas are located in the vicinity of the subproject area
3	Will the project activities involve with Encroachment on historical/cultural areas: disfiguration of landscape by road embankments, cuts, fills and quarries?		√		The equipment proposed to supply under this subproject will be placed in the currently operating laboratories only
4	Will the project interventions involve with encroachment on or impact ecologically sensitive or protected areas?		√		No civil/construction works includes in this subproject
5	Will the project interventions involve with alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		√		No civil/construction works includes in this subproject
6	Will the project interventions involve with deterioration of surface water quality due to silt runoff and sanitary wastes from work-based camps and chemicals used in construction?		√		No civil/construction works includes in this subproject
7	Will the project intervention involve with Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?		√		No such activities are included as the subproject's activities
8	Will the project interventions involve with noise and vibration due to blasting and other civil works?		√		No blasting activities are required for the subproject

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
9	Is there any possibility to create poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations due project interventions?		√		No such impacts are anticipated
10	Will be possible to creation of temporary breeding habitats for mosquito vectors of disease?		√		No such impacts are anticipated
11	Will there be risk of accidents associated with the increased vehicular traffic due to project interventions?		√		No such impacts are anticipated
12	Will the project activities increase the risk of water pollution from oil, greases and fuel spills, and other materials?		√		No such impacts are anticipated
13	Will the project activities involve with additional waste in water canals that may increase floods and waterlogs?		√		No such impacts are anticipated
14	Will the project activities involve with new/restored public areas/ spaces that can be inundated in case of floods?		√		No such impacts are anticipated
15	Project interventions proposed to include Green infrastructure: Does sub-project include any of the following design aspects such as: Sri Lankan Guidelines of Green and Environmentally Friendly Building for the State Institutions (2016), Low energy materials, Reduced water use options, Energy optimization for lights, A/C etc. , Recycling and waste management, Increased human comfort, Enhanced landscaping, exterior or interior design, Site selection considering conservation of vegetation and wildlife?		√		Under this subproject, only supply the equipment for the laboratories established and operating in the research station
16	Will the project interventions increase disaster Risk Management (DRM): such as: Floods, including coastal, Storm surges, Coastal erosion, Landslides, Land subsidence, Soil erosion and sedimentation, Rock falls, Cyclones, Droughts, Earthquakes, Salinization, salinity intrusion into drinking water sources, Forest fires, High winds, tornadoes etc., Epidemic and hazards related to environmental pollution, Vector borne diseases?		√		No such impacts will be resulted by this subproject

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
17	Will construction and operation of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.?)		√		The proposed subproject will enhance the capacities of the existing laboratories in the research station
18	Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?		√		No such substances are involved with this subproject
19	Will the Project produce solid wastes during construction and/ or operation?		√		No solid waste is generated due to the subproject.
20	Will the Project release pollutants or any hazardous, toxic or noxious substances to air?		√		No such emission will be released
21	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?		√		No such impacts are anticipated as a result of the subproject implementation or operation
22	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater or coastal wasters?		√		No such impacts are anticipated
23	Will the project cause localized flooding and poor drainage during construction Is the project area located in a flooding location?		√		No such impacts are anticipated
24	Will there be any risks and vulnerabilities to public safety due to physical hazards during construction or operation of the Project?		√		No such impacts are anticipated
25	Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?		√		No such impacts are anticipated
26	Are there any routes or facilities on or around the location, which are used by the public for access to recreation or other facilities, which could be affected by the project?		√		No such impacts are anticipated
27	Are there any areas or features of high landscape or scenic value on or around the location, which could be affected by the project?		√		No such impacts are anticipated

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
28	Are there any other areas on or around the location, which are important or sensitive for reasons of their ecology e.g., wetlands, watercourses or other water bodies, the coastal zone, mountains, forests, which could be affected by the project?		√		No such impacts are anticipated
29	Are there any areas on or around the location, which are used by protected, important or sensitive species of fauna or flora e.g., for breeding, nesting, foraging, resting, migration, which could be affected by the project?		√		No such impacts are anticipated
30	Is the project located in a previously undeveloped area, where there will be loss of green field land		√		No such impacts are anticipated
31	Will the project cause the removal of trees in the locality?		√		Tree removal is not required
32	Are there any areas or features of historic or cultural importance on or around the location, which could be affected by the project?		√		No such impacts are anticipated
33	Are there existing land uses in or around the location e.g., home gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?		√		No such impacts are anticipated
34	Are there any areas in or around the location which are densely populated or built-up, which could be affected by the project?		√		Labs are separately established
35	Are there any areas in or around the location, which is occupied by sensitive land uses e.g., hospitals, schools, places of worship, community facilities, which could be affected by the project?		√		Labs are separately established
36	Are there any areas in or around the location, which contain important, high quality or scarce resources e.g., groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?		√		Labs are separately established
37	Are there any areas in or around the location, which are already subject to pollution or environmental damage e.g., where existing legal environmental standards are exceeded, which could be affected by the project?		√		No such impacts are anticipated

I. CONCLUSION AND SCREENING DECISION SUMMARY OF ENVIRONMENTAL EFFECTS:

Assuming that all mitigation measures are implemented as proposed, the following effects can be predicted

Key project activities	Potential Environmental Effects	**Significance of environmental effect with mitigation in place** NS - Effect not significant, or can be rendered insignificant with mitigation SP - Significant positive effect SN - Significant negative effect U - Outcome unknown or cannot be predicted, even with mitigation
Supplying of equipment to laboratories in FRDI- Horana	Vegetation loss, dust, Crop damage siltation	NS

J. OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

1. The client's (Research Station's Officers) responsibility for preventing/minimizing/mitigating adverse environmental issues raised during the subproject operational stage

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
1	Soil, Water, and Leachate	• Soil and water (surface and ground water) on the onsite is unlikely to be contaminated by the operation of the subproject	• Periodic monitoring of the operation of the wastewater management system of the research station • Ensure the operation of wastewater pits in good condition • Periodic maintenance of the sedimentations, overflow of the waste water pits • Periodic maintenance of the pipelines of the wastewater management system • Timely address the breakdown/blocking of the pipelines and pits • Testing the samples to check the contamination of soil, groundwater table, and the surface water sources of the surrounding area • Avoid surface water stagnation and creating mosquito breeding places

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Frequent monitoring of contamination of leachate that is originated in labs with water and soil if any
2	Traffic and Transport Impact	• Unnecessary Traffic (Vehicular and Pedestrians) issues raised by Transport needs of the subproject operation	• No new transport needs is generated by the operation of the subproject • Follow the solid waste transport schedule according to the present routing • Identify the new transport needs created by the subproject operation if avail • Plan the new transport needs minimizing present activities • Display the in and out services routes to aware the staff
3	Air Quality	• Dust, Odour and Greenhouse Gas generated by the Subproject Operation	• Assess the emission (Air Quality Testing) during subproject operation • Assess the potential impacts of dust, suspended particulate matter, odor, and greenhouse gas emissions • Take precautionary actions to minimize the emission
4	Noise and Vibration	• Disturbances and inconveniences occurred by Noise and Vibration	• Measure the noise and vibration level of subproject operation • Identify the possible impacts by noise and vibration created by subproject operations • If exceed the acceptable level of noise and vibration, take precautionary actions to minimize • Prepare the specifications of the equipment and machinery with low vibration and noise • Introduce a code of conduct for the staff who engages in subproject operations to minimize the noise and vibration impacts. • Noise emission levels of all critical plant and equipment should be expected to comply with manufacturers' specifications with noise limits appropriate to those items

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
5	Invasive Species of Flora and Fauna, Weeds, Pests and Diseases	• Invasive Species of Flora and Fauna, Weeds, Pests and Diseases spreading due to subproject's operation	• Always keep hygienic conditions of the labs, cultivation areas. • Disinfect all the soil, plant and pests samples after testing using autoclaves or appropriate technique. • The composting organic material, which may contain insect eggs or larvae, weed seeds and spores, will be subject to temperatures in excess of 55 degrees for at least three days. • Control the weeds, diseases and pests as stipulated in PMP • Select healthy and diseases free planting materials with high purity for the cultivation • Avoid the contaminations of cultivation lands • Avoid the visitors of the labs and cultivation areas • Follow the approved procedures to maintain the hygienic conditions at the labs and cultivation plots • Follow the guidelines for the transport of the movement of solid waste from the research station/ farmlands • Burnt the crop residuals and the organic waste generated at the locations using safety measures
6	Waste Management	• Crops-related waste, general waste	• Dump the organic waste in the soil pit established at the stations • Use the organic waste for compost preparation after heat treatments/ disinfection • Burnt the crop residuals to maintain hygienic conditions of the field • Implement crop rotation to breakdown of pests/ diseases lifecycles
		• Utensils of agrochemicals, & chemicals, and chemical waste	• Store in the safe store up to proper dispose • Select a suitable contractor who has facilities for Cement Kiln Co-processing for disposing
		• E-Waste	• Segregate the e-waste on its type • Store in the safe store up to proper dispose

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Keep records on the accumulated waste • Contact the licensed e-waste collectors (CEA Licensed) • Handing over the e-waste to the licensed e-waste collector for proper disposal that has been approved by the CEA
7	Occupational Health and Safety	• Occupational hazards which can cause during subproject operation	• Develop and implement site-specific Health and Safety (H&S) plan which will include measures such as: (a) excluding the public from the defined labs/cultivation areas; (b) ensuring all workers/staff are provided with and use of personal protective equipment (PPE); (c) provision of H&S training for all personnel; (d) documented procedures to be followed for all construction activities; and (e) documentation of work-related accidents (There is a SOP that has already been implemented in the labs and all activities have been arranged accordingly). • Provide H&S training to all new workers/staff to ensure that they are appraised of the basic rules of work at the labs, personal protective protection, and preventing injuries to fellow workers/staff • Ensure that a first-aid station, eye washers, bathing location are provided within easy access to all and that trained first-aid personnel are made available to attend to first-aid needs and keep ready the vehicle to a government hospital in emergency case. • Provide medical insurance coverage for all workers/ staff • Ensure that all labs/ cultivation areas are barricaded to prevent unauthorized person entry • Provide a source of potable water and a clean eating place for workers, at a location not exposed to hazardous or noxious substances.

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Provide visitors with necessary safety gear if visitors to the labs/cultivation areas are allowed access to areas where incubators, crop/disease samples, culturing activities, hazardous conditions, or substances may be present. • Ensure that visitor/s do not enter hazard areas unescorted by relevant authorized parties in attendance. • Provide signboards to mark, hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal of hazardous substances. • Such signage shall be in accordance with international standards and be well known and easily understood by workers, visitors, and the general public

2. Cost of mitigation

The cost incurred with implementation of O-EMP will be allocated through the research station's budget

K. EMP IMPLEMENTATION RESPONSIBILITIES AND COST

The subproject includes only supplying equipment for the laboratories that are already established and operating in laboratories in FRDI- Horana. Hence, no civil/construction works include in the subproject. All the labs are operating based on the standards of the procedures (SOP). Therefore, no anticipated impacts are identified to develop an environmental management plan to be followed by the contractor during subproject implementation. But environment management plan has been prepared considering the impact that may occur during the subproject operational stage and it should be followed by the workers/staff of the research station.

The overall responsibility of ensuring compliance with safeguard requirements rests with the PMU. The PMU will be directly responsible for reviewing the proposed activities are aligned with environmental safeguards compliances. The overall supervision will be carried out by the in-house staff of the PMU supported by the staff in research centers. Any consequent modification or amendments of subproject will be negotiated prior to implementation with ASMP and DOA staff with notification to the WB's office.

Environmental & Social monitoring will be carried out largely through visual observations and compliance monitoring using the checklist provided in the EMF & RPF by the Safeguard Specialist of the PMU and the DOA jointly. The Environmental and Social Safeguards Specialist will need to visit the site quarterly and report on issues and performance on ESMP implementation to the PMU.

L. DETAILS OF PERSON RESPONSIBLE FOR THE ENVIRONMENTAL SCREENING

This project does not require environmental clearance under national environmental regulations. No other approval is required due to the spread and magnitude of the project. The project will have negligible environmental impacts, mostly limited to the operation period and there is a set of activities to manage the impacts to the environment. The impacts on the physical and biological environment are virtually none.

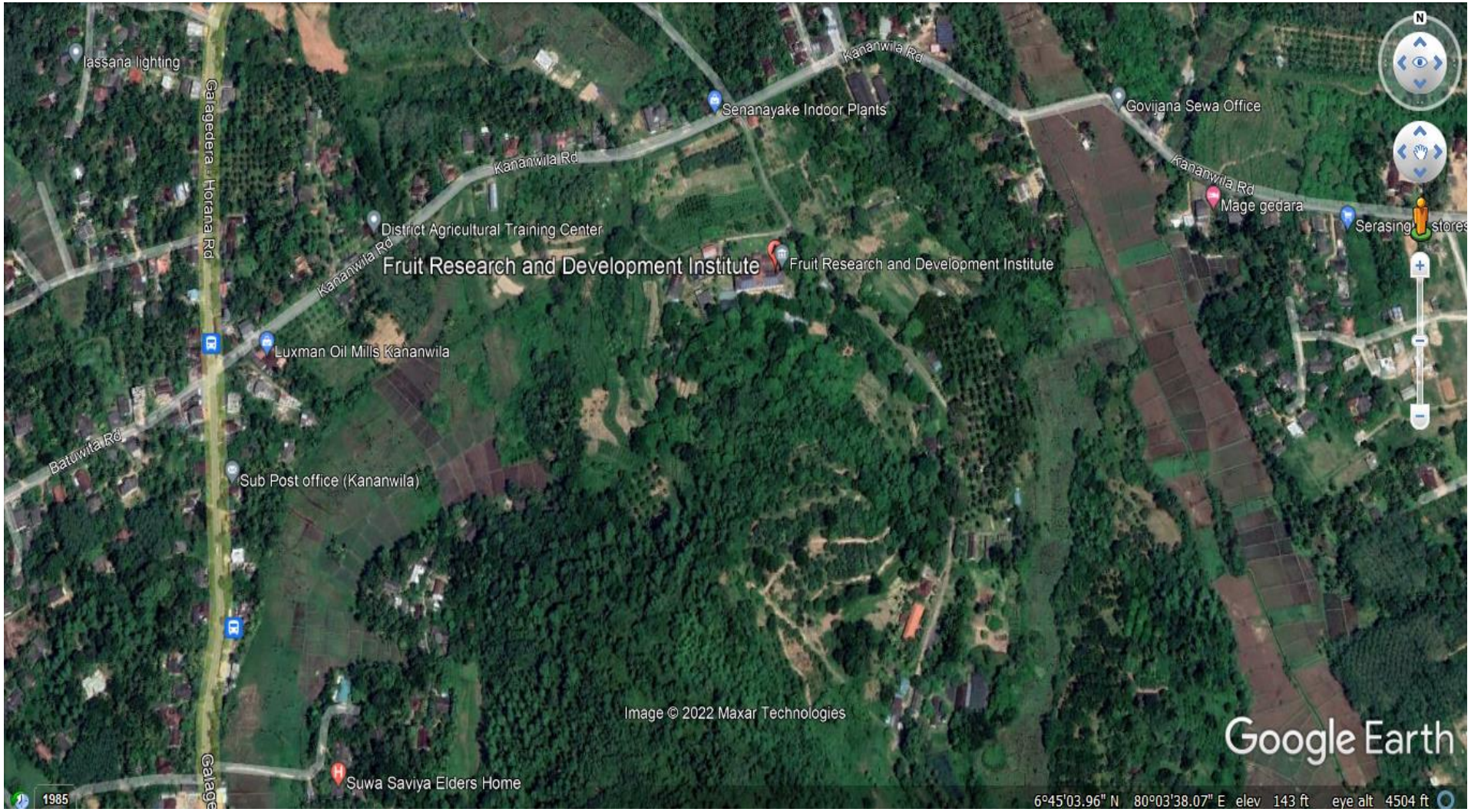
M. DETAILS OF PERSONS RESPONSIBLE FOR THE ENVIRONMENTAL SCREENING

Screening conducted and reviewed **D.M. Sanjaya Bandara** Environment and Social Safeguard Specialist Agriculture Sector Modernization Project ***Name/Designation/Contact information***	**Date** January 2022  ***Signature***
Screening report approved by **Dr. Rohan Wijekoon** Project Director Agriculture Sector Modernization Project ***Name/Designation/Contact information***	**Date** January 2022  ***Signature***

N. ANNEXES

Annex 1: Google Map/ Location Map

1. Fruit Research and Development Institute- Horana



Source: Google Map

Annex 2: Interim Guidelines on COVID-19 of World Bank

ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

1. INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19, and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

2. CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors

permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering and exiting the site; support services, such as catering, cleaning services, equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-serviced areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

3. DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including:

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)
- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PIU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

4. WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PIUs) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PIU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).

- In making the request, it may be helpful for the PIU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant

guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.

- The PIU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.

- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.

- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PIU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member (with back up) to attend such meetings. If meetings cannot be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.

- The PIU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PIU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity.

- Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

5. WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PIUs and contractors should refer to guidance issued by relevant authorities, both national

and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety, and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PIU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

(a) ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

(b) ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID - 19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

(c) GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

(d) CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19).

(e) ADJUSTING WORK PRACTICES

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.

- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

(f) PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected.
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on constructions sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

(g) LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
- Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

(h) INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.
- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.

- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

(i) CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible).
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

(j) TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

(k) COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed , which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

6. EMERGENCY POWERS AND LEGISLATION

Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:

- Declaring a public health emergency

- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)
- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday

Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

ANNEX

WHO Guidance

Advice for the public

WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website:
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

Technical guidance

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, issued on 19 March 2020

Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health, issued on 18 March 2020

Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response, issued on 16 March 2020

Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19), issued on 19 March 2020

Operational considerations for case management of COVID-19 in health facility and community, issued on 19 March 2020

Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19), issued on 27 February 2020

Getting your workplace ready for COVID-19, issued on 19 March 2020

Water, sanitation, hygiene and waste management for COVID-19, issued on 19 March 2020

Safe management of wastes from health-care activities issued in 2014

Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (COVID-19) outbreak, issued on March 19, 2020

ILO GUIDANCE

ILO Standards and COVID-19 FAQ, issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

MFI GUIDANCE

IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework