කෘෂි නවීකරණ ව්‍යාපෘතිය
விவசாய நவீனமயமாக்கல் திட்டம்
Agriculture Modernization Project

කෘෂිකර්ම අමාත්‍යාංශය
Ministry of Agriculture
கமத்தொழில் அமைச்சு

Environmental Screening Report

Strengthening Capacity to Enhance Basic Seed Potato Production at Seetha Eliya

Project Management Unit
Agriculture Sector Modernization Project
January 2022

Table of Contents

FIGURES

TABLES

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 Basic Seed Potato Production at Seetha Eliya
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 seed potato farm and potato research center that are jointly located in Seetha Eliya 3.7 km away from the city. This area belongs to Nuwara Eliya DSD and district in the Central Province. Under this subproject, Strengthening Capacity to Enhance Basic Seed Potato Production will be implemented. The location maps are annexed as Annex 1.
Location (Google Map) ***Seed Potato Farm***- 6^0 57' 03.04" N 80^0 47' 58.50" E **Seed Potato Research Center-** 6^0 55' 28.10" N 80^0 46' 17.34" E	 **Figure 1: Location of the Potato Research Center and Seed Farm at Seetha Eliya**
Definition of Project Area *(The geographical extent of the project & areas*	Agricultural Research Station, Seetha Eliya comes under the purview of Horticultural Crop Research and Development Institute, Gannoruwa. Potatoes and temperate vegetables are the commodity research focus of this station. Plant breeding programs of the station include potato and carrot breeding programs for upcountry wet and intermediate zones.

affected during construction)	Enhancement of crop productivity is done through the development of improved agronomic packages, the use of good agricultural practices for the management of pests, diseases, and nutrients. The center is responsible for conducting national programs to uplift the quality and amount of seed potato by providing in-vitro potato plants, rooted stem cutting plants, and potato mini-tubers for pre-basic seed production for both private and public sectors.  **Figure 2: Agriculture Research Station, Seetha Eliya** The Seed and Planting Material Development Center (SPMDC) has been established under the Department of Agriculture to achieve the vision of achieving excellence in Agriculture through increasing quality seed and planting materials. Seed potato development center/ seed potato farm was established in Seetha Elia as the affiliated center by SMPDC and its main objective is locally producing seed potato to supply high-quality planting materials to the growers.  **Figure 3: Seed potato farm at Seetha Eliya** The cultivatable land extent belongs to potato research center and seed farm is about 240ha (600 acres). Meanwhile, research station buildings, farm's building, potato stores and the road networks covers considerable land extent. The potato research center and farm are nexus established in the agro-ecological zone belonging to the upcountry wet zone (WU2). The surrounding area is predominantly rolling terrain areas where the majority of lands are agricultural. All the private owners cultivate upcountry vegetables mostly potato and leeks on their farmlands as well as home gardens.

Adjacent land and features	The total cultivatable land extent under potato research center and the farm is about 240ha (600 acres) and in addition to cultivatable area, a considerable land area is covered by research station buildings, staff quarters, farm buildings, road network and potato stores. Seetha Eliya area belongs to Nuwara Eliya DS division of the Nuwara Eliya district in Central Province. The area belongs to the upcountry wet zone. This research station mainly aims generation and primary dissemination of technologies to improve the productivity, quality, and profitability of potato and carrot farming. The mandate of research center is the development and dissemination of appropriate technologies to increase commercial potato production in the country and improve the living standard of farmers. Seed potato farm ensures the availability of quality seed and planting material to satisfy the demand of local growers through the development of local seed production industry with the participation of public and private sector. The area adjacent to the research center and the farm are owned by the farmers who continue the vegetable cultivation intensively. The land use of the surrounding area is agriculture. Even home gardens are also used by the residents for vegetable cultivation since the area is favorable for cultivation and it gives a high return for the investment. Since the research station and farm are jointly located separate from community living areas, there is no encroachment, activities, or accesses of other parties are get affected or disturbed by their activities.  **Figure 4: Potato Farmland**

C. PROJECT JUSTIFICATION

Need for the project (What problem is the project going to solve)	The Department of Agriculture (DOA) acts as the main project partner agency of Productivity Enhancement and Diversification Demonstrations. DOA's activities consist 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.

	Potato (***Solanum tuberosum L***.) originated in the Andes highlands in Peru and Europeans who settled in hilly areas introduced it to Sri Lanka in the 1850s. At present potato is extensively cultivated in the district of Nuwara Eliya (Upcountry wet zone >1,000m AMSL) in two major seasons, "Yala" (Feb - July) and "Maha" (Aug - Dec.) where annual rainfall is >2,500mm and temperature ranges between 10-15 ^{o}C with the relative humidity of 80%. It is also widely grown in Badulla District (Up Country intermediate zone- 1,000 to 1,500 m MSL) in paddy fields and high land during "Yala' and "Maha" seasons respectively. This area experiences rainfall of 1,500 - 2,250 mm annually with 70 % RH and 15- 22 ^{o}C The annual domestic potato production which is generally about 80,000 tons is about 40% of the domestic consumption requirement of 200,000 tons. The balance requirement is about 120,000 tons is imported annually incurring a foreign exchange cost of about SLRs. 5,100mn. The potato extent and production of Sri Lanka have been stagnating with slight annual variations over the recent years. The average productivity of potatoes in Sri Lanka has been stagnating around 16 t/ha which is below the average yields of the neighboring countries. Relatively low productivity increases the price of local potatoes than the imported products and the farmers have to compete with the low price imported potatoes. Local potato farmers get at risk of price fluctuation during the harvesting period and economic losses are happen as the result of this market behavior. The low productivity directly affects the increase of the cost of production resulting in less profit margin to the potato farmers. The present annual unit cost of the production of potato is about SLRs 55.00 to 60.00/kg of which about 50% is incurred on the seed. The annual extent of potato cultivated is about 5,000 ha that needs about 12,500 tons of seed tubers to be cultivated. About 70% of the seed requirement is met with seed produced by farmers themselves, and 8% of the annual seed requirement is met with seed produced in government farms. While another 10% of seeds are being imported annually. Additionally, 12% of the annual seed requirement is supplied by small and medium-scale seed suppliers. Seeds produced by farmers are generally below the required standards of quality but the unit cost of imported seed is about SLRs 400/kg, and this high cost discourages farmers to purchase quality seed. Usage of lower quality seed is considered as the main reason for lower productivity of the domestic potato sector, and the high proportion of the cost of seeds in the unit cost of production reduces farmers' profitability and reduces incentives for expanding production. Supplying high-quality seed at a lower cost has become a critical necessity to break the lower productivity-based vicious cycle of stagnating domestic extent and production of potato, and associated impediments on efforts for reducing the high foreign exchange cost incurred annually on potato imports. The Department of Agriculture implemented a project on increasing high-quality seed production

	through rapid seed multiplication and has obtained successful results that seemed to lead to slight increases in domestic potato productivity. The previous project of the Department of Agriculture expanded the Rapid Multiplication of potato seeds within Polly Tunnels by the expansion of area under Poly Tunnels that produce early generation seed (G0 or G1). However, the full benefit of that project could not be achieved since the expansion of the multiplication cycle at farmer fields was below expectations due to a lack of proper implementation of appropriate agronomic practices. The lessons learned from that project indicates that high-quality seed at a lower cost can be produced at farmer fields with the adoption of improved agronomic practices and multiplication of early generations of seeds (G0 or G1) produced at Poly Tunnels. Focusing to achieve the above targets, ASMP and DOA officers have implemented a seed potato production cluster program with the participation of the selected farmers' groups in Keppetipola and Boralanda areas of the Badulla district. Simultaneously, Strengthening Capacity to Enhance Basic Seed Potato Production of DOA has been identified as the urgent need that should be addressed by ASMP. This program directly impacts the sustainability of the ASMP seed potato production program too while it serves national potato production. Enhancement of the capacities of potato research center and potato seed farm- Seetha Eliya will result the more positive return to the farmers and the country economy as well. The services that are provided by the both centers are; • Development of high yielding potato and carrot varieties locally. • Development of agricultural technology for consumption potato production, seed potato production and other up-country vegetables like leeks, cabbage, cauliflower, broccoli, lettuce, kohlrabi, beet etc. • Development and evaluation of effective pest and disease control measures for potato and other up-country vegetables. • Evaluation of commercial potato and up-country vegetable varieties for recommendation • Evaluation of new fungicide, insecticide and weedicide for potato and other up-country vegetables. • Evaluation of fertilizers for potato and up-country vegetables • Soil testing for potato bacterial wilt, nematodes and soil mineral NPK • Production of disease free in-vitro potato plants for pre-basic potato plant production. • Production of potato mini-tubers as planting material for basic potato seed production using aeroponic, hydroponic and geoponic systems • Farmers' field inspection for field problems

	• Fertilizer recommendation for potato and up-country vegetables according to soil analysis results • Dissemination of agricultural technologies to the field extension officers. • Supply of high-quality Seed Potato • Seed Processing • Providing Storage Facilities • Distribution & Supply of Quality Seed & Planting Materials • Management of Buffer Seeds & Planting Material Stock • Quality Seed Production under the Contract Growing Program • Conducting Training Programs The need of this subproject emphasizes that Basic Seed Potato Production, and practicing good agricultural practices in potato farming under ASMP is an essential integral part of the agriculture modernization activities.
Purpose of the project (*What is going to be achieved by carrying out the project*)	The project will directly result the enhancements of basic seed potato production process at potato research center and the potato seed farm in Seetha Eliya. The following purposes will be achieved by implementing the subproject. • Ensure timely availability of Quality Seed & Planting Materials. • Production and Supply of National Basic Seed Requirement of Potato. • Fulfillment of National/Certified Seed Requirement through Co-ordination of stakeholders of the industry. • To overcome Crisis situations through maintenance of buffer seed stocks • Recommendation of commercial potato and up-country vegetable varieties for commercial cultivation • Screening of new fungicide, insecticide and weedicide for potato and other up-country vegetables for recommendation. • Fertilizer testing for potato and up-country vegetables • Soil testing for potato bacterial wilt, nematodes and soil mineral NPK • Supply of disease free in-vitro potato plants for pre-basic potato plant production. • supply of potato mini-tubers for basic seed potato production • Farmers' field inspection for field problems • Fertilizer recommendation for potato and up-country vegetables according to soil analysis results • Dissemination of agricultural technologies to the field extension officers • 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. 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*)	With the current economic policies of the country, farmers are encouraged to use locally produced seeds and planting materials. Simultaneously, the enhancement of national production is also a goal set by policymakers. During the past four decades, farmers use imported seed potatoes for their cultivations finally it becomes the 70% share of the total seed requirement. In addition to that potato, cultivation was threatening due to poor quality imported seeds. As per the evidence revealed by the authorized parties, many pest and diseases issues were arisen due to the seed potato importation. Now the cost of potato production is too high and more than 70% of the potato production cost is caused due to imported seeds. Hence, promoting local seed potato production is the most cost-effective alternative as it indirectly influences food security too. Therefore, strengthening basic potato seed production is the only alternative that can be implementable. There is no private party investing for the local seed production since it needs high-level investment.

D. PROJECT DESCRIPTION

Proposed Start Date (Duration)	March 2022 (04 Months)
Proposed completion Date	June 2022
Estimated total cost	SLRs 164.29 Mn
Present Land Ownership	The potato research center and the farm are 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 on enhancing facilities at the potato research center and seed farm- Seetha Eliya and upgrading their services. For strengthening capacities includes following activities**;** **<u>At Research Station</u>** • Increasing capacity of tissue culture facilities • Installation of sprinkler irrigation system for 1 acre land plot **<u>At Seeds Farm</u>** • Upgrading Root Stem Cutting (RSC) production facilities • Construction of 4 polytunnels (each size is 400m^2)

	• Converting of G_0 potato seed producing polytunnels in to aero phonic pre basic seed potato (G_0) production system with hardening facilities – 20 units • Establishing cold room facilities for seed multiplier as a service – 1 unit) • Establishing seed potato (G_0 and G_1) sorting facility- I unit The design drawings of the civil works 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.

E. DESCRIPTION OF PROPOSED SUBPROJECT ACTIVITIES

Subproject activities are been designed to implement in research station and seed farm as below;

1. At Research Station

- Establishment of tissue culture lab
- Installation of sprinkler irrigation system for 1 acre land plot

2. At Seeds Farm

- Upgrading Root Stem Cutting (RSC) production unit
- Construction of 4 polytunnels (each size is $400m^2$)
- Converting of G_0 potato seed producing polytunnels in to aero phonic pre basic seed potato (G_0) production system with hardening facilities – 20 units
- Establishing cold room facilities for seed multiplier as a service – 1 unit)
- Establishing seed potato (G_0 and G_1) sorting facility- I unit

Existing Condition of the Facilities	There are five (5) main divisions that come under potato research center. All five 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), Assistant Directors Agriculture (Research), Research Assistants, and Technical Assistants. As the main divisions, there are; 1. Plant breeding and bio-technology division 2. Agronomy division 3. Plant pathology division 4. Plant entomology division 5. Soil science division Each above divisions have their laboratories within the research premises. With the existing facilities they are delivering the following services to the industry. • Recommendation of commercial potato and up-country vegetable varieties for commercial cultivation • Screening of new fungicide, insecticide and weedicide for potato and other up-country vegetables for recommendation. • Fertilizer testing for potato and up-country vegetables • Soil testing for potato bacterial wilt, nematodes and soil mineral NPK • Supply of disease free in-vitro potato plants for pre-basic potato plant production. • supply of potato mini-tubers for basic seed potato production • Farmers' field inspection for field problems • Fertilizer recommendation for potato and up-country vegetables according to soil analysis results • Dissemination of agricultural technologies to the field extension officers More ever, the research center has to be provided the potato tissue culture seedlings to the farm to proceed with the new G0 and G1 production. The existing facilities are not enough they supply the demand made by the seed farm; hence they have planned to strengthen their services by expanding their tissue culture lab. They have planned to convert an underutilized section of the center into a tissue culture lab.  **Figure 5: The vacant room identified to convert into tissue culture lab**  **Figure 6: Existing culture room of tissue culture lab**

Further, the one-acre extent open field has to be upgraded with a sprinkler irrigation system to facilitate the ongoing research activities of the center. The research station uses earthen ponds to irrigate its crops. And they have planned to connect the new sprinkler system into their existing irrigation system since there is adequate water.

Figure 7: Land proposed to be upgraded with sprinkler irrigation system

Figure 8: Water source for irrigation

The seed potato farm includes a polytunnel area, open field, and potato stores area. Presently, the farm division gets potato tissue culture seedlings from the research center and multiply seedling subject to hardening process and then produce the G_0 and G_1 potato seeds for distribution among the farmers and the private farms.

The seed farm has constructed 20 polytunnels to produce the G0 potato seed and a few aeroponic polytunnels. The experiences and the research findings revealed that aeroponic cultivation gives two times more yield than hydroponic cultivation. E.g., In hydroponic cultivation, one potato plant produces nearly 20-22 tubers but aeroponic cultivation can produce 40-45 tubers from one plant at a time. It is a 100% yield increment. Hence, they have decided to convert the existing polytunnel into aeroponic polytunnels since it is a cost-effective and efficient program.

Figure 9: Aeroponic cultivation

Figure 10: Aeration system of aeroponic cultivation

Figure 11: An existing polytunnel

Figure 12: Polytunnels decided to be converted

The seed potato sorting is currently undertaken manually. It consumes time and a high labor force. Therefore, seed potato sorting should be mechanized to cater to the high production period to minimize the cost and improve the quality of the service. Meantime, the seed potato farm already has 3 cold storages to store the production. One of these stores can store 150 MT of seed potato and cumulatively, the farm can store 450 MT of seed potato during the season. It is emphasized that the facility should be expanded to cater the future demand and the production enhancement.

Figure 13: Manual sorting

Figure 14: Cold Store

DOA annually allocates funds for the recurrent expenditures to manage the researches and continue the seed potato production process but there is no capital investment is received to enhance the proposed activities. ASMP and DOA together conduct the consultation sessions with relevant officials and identified to need of strengthening the capacities of these centers.

2. Other factors	
Solid waste	The solid organic waste such as parts of crops generated by labs' testing is disinfected using autoclaves and dumped in the soil pit after the testing. Due to disinfecting the remaining organic sample, there are no contamination or inoculation issues that may arise by the open-pit dumping. The research station has 240ha land extent, therefore organic waste dumping is not an issue since there are no residents or other sensitive areas. All the chemical waste including empty containers of labs chemicals, agrochemicals, and others is kept in separate part of the chemical stores. The DOA has established a center to collect the agrochemical waste and the empty containers of the surrounding areas farmers to minimize the environmental pollution caused by

	the careless dumping. This center is located in the potato seed farm and the research center hand over their chemical waste to this center. This center collects all the agrochemical containers and annually calls bids to find a contractor for the safe disposal of chemical waste. After selecting a suitable contractor, the chemical waste will be removed properly. DOA selects a contractor who has the facilities for the insulation of this waste at higher temperatures (through Cement Kiln Co-processing) as an approved and appropriate method. Most often, the cement factories have been selected as the qualified contractor for this job. This process is being monitored by the DOA's special audit team timely whether there is quantity and process are going properly.  **Figure 15: Agrochemical waste collection center**
Wastewater	The seed farm discharges the wastewater into the open earthen pits that have been constructed on the farmland. This wastewater contains the Albert Solution at a low concentration. Again this wastewater is pumped to irrigate the open cultivation area of the farm and no pollution material remains since it is been reused.  **Figure 16: Pump house located near earthen water pit**  **Figure 17: Open earthen pit collects waste water**

	In addition, there is a rainwater harvesting system established in the seed potato farm and the collected water is used for the irrigation purpose.  **Figure 18: The rainwater harvesting system established**

F. DESCRIPTION OF THE EXISTING ENVIRONMENT

1. Physical features – Ecosystem components	
Topography and terrain	Geologically, the Seetha Eliya area belongs to the Highland Complex of Sri Lanka and the elevation is nearly 1,900m AMSL. Generally, the area is having a rolling terrain with a slope (slope 30%). The project site falls into wet zone up country of Sri Lanka and the features of this area is a combination of WU2 Agro-ecological zones
Climate and Meteorology	Climatically the area belongs to up country wet zone and the average temperature is 15.9ºC and maximum and minimum are 20.2°C and 11.6°C respectively. The average annual rainfall varies from 1,700mm to 2,700mm and average 1,900mm. Relative Humidity varies from 75% during the day to 95% at night.
Soil (*type and quality*)	Two main soil group identified; i.e., Red-Yellow Podzolic and Mountain Regosols are 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 Seetha Eliya Seed Potato Farm and the Potato Research Center 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, earthen ponds and drainage canals are located within the Nuwaraeliya DSD. A natural spring and drainage canals are located adjacent to the both research center land and seed potato farmland. Few earthen water ponds are located within the seed potato farmland and these are the water source utilized for the irrigation purposes of the centers.

	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, domestic and agriculture is common. **Quality**: The quality of surface water in the area is good  **Figure 19: Open water pond utilize for seed farm irrigation purposes**
Ground water (*Sources, distance from the site, local uses and quality*)	The seed potato farmland and research station are located at plat terrain with a hilly surrounding area. Therefore, groundwater in the area is available. Generally, the groundwater table is located within 3-5m depth and many farmers and the surrounding community of the area have constructed shallow 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.
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*)	The predominant land use type of the project area is agriculture. Apart from vegetable cropping lands, the rest of the area consists of plantation crops and state-owned lands are being utilized for plantations. The identified farmlands are located within several habitat types including grassland, cultivated area, home gardens, and secondary vegetation. The flora such as *Panicum rapens, Paniucum notatum* (Ginigrass), Strobilanthes spp. (Nelu), ground orchids 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 Sri Lanka Wood (Pigeon*Columba torringtoniae),* Oriental Honey (Buzzard*Pernis*

	ptilorhynchus), House Crow (*Corvus splendens),* Common Myna (*Acridotheres tristis),* Rock Pigeon (*Columba livia),* Indian Swiftlet (*Aerodramus unicolor),* House Sparrow (*Passer domestic),* Sri Lanka White- Eye (*Zosterops ceylonensis) and* Yellow-eared Bulbul (*Pycnonotus penicillatus).* 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 1 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 and farmland are not in a vulnerable situation
3. Other features	
Residential/Sensitive Areas (*E.g., Hospitals, Schools*)	The research station and seed farm are located away from the residential or other sensitive areas. The sensitive areas such as hospitals, schools, community gathering centers are not located within the subproject impact zone.
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' Engagement

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 decide the subproject activities between the research stations and seed farm staff. In addition to DOA officials, the Seeds and Planting Materials Development Center (SPMDC)- Peradeniya and Horticulture Research and Development Institute (HORDI) also participated during the consultation process with ASMP. For more transparency, the research staff and seed farm staff represent 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. K.D. Pushpananda	Director (Seed and Planting Material Development Center- Peradeniya)	0812 388122 0812 388608 pushpanandak@yahoo.com
2	Mr. M.C. Jayasinghe	Additional Director of Agriculture (Development)	0718 319224 jayasinghe70c@gmail.com
3	Mr. W.M.I. Weerasekara	Deputy Director of Agriculture (Farm Development)	0715 347267 weerasekaradoa@gmail.com
4	Mr. Sanath Dissanayake	Assistant Director of Agriculture (Seeds)	0718153061
5	Mr. Athula Nawarathne	Agriculture Instructor (AI)/ Officer-In-Charge- Seed Farm	
6	Ms. Chalani Dissanayake	Agriculture Instructor (AI)- Seed Farm	
7	Ms. Nishanthi Handunge	Agriculture Instructor (AI)-Cold Room Facility	07184860160
8	Dr.P.D. Abeythilakarathna	Deputy Director Research- Potato Research Center	0522222615 0714495445 ddr.arssi@doa.gov.lk
9	Ms. K. Pushpanji	Assistant Director of Agriculture (Research)	0522222615 0716431992 pushpanjie@yahoo.com

Stakeholders' consultation

During the social and environmental screening process, the staff of Potato Research Center, Potato Seed Farm and Cold Stores- Seetha Eliya 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 and seed farm's staff are 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 and seed production facilities of the stations.

Table 2: Consultation outputs

Locations / Sub Units / Fields Visited	Participants with Designations	Matters Discussed
SPMDC- Peradeniya on 19.01.2022		
Director's Office (Seed and Planting Material Development Center- Peradeniya)	Mr. K.D. Pushpananda Director	Overall capacity building plan on strengthening seed and planting material production at seed potato farm at Seetha Eliya and Vegetable seeds and planting material production farm- Kundasale
	Mr. W.M.I. Weerasekara- Deputy Director of Agriculture (Farm Development)	
Seed Potato Production Farm @ Seetha Eliya on 21.01.2020		
Seed & Planting Material Development Center, Seetha Eliya	Mr.M.C. Jayasinghe Additional Director of Agriculture Development)	Requirement of proposed improvement for seed potato production and its impact
	Mr. Sanath Dissanayake Assistant Director of Agriculture (Seeds)	Process of seed potato production (G0 & G1)
	Ms. Chalani Dissanayake Agriculture Instructor (AI) Seed Farm	
	Ms. Nishanthi Handunge Agriculture Instructor (AI)- Cold Room Facility	Cold room storage facilities
Seed Potato Research Station @ Seetha Eliya on 21.01.2020		
Seed Potato Research Station, Seetha Eliya	Ms. K. Pushpanji Assistant Director of Agriculture (Research)	Requirement of improving tissue culture laboratory facilities and sprinkler system for irrigation facility

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.?		√		Construction of polytunnels, converting of existing polytunnels into aeroponic polytunnels, establishing seed potato sorting facilities and cold storage facilities for seed potato production farm and establishing sprinkler irrigation system and expansion of tissue culture facilities in potato research center are the proposed civil works under the subproject. The proposed activities will slightly change the topography but no harm or impact to the natural drainage patterns of the locality. And the drainage activities are designed and implemented as an important part of the subproject activities. Debris/unsuitable excavated or clearing material will be disposed properly
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?		√		No such impacts are anticipated
4	Will the project interventions involve with encroachment on or impact ecologically sensitive or protected areas?		√		No such impacts are anticipated

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
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 such impacts are anticipated but there may be temporary impacts. Such impacts will be mitigated through implementation of EMP
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 such impacts will be anticipated from the proposed civil works of the 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 impacts will be anticipated from the proposed civil works of the subproject
8	Will the project interventions involve with noise and vibration due to blasting and other civil works?	√		Low	The use of machines for civil works may make noise and vibrations but those impacts will be mitigated through the implementation of EMP. Further, civil works are taking place at the research station and farm division away from the residential area. Hence there is no possibility happen such impacts to the surrounding area.
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?		√		The construction area is far away from the residential, commercial or any other occupants' areas. There is no any contact with the outsiders or activities

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
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?		√		Establishing sprinkler irrigation systems, and aeroponic polytunnels conserve water more than other irrigation methods and these civil works are directly bounded with the effective use of irrigation water. it indirectly effects on efficient use of water and conserves the water. Further, seed farm already established the rainwater harvesting system and it is an important activity for the center since it conserves water while managing storm water too.
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
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.?)	√	Low		The construction activities slightly effect on changes the topography of the area but proposed civil works have been designed with appropriate drainage improvements.

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
					No change on land use and waterbodies by civil works.
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?	√		Low	The solid waste generated through the civil works should be properly managed by the contractor. The EMP will guide to proper disposal of the waste by the contractor. ASMP-PMU will timely monitor the process.
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?	√		Low	Construction of polytunnels and proposed renovation activities may cause noise and vibration due to the machinery uses for the activities. Such impacts will be mitigated by implementing EMP. No impacts such as the release of light, heat, energy, or electromagnetic radiation 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

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
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. The construction area is a separate area from the other activities and the public
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
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. This land is exclusively allocated for the research station activities
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

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
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
Increasing capacity of tissue culture facilities	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Installation of sprinkler irrigation system for 1 acre land plot	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Upgrading Root Stem Cutting (RSC) production facilities	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Construction of 4 polytunnels	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Converting of G_0 potato seed producing polytunnels in to aero	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Establishing cold room facilities for seed multiplier as a service – 1 unit)	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS
Establishing seed potato (G_0 and G_1) sorting facility	Dust, Noise, Vibration, Siltation, Vegetation Loss, Crop Damage	NS

J. ENVIRONMENTAL MANAGEMENT PLAN

1. Contractor's responsibility for preventing/minimizing/ mitigating adverse environmental issues raised during construction activities

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	Public complaints and lack of stakeholders' support for the project implementation	• Information Disclosure among Stakeholders	• Discussions should be conducted with the relevant stakeholders to aware the subproject activities • Disseminate the finalized subproject's activity list and implementation arrangement with staff of Research Station, Seed Farm and other stakeholders • Timely conduct the progress review meetings with relevant stakeholders to discuss the implementation of subproject activities • The contractor should take note of all impacts, especially temporary issues and safety hazards that will be of concern to the research stations routing activities. All possible negative impacts will be mitigated as stipulated in the EMP to mitigate them • The contractor will maintain a log of any grievances/complaints and actions taken to resolve them and incorporate a summary to the progress reports • A copy of the EMP should be available at all times at the project supervision office on site
2	Spreading COVID 19	• All activities as per health guidelines	• The contractor must ensure that all workers, including managers and other staff, are well trained/make aware on COVID 19 safety precautions/health guidelines published by the health ministry/authorities • All construction activities should follow the 'INTERIM GUIDANCE ON COVID-19 (VERSION 1: APRIL 7, 2020)' recommended by World Bank's Operations Environmental and Social Review Committee
3	Activities related to subproject's civil works	**<u>At Research Station</u>** • Increasing capacity of tissue culture facilities • Installation of sprinkler irrigation system for 1 acre land plot **<u>At Seeds Farm</u>**	• Implement renovation and upgrading activities phase-wise to avoid disturbances to the existing activities • Minimize the disturbances to other activities that can be made by the civil works • Implement the new construction works within the proposed project period • Avoid potential damages to the existing rainwater harvesting systems and other utilities

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
		• Upgrading Root Stem Cutting (RSC) production facilities • Construction of 4 polytunnels (each size is 400m^2) • Converting of G_0 potato seed producing polytunnels in to aero phonic pre basic seed potato (G_0) production system with hardening facilities • Establishing cold room facilities for seed multiplier as a service • Establishing seed potato (G_0 and G_1) sorting facility	
4	Exposing and damaging of physical cultural resources (PCR)	• Site preparatory work • Construction of 4 polytunnels (each size is 400m^2) • Vehicle and machinery movements	• Upon discovery of physical cultural material during project implementation work, the following should be carried out • Immediately stop construction activities • With the approval of the resident engineer delineate the discovered site area. • Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over. • Through the Resident Engineer, notify the responsible authorities, the Department of Archaeology, and local authorities within 24 hours. • Submit a brief chance to find the report, within a specified time period, with the date and time of discovery, location of discovery, description of finding, estimated weight and dimension of PCR, and temporary protection implemented. • Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. • An evaluation of the finding will be performed by the Department of Archaeology who may decide to either remove the PCR deemed to be of significance, further excavate within a specified distance of the discovery point and conserve on-site,

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
			and/or extend/reduce the areas demarcated by the contractor, etc. This should ideally take place within about 7 days. • Construction work could resume only when permission is given from the Department of Archaeology after the decision concerning the safeguard of the heritage is fully executed.
5	Spreading of Invasive Alien Species	• Vegetation clearing • Importation of construction materials, organic manure and machinery from outside • Desilting	• Manual and integrated vegetation clearing • Prevent weed spreading via construction materials, machinery and organic manure (Compost) by periodic inspection and manual removal if observed • Construction materials and organic manure should be supplied only from suppliers having relevant approvals
6	Noise Pollution & Vibration that can affect nearby structures	• Use of construction vehicles and machineries • Transportation of products from outside	• Working time for noise/vibration generation activities should be restricted and carried out only from 6 am to 6 pm. • Noise related to all agricultural improvement activities should not exceed 55 dB (daytime) and 45dB (night time) as practicable as possible. • Equipment and machinery should be maintained in good condition. • It is highly recommended to do transportation during daytime only
7	Air Pollution including dust generation that can affect nearby vegetation and households	• Site Preparation activities setting up of material storage yards, and removal of vegetation • Transport of construction materials and storage on site	• In the construction method statement, the contractor should clearly designate areas for maintaining material stockpiles, waste stockpiles, labor camps, and vehicle maintenance yards. These dust-emitting sources should be located away from human settlements and natural drainage paths as much as possible. • All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations. • Stockpiled soil and sand shall be slightly wetted before loading, particularly in windy conditions. • The site should be wetted at least 2/3 times a day during dry weather to keep dust levels low. • Vehicles transporting soil, sand, and other construction materials shall be covered. Limitations to the speeds of such vehicles are necessary. Transport through densely populated areas should be avoided.

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
			• Regular and proper maintenance of construction vehicles and machinery to avoid air emissions. • There should be no burning of wastes on-site. • Until removal to arranged disposal sites, waste from demolition shall be held stockpiled in a place with minimal interference with local drainage paths and obstruction to traffic, local residents.
8	Solid Waste Disposal	• Site clearing • Construction waste • Waste from labor resting areas and labor camps	• The contractor shall make a list of all types of waste resulting from the construction activity, and obtain direction from the relevant LA on possible disposal sites for each waste type. • Any hazardous type of waste shall be dealt with special care and instructions from the LA. • The contractor shall document all types and quantities of waste generated and removed from the site and the disposal locations. • The contractor shall remove waste from the site each day and dispose of the waste in the LA-approved site/s.
9	Contamination of water, land and air during usage of chemicals (Oil, Greis, petroleum products...) and Solid Waste Disposal	• Civil works • Transportation • Organic materials disposal • Chemical waste disposal	• Awareness of usage time, handling, and storage of chemicals • Guidance on a suitable time for the usage of chemicals • Enhance the supervision activities • Dispose all the solid waste as directed by the local authority of the area • Maintain site hygienic condition well
10	Water Quantity	• For construction activities	• Excess water extraction is to be cut down to up to subproject is completed • Proper introduction of sprinkler irrigation practices instead of conventional irrigation to preserve water and use of modern techniques to reduce water consumption • Proper irrigation practice to avoid excess water drain back to the canals
11	Health & safety hazard	• Use of chemicals for construction activities	• Carry out proper hazardous identification and risk assessment of all proposed activities • Training and awareness for workers on safe chemical handling

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
			• Implement proper health and safety protocols by elimination, substitution, engineering controls, administrative control, and providing personal protective equipment (PPEs). Provide necessary PPEs (basic should include gloves, goggles, masks, and protective clothing) • A safety inspection checklist should be prepared to take into consideration what the workers are supposed to be wore and monitored
12	Temporary loss of livelihood due to civil works	**<u>At Research Station</u>** • Increasing capacity of tissue culture facilities • Installation of sprinkler irrigation system for 1 acre land plot **<u>At Seeds Farm</u>** • Upgrading Root Stem Cutting (RSC) production facilities • Construction of 4 polytunnels (each size is $400m^2$) • Converting of G_0 potato seed producing polytunnels in to aero phonic pre basic seed potato (G_0) production system with hardening facilities • Establishing cold room facilities for seed multiplier as a service • Establishing seed potato (G_0 and G_1) sorting facility	• Since the subproject activities are taken place in research station , no such impacts are anticipated
13	Blocking of surface drainage paths leading to localized flooding and ponding of water	• Site Preparation including provision of access roads, material/waste piles	• Until transport to approved disposal sites, debris and waste from site preparation work and desilting shall be stockpiled in a place with minimal interference with local drainage paths and obstruction to traffic and local residents. The contractor shall identify areas for stockpiling material and waste.

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
			• The stockpiles should be suitably covered to minimize wash-offs to nearby waterways during rainy periods and to minimize dust emission during dry weather conditions. • If impacts to surface drainage cannot be avoided leading to ponding of rainwater and inconvenience to people, the contractor must provide an adequate surface drainage system to safely remove water from the site to the canal to avoid on-site ponding or flooding. • Proper planning to avoid construction during the rainy season. • Preventing total blockage of streams / providing alternative drainage paths during construction.
14	Public/occupational safety hazard	• Site clearing, storage of equipment, material etc. • Increased traffic of heavy vehicles for material transportation • Noise and vibration of construction machinery	**Training** 1. The contractor must ensure that all workers, including managers, are trained on occupational health and public safety risks and mitigation measures for the site, prior to commencement of construction. **Personal Protective Equipment** 2. All workers will be provided with necessary PPEs (basic should include a safety helmet, protective footwear, and high visibility jackets). 3. In addition, the contractor shall maintain in stock at the site office, gloves, ear muffs, goggles, dust masks, safety harness, and any other equipment considered necessary. 4. A safety inspection checklist should be prepared to take into consideration what the workers are supposed to be wore and monitoring. **Site Delineation and Warning Signs** 5. The entire construction site should be delineated using devices such as cones, lights, tubular markers, orange and white stripes, and barricades to inform oncoming vehicular traffic and pedestrians in the area about work zones. 6. All digging and installation work items that are not accomplished should be isolated and warned of by signposts and flash lamps in the night-time.

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
			7. Dangerous warning signs should be raised to inform the public of particular dangers and to keep the public away from such hazards. 8. Trenches should be progressively rehabilitated once work is completed. 9. Overloading of vehicles with materials should be controlled 10. Construction wastes should be removed as much as possible within 24 hours from the site to ensure public safety. 11. The safety inspection checklist must look to see that the delineation devices are used, whether they are appropriately positioned if they are easily identifiable, and whether they are reflective. **Equipment safety** 12. Work zone workers use tools, equipment, and machinery that could be dangerous if used incorrectly or if the equipment malfunctions. Inspections must be carried out to test the equipment before it is used so that worker safety can be secured. Inspections should look for evidence of wear and tear, frays, missing parts, and mechanical or electrical problems. **Emergency Procedures** 13. An emergency aid service must be in place on the worksite. 14. During health and safety training, site staff should be properly briefed as to what to do in the event of an emergency, such as who to notify and where to assemble in an emergency. This information must be conveyed to employees by the site manager on the first occasion a worker visits the site. **Construction camps** 15. Construction camps should have adequate sanitation facilities for construction workers to control the transmission of infectious diseases. 16. Avoid housing workers in camps and provide socio-economic benefits locally by employing local people. If there is no alternative to employ workers from elsewhere, locate accommodation camps away from communities on land

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
			acquired from willing sellers. Provide labor camps with adequate sanitation, waste disposal, and health facilities according to labor laws. Clear work campsites after use and reinstate vegetation. Conduct programs to raise worker awareness of HIV/AIDS. **Information management** 17. Develop and establish the contractor's own procedure for receiving, documenting, and addressing complaints from the affected public and nearby communities. 18. Provide advance notice to local communities by way of information boards or leaflets about the schedule of construction activities, interruption to services and access, etc.
15	Damages to Flora and Fauna	• Vegetation clearing/ site clearing	• Due consideration should be given to carefully clearing of vegetation avoiding the destruction of habitats of fauna. • The de-silted matter shall immediately be disposed of off to pre-decided approved disposal sites. • The contractor will take reasonable precautions to prevent workmen or any other persons from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in any water body and hunting of any animal. • If any wild animal is found near the construction site at any point of time, the contractor will immediately upon discovery thereof acquaint the Engineer and carry out the Engineer's instructions for dealing with the same. • The Engineer will report to the nearby Forest Department /Department of Wild Life Conservation (range office or divisional office) and will take appropriate steps/ measures if required in consultation with the forest officials. • It is recommended to do the project work in day time only
16	Soil erosion, sedimentation of nearby waterbodies and low-lying areas	• Construction work • Vegetation clearance	• Soil stockpiles and other construction material should not be placed within the bed or banks of the tanks or canal. • Installing and maintaining permanent erosion and sediment control measures such as silt traps to avoid sediment runoff into the tank and nearby waterways.

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
17	Access restrictions and public inconvenience	• Material transportation and storage • Noise, vibration, dust and waste piling from demolition and construction	• If any temporary interruptions to house access take place, the contractor should inform the concerned houses prior to breaching access. • Provision of access during designated times of the day or where possible provides temporary access paths for pedestrians on the downstream side of the bund. • If a road is closed completely for a period, signage is to be put up at both ends.
Post construction phase			
18	Clearing/Closure of Construction Site/Labour Accommodations		• Contractor to prepare site restoration plans for approval by the engineer. The plan is to be implemented by the contractor prior to demobilization. This includes burrow sites and storage yards as well • On completion of the works, all temporary structures will be cleared away, all rubbish cleared, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the contractor's expenses, to the entire satisfaction of the engineer.
19	Solid waste	• Operational stage crops related waste, general household waste & machinery parts.	• Any hazardous type of waste shall be dealt with special care and instructions from relevant local authority. • The contractor shall remove waste from the site each day and dispose of the waste as appropriate with support of local authority
20	Environmental Enhancement/ Landscaping		• Landscape plantation, including turfing shall be taken up as per either detailed design or typical design guidelines given as part of the Bid Documents. • The contactor also shall remove all debris, piles of unwanted earth, spoil material, away from the site and disposed at locations designated or acceptable to the Engineer or as per the stipulated waste management criteria of this EMP

2. Cost of mitigation

SN	Environmental mitigation measure	Cost (LKR)	Remarks
1	Information Boards, leaflets	35,000	Diversion of roads, Safety signage, awareness leaflets & COVID 19 sign boards
2	On site first aid facilities	15,000	
3	Personal Protective Equipment (PPE)	70,000	Basic should include sanitizers, safety helmet, protective footwear and high visibility jackets.
4	Site delineation and barricading material and equipment	15,000	
4	Dust suppression	20,000	Need to be done during road and canal renovation activities
5	Waste removal from site	20,000	Desilted material, waste from vegetation clearing, labour camps (amount is only for construction phase)
6	Training of Farmers and Village level stakeholders on new technological applications	20,000	Should be scheduled to a few sessions

K. EMP IMPLEMENTATION RESPONSIBILITIES AND COST

The overall responsibility of ensuring compliance with safeguard requirements rests with the PMU. The PMU is 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 EMP 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 which needs to manage the negative impacts while enhancing positive impact 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

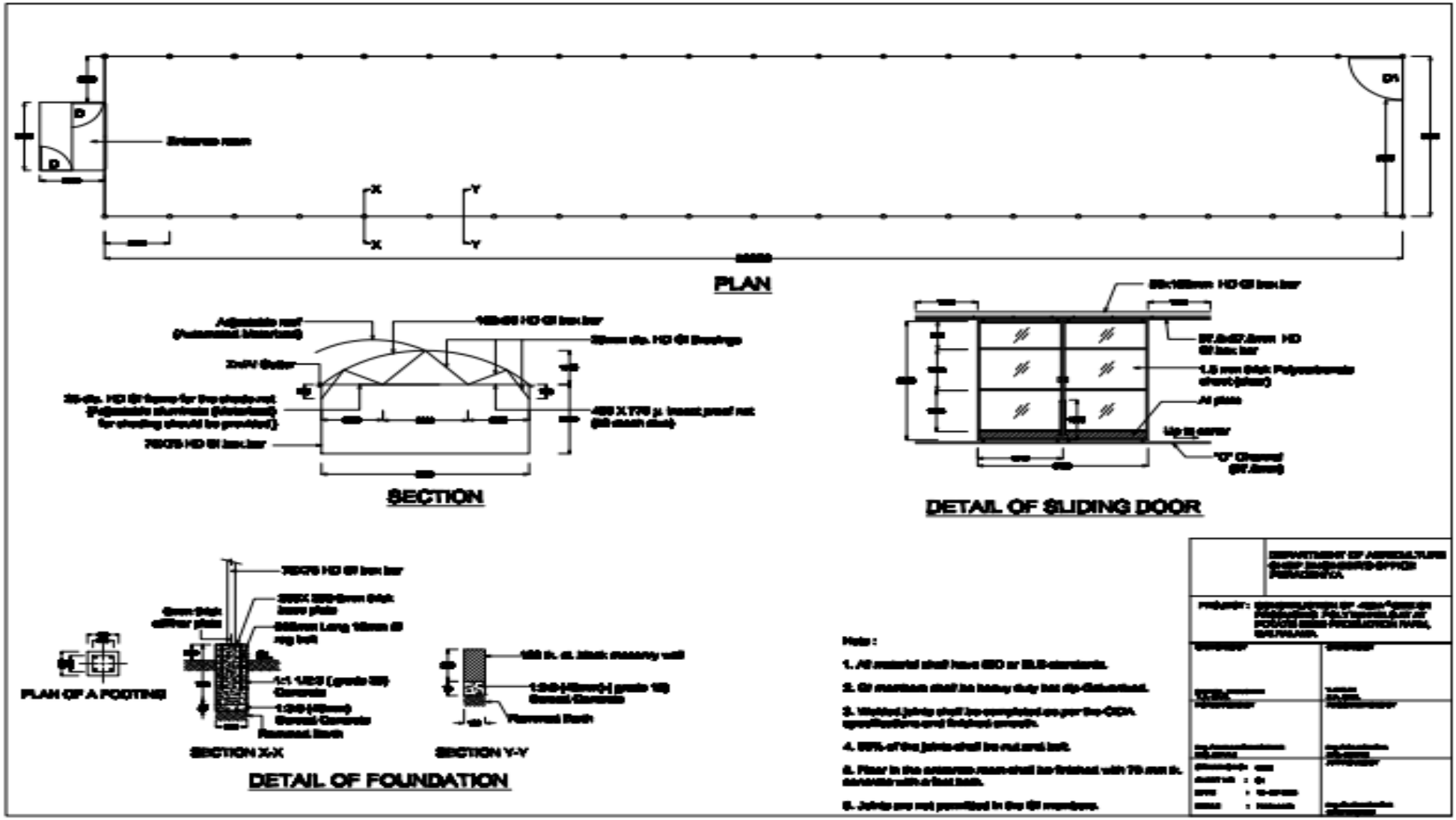
Annex 1: Google Map/ Location Map

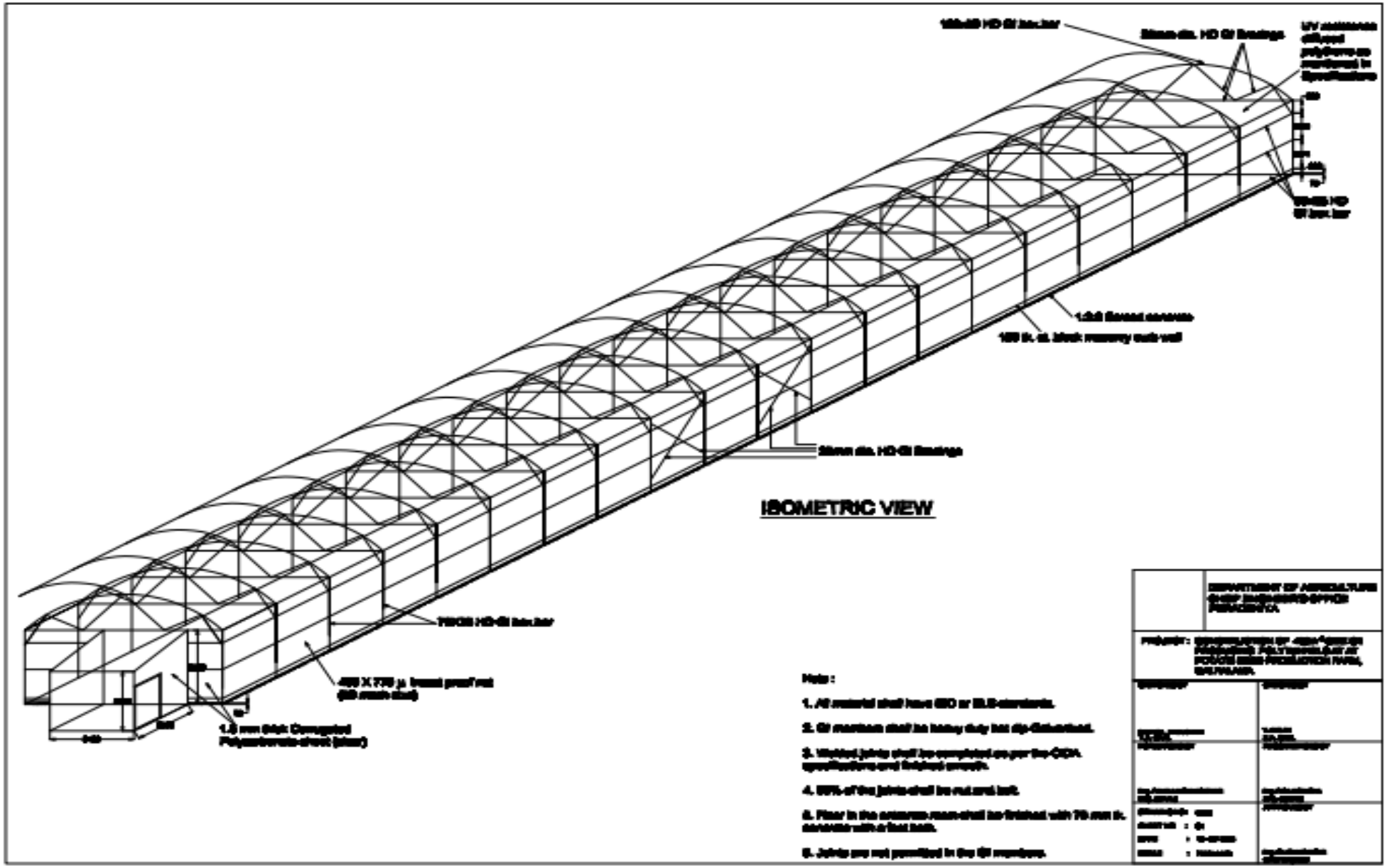
1. ***Seed Potato Farm and Research station at Seetha Eliya***

Source: Google Map

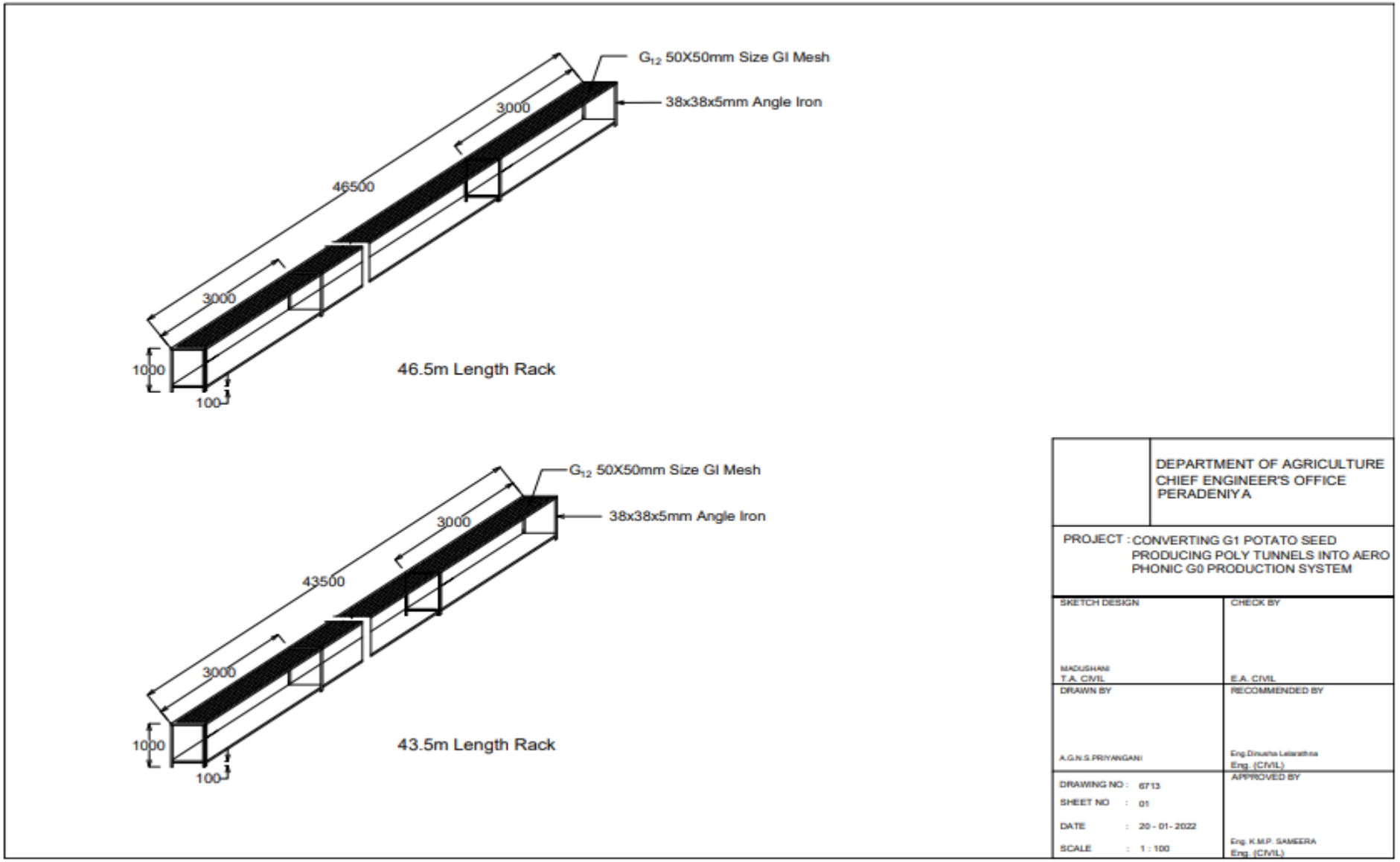
Annex 2: Design drawings of

1. Construction of 400m^2 size Polytunnel

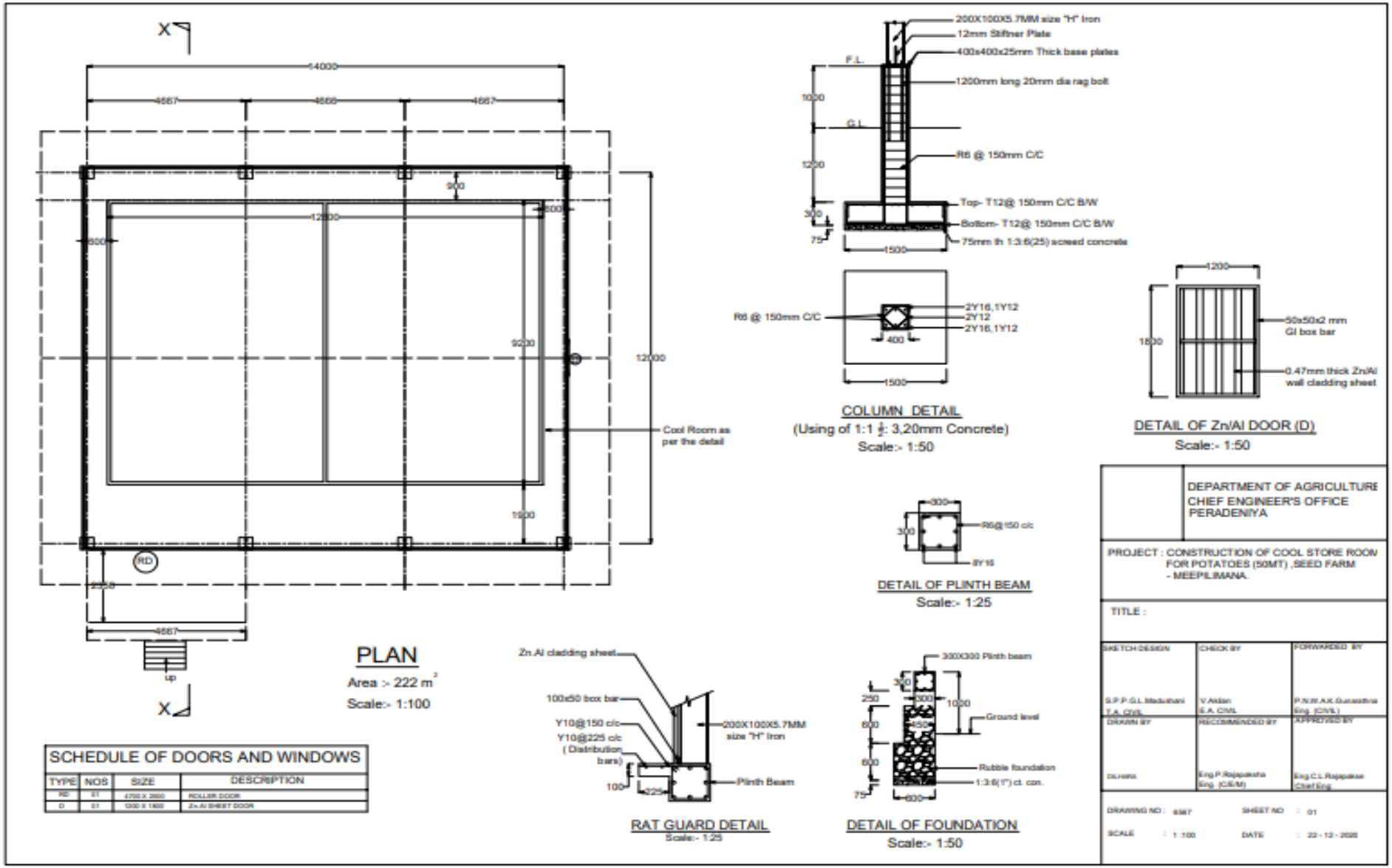


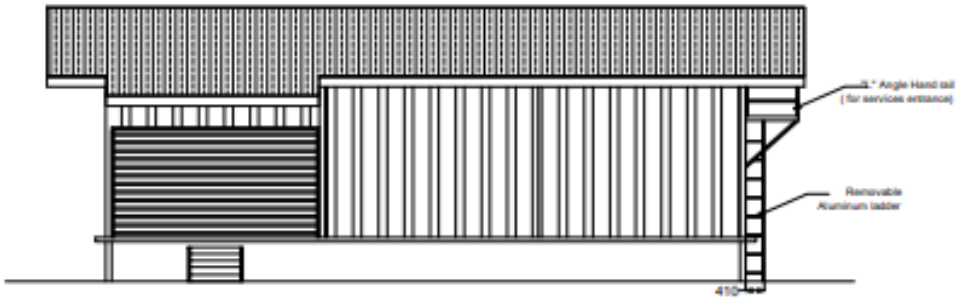

ISOMETRIC VIEW

2. Converting G_0 potato seed producing polytunnels in to aero phonic pre basic seed potato (G_0) production system

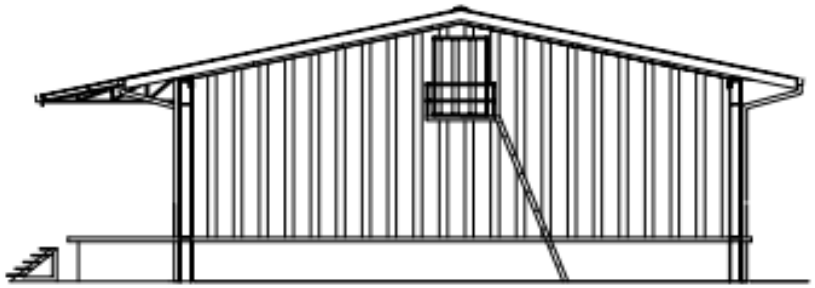


3. Establishing Cold Room Facilities

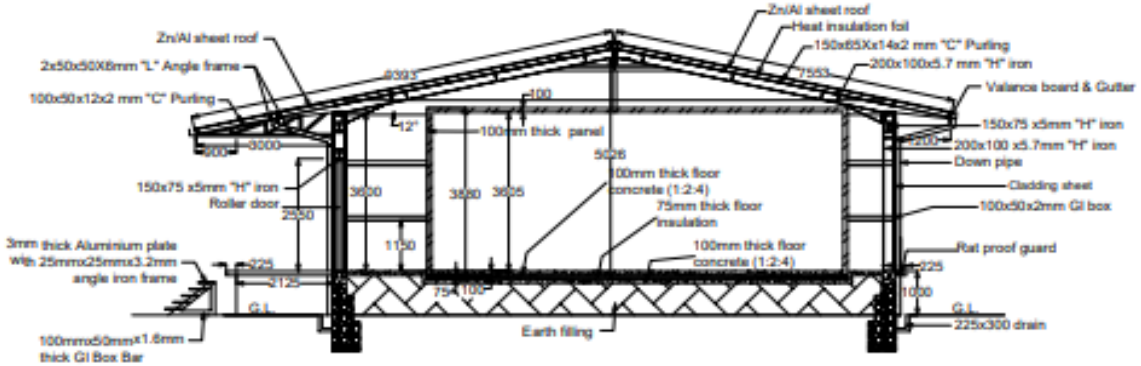




FRONT ELEVATION



SIDE ELEVATION



SECTION X-X

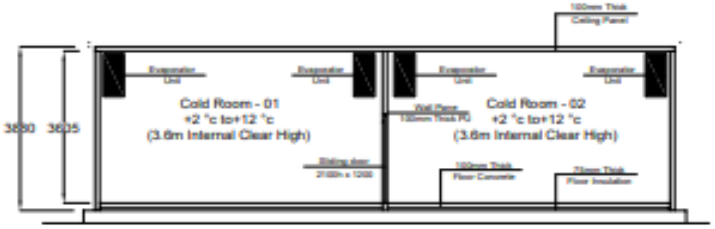
	DEPARTMENT OF AGRICULTURE CHIEF ENGINEER'S OFFICE PERADENIYA
PROJECT : CONSTRUCTION OF COOL STORE ROOM FOR POTATOES (50MT) ,SEED FARM - MEEPILIMANA.	
TITLE :	

SKETCH DESIGN	CHECK BY	FORWARDED BY
S.P.P.G.L.Madushani T.A. CIVIL	V.Akilan E.A. CIVIL	P.N.W.A.K.Gunarathna Eng. (CIVIL)
DRAWN BY	**RECOMMENDED BY**	**APPROVED BY**
DILHARA	Eng.P.Rajapaksha Eng. (CE/M)	Eng.C.L.Rajapakse Chief Eng.

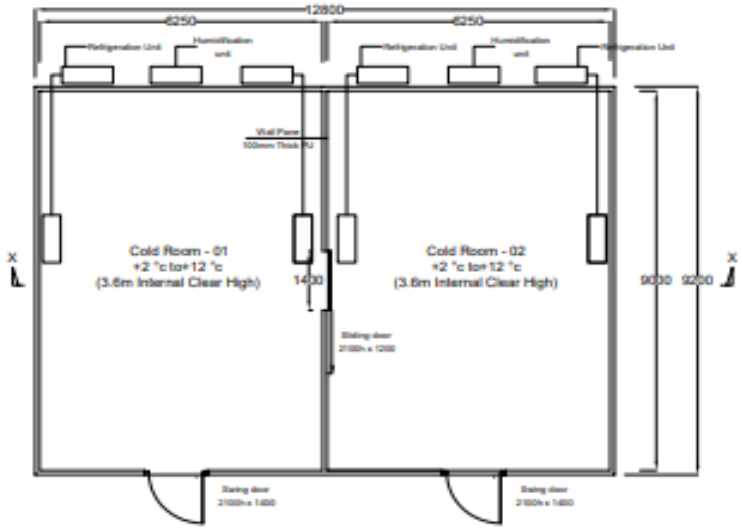
DRAWING NO : 6567 SHEET NO : 02

SCALE : 1 :100 DATE : 22 - 12 - 2020

FRONT ELEVATION



SECTION X-X



FLOOR PLAN

	DEPARTMENT OF AGRICULTURE CHIEF ENGINEER'S OFFICE PERADENIYA
PROJECT : CONSTRUCTION OF COOL STORE ROOM FOR POTATOES (50MT) ,SEED FARM - MEEPILIMANA.	
TITLE : COLD ROOM GENERAL LAY-OUT	

SKETCH DESIGN	CHECK BY	FORWARDED BY
S.P.P.G.L.Madushani T.A. CIVIL	V.Akilan S.A. CIVIL	L.L.R.R.LOKULIYANA Eng. (MRICH.)
DRAWN BY	**RECOMMENDED BY**	**APPROVED BY**
DILHARA	Eng.P.Rajapaksha Eng. (C/E/M)	Eng.C.L.Rajapakse Chief Eng.

DRAWING NO : 6567 SHEET NO : 03

SCALE : 1:100 DATE : 22 - 12 - 2020

Annex 3: 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