කෘෂිකර්ම අමාත්‍යාංශය
Ministry of Agriculture
கமத்தொழில் அமைச்சு

කෘෂි නවීකරණ ව්‍යාපෘතිය
விவசாய நவீனமயமாக்கல் திட்டம்
Agriculture Modernization Project

Social Screening Report

Strengthening Capacity to Enhance Planting Material Production of Vegetables- Rehabilitation and Upgrading existing facilities and Land Improvement at Gannoruwa, and Dodangolla

Sri Lanka Agriculture Sector Modernization Project (ASMP)

Prepared for Project Management Unit of the Agriculture Sector Modernization Project

Democratic Socialist Republic of Sri Lanka, Ministry of Agriculture (MOA)

February 2022

Table of Contents

List of tables and figures

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
ESS	Environmental and Social Standards
FO	Farmers Organization
FPO	Farmers' Production Organization
GAP	Good Agricultural Practices
GND	Grama Niladhari Division
GoSL	Government of Sri Lanka
HORDI	Horticultural Crops Research and Development Institute
IDA	International Development Association
IEE	Initial Environmental Examination
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
SCS	Seed Certification Service
SIA	Social Impact Assessment
SIMP	Social Impact Mitigation Plan
SLRs	Sri Lanka Rupees
SSR	Social Screening Report

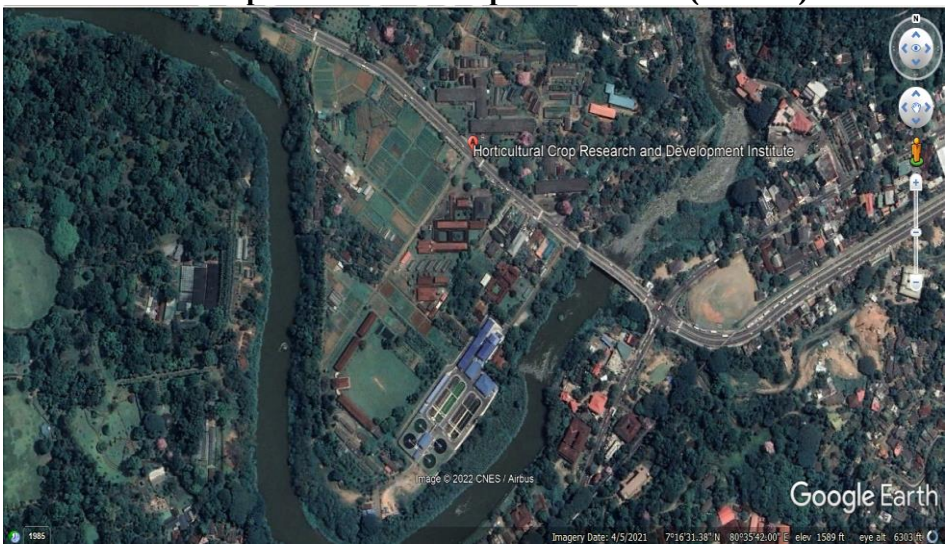
A. SUBPROJECT IDENTIFICATION

Subproject Title	Strengthening Capacity to Enhance Planting Material Production of Vegetables- Rehabilitation and Upgrading existing facilities and Land Improvement at HORDI- Gannoruwa and University Experimental Station-Dodangolla
Parent Project Objectives (briefly)	The World Bank Funded **Agriculture Sector Modernization Project** is aligned with the Country Partnership Strategy (CPS) 2013-2016. The project seeks to contribute to two CPS focus areas, namely: "Supporting structural shifts in the economy" and "Improved living standards and social inclusion" through: (a) improving agricultural productivity and competitiveness to strengthen the links between rural and urban areas and facilitate Sri Lanka's structural transformation; (b) providing and strengthening rural livelihood sources, employment opportunities in agriculture and along agriculture value chains, as well as market access for the poor, bottom 40 percent, and vulnerable people, thereby improving income sources and livelihood security in lagging rural areas; and (c) contributing to improved flood and drought management, through project's linkages to the water and irrigation sectors and a climate-smart agriculture approach. The project is also to promote diversification, value addition and increased competitiveness in the agriculture sector. **The project has three components.** (01) Agriculture Value Chain Development (02) Productivity Enhancement and Diversification Demonstrations (03) Project Management, Monitoring and Evaluation The Ministry of Agriculture (MOA) is responsible for the implementation of Component 2: **Productivity Enhancement and Diversification Demonstrations**. The component aims at supporting smallholder farmers to produce competitive and marketable commodities, improve their ability to respond to market requirements, and move towards increased commercialization. Component 2 comprises the following sub-components: 2.1: Farmer Training and Capacity Building 2.2: Establishment of Modern Agriculture Technology Parks 2.3: Production and Market Infrastructure Supporting; (i) Rehabilitation of small-scale irrigation infrastructures (ii) Improvement of selected production and market access roads and construction of new field access tracks to improve transportation, access to markets and accessibility for agricultural machinery (iii) Village level storage and product handling facilities 2.4: Analytical and Policy Advisory Support- Activities to be supported under this sub-component would include technical assistance to: (i) Evaluate policies and regulations and recommend adjustments, reforms or new policies needed to make agriculture more competitive, responsive to market demand, gender sensitive, sustainable, and resilient; (ii) Undertake strategic market analysis for promoting new and high value exports, and analyze the changes needed in the policy, regulatory and institutional framework, or public investments needed to address the binding constraints to the evolution of high impact value chains;

	(iii) Evaluate the social and economic impact of policies and public expenditures and make recommendations on course corrections to improve the efficiency and effectiveness of public expenditures. (iv) Undertake external and independent monitoring and evaluation functions, including formal impact evaluations of government programs and investments, to provide the critical learning and feedback loop into the ministries' decision-making processes. It would also support: (v) Annual conferences on Sri Lanka's agricultural policy; (vi) Equipment, office furniture, and communications technology for MOA's proposed Center of Excellence The development objectives of Agriculture Sector Modernization Project for Sri Lanka are to support increasing agriculture productivity, improving market access, and enhancing value addition of smallholder farmers and agribusinesses in the project areas. Up to now, ASMP has launched its activities in nine districts of seven provinces of the country. Project Management Unit (PMU) and Provincial Project Management (PPMUs) directly implement the two kinds of subproject activities that mainly consist of Productivity Enhancement and Diversification Demonstrations and the infrastructure development programs. The Department of Agriculture (DOA) acts as the main project partner agency of Productivity Enhancement and Diversification Demonstrations. DOA's activities consist of designing subprojects, training farmers, monitoring subprojects' activities, and involving the troubleshooting of the program. The agricultural research stations play a 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, 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**.** Strengthening the capacities of Agricultural Research Stations, seed production farms, and seed certification service is identified as the subcomponent of ASMP. Inventing new crop varieties and expansion of hybrid seed production is one of the main sustainable factors of the ASMP's activities to achieve its development objectives. Meantime, it will facilitate supply the of high-quality hybrid seed requirements and finally contribute to enhancing the productivity of the field crops, vegetable, and fruit farming sector in Sri Lanka
Project proponent	Project Management unit, Agriculture Sector Modernization Project (ASMP), Ministry of Agriculture (MOA)
Implementing agency	Agriculture Sector Modernization Project (ASMP) implementing through Department of Agriculture
Project Management Team	A PMU was established under the Ministry of Agriculture to implement proposed project activities. **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, DOA officials and field visits to the project

B. SUBPROJECT LOCATION

Location 1. HORDI @ Gannoruwa $7^0 16'25.70"$ N $80^0 36'08.89"$ E 2. University Experimental Station @ Dodangolla $7^0 17'07.21"$ N $80^0 42'28.24"$ E	The subproject's activities will be mainly implemented in 3 different locations. They are; 1. Horticultural Crops Research and Development Institute (HORDI) at Gannoruwa- The institute is located at Gannoruwa 8 km away from Kandy city in Yatinuwra DS division of Kandy district in Central Province. 2. University Experimental Station at Dodangolla, Kundasale- University experimental station is located at Dadangolla 11.7km away from Kandy city in Kundasale DS division of Kandy district in Central Province Under this subproject, construction of Polytunnels and Thermo-Gradient Tunnels will be implemented for strengthening the research and seed production facilities of the station. The location maps are annexed as Annex 2. **1. Horticultural Crops Research Development Institute (HORDI)- Gannoruwa**  **Figure 1: Location of HORDI @ Gannoruwa** **2. University Experimental Station at Dodangolla**

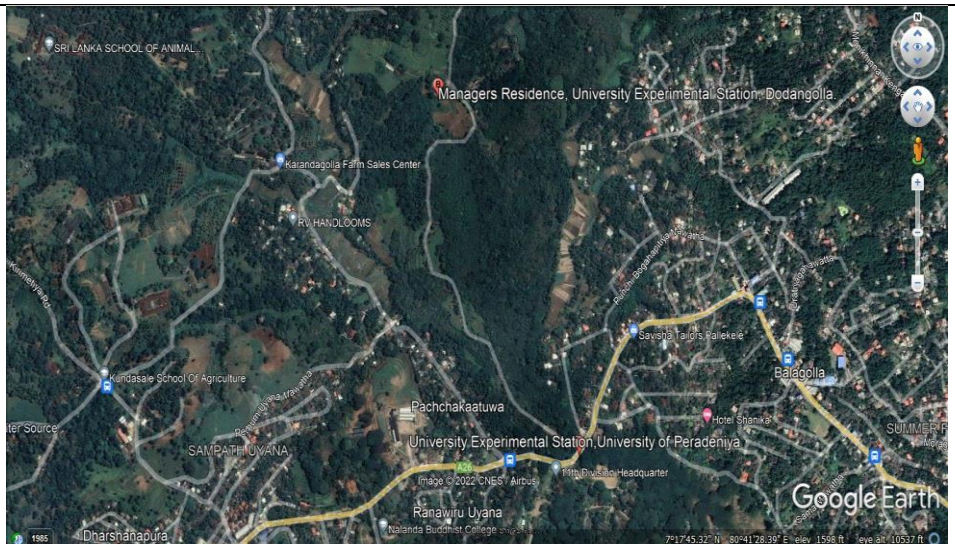


Figure 2: Location of University Experimental Station @ Dodangolla

Definition of Project Area / Project Impact area

1. Horticultural Crops Research and Development Institute (HORDI)

The Horticultural Crop Research and Development Institute (HORDI) is vested with the responsibility of technology development concerning vegetables, root and tuber crops and floriculture. The research program focuses on the development of improved crop varieties, new propagation methods, post-harvest and food processing methods, the use of protected culture and ensuring better plant health with fewer defendants on chemicals. It is situated at Gannoruwa Peradeniya, coordinating the network of RARDCS, ARSS and horticultural farms.

History of HORDI

The Department of Agriculture was established in 1912 and the Division of Research was one of its important sections that provide scientific information for establishment of major plantation crops, tea, rubber coconut and other plants of economic and ornamental importance.

Three separate institutions for tea, rubber and coconut were established and thereafter the Division of Research in the Department of agriculture placed the emphasis on peasant agriculture and established the Central Agricultural Research Institute.

The foundation stone for new laboratories of the Central Agricultural Research Institute was laid in Gannoruwa on 21 June 1958 by the Honorable S.W.R.D Bandranayake. Honorable Dudley Senanayaka, late Prime Minister of Ceylon, formally declared the Institute open on 6th August 1967. Apart from the administrative Headquarters housed in the institute, there were Research divisions of Agricultural Botany, Agricultural Chemistry, Plant Pathology, Entomology, Horticulture, Food technology, Minor plantation crops, Tobacco & soil conservation and Statistics.

With re-structure of the Department of Agriculture, three national Institutes were formed in 1994 to conduct research and development activities on horticulture, rice & field crops. The Central Agriculture Research Institute at Gannoruwa was renamed as Horticultural Crop Research and Development Institute to carryout efficient and intensive research & development work on horticulture.

	 **Figure 3: Horticultural Crops Research and Development Institute** There are ten sub units comes under HORDI. Regional wise research activities are carried out at these sub stations with coordination of HORDI. **2. University Experimental Station- Dodangolla** The University Experimental Station is based at Dodangolla, Kundasale in the mid country intermediate zone (IM3) in Sri Lanka. The farm was established in 1968 for the purpose of utilizing for the undergraduate academic program offered by the Faculty of Agriculture, University of Peradeniya and provides great support in outreach training program and research opportunities, offered for various government, private and non-government organizations in the country and promote collaborative research with foreign universities, on agriculture and allied field of study.  **Figure 4: A research activity in a polytunnel at University Experimental Station** The farm occupies 79 ha (195 Acres) of land which is extending from sloppy landscape to flat landscape. Meanwhile, experimental station buildings, students and staff accommodation buildings, polytunnels, and the road network covers considerable land extent. The surrounding area is predominantly from sloppy landscape to flat landscape areas where the land use is mixed (agriculture, residential, commercial and scrublands).
Adjacent land and features	

C. SUBPROJECT JUSTIFICATION

Need for the project (What problem is the project going to solve)	**1. Horticultural Crops Research and Development Institute (HORDI)** The HORDI administration complex, laboratories, and cultivation area is located on the land belongs to DOA. The land with an extent about 120ha (300acres) is allocated for the several government institutions comes under DOA in Gannoruwa. The area where HORDI is located belongs to Yatinuwara DS division of the Kandy district in Central Province. The area belongs to the Mid country wet zone.

	The mission of the institute is functioning as the national center for research and development of sustainable and productive technologies for horticultural crops to ensure economic and social development of the farmers, and other stakeholders. The HORDI promotes the Good Agricultural Practices (GAP) program for the quality assurance of agricultural products as healthy products through their research activities. As the development perspective, HORDI transfer new technologies which are developed by the research divisions to the agriculture extension officers, vegetable farmers, students (School, School of Agriculture & University) Entrepreneurs in the private sector. Improve the research extension linkage by coordinating research extension dialogue, technology demonstrations at farmer fields. Coordinating and testing of adaptability on research-proven technologies of HORDI at field level. The administrative complex and the labs are located together bounded to Gannoruwa Kandy road. The cultivation area used for the research activities is bounded by Kandy- Gannoruwa main road and Mahaweli river. There are many government institutions located surrounding area. They are; • Seed Certification and Plant Protection Center • Plant Genetic Resource Center (PGRC) • Gannoruwa Agricultural Complex • Agro Technology Park Unit • Agro Enterprise Development & Information Service • Quality Seeds and Planting Material and Agriculture Publications Sales Center • Inservice Training Center • Plant Protection Service • Fruit Crop Research and Development Station • Food Research Unit • National Agriculture Information and Communication Center • Plant Propagation and Nursery Management Division • Natural Resource Management Center • Vegetable Seed Center • Central seed Testing Laboratory • Veterinary Research Center (VRI) • Sri Lanka Army- Gannoruwa Camp • Provincial Surveyor General's Office • Hadabima Authority of Sri Lanka • Government Staff Quarters and Circuit Bungalows The Department of Agriculture is one of the few departments that has been established out of the capital city Colombo Sri Lanka. Therefore, many institutes affiliated with DOA are centralized in Gannoruwa and Peradeniya area. A part of DOA- owned land is used for the demonstration cultivations, research activities (cultivations), and agriculture park by the relevant institutions. Except for the DOA and other government agencies' owned land, there are no agricultural lands in the surrounding area. All the private lands located surrounding areas are residential or commercials. Mahaweli river

	flows adjoining the DOA-owned land. The opposite side of the Mahaweli River is bounded by the Royal Botanical Garden of Sri Lanka. **2. University Experimental Station- Dodangolla** The total land extent under experimental station is about 79ha (195 acres). This station has facilities for residential training programs, agricultural demonstrations and research trials. Students of the University of Peradeniya and students from other Sri Lankan and foreign universities conduct their Bachelors, Masters and Doctoral field experiments at this station. In addition, leading local and foreign private organizations use the unit for research purposes. Very importantly, the unit offers very good facilities for academia of the University of Peradeniya to conduct research programs. Approximately 50% of the station's land is covered with perennial tree species such as Teak, Coffee and Coconut.  *Figure 5: A facility building located in the station* This experimental site is located separately from other institutions and human settlement areas. The land is owned by the University of Peradeniya and vested by the faculty of agriculture. The surrounding area adjacent to the station is owned by private owners. The land use of the surrounding area is agriculture, residential and commercial. There is no encroachment, activities, or accesses of other parties are get affected or disturbed by the station's activities or vise-versa.
Purpose of the project (What is going to be achieved by carrying out the project)	The project will directly result the strengthening of planting material production facilities at HORDI- Gannoruwa, and University Experimental Station- Dodangolla. Ultimately, it gives the benefits to the farmers who have engaged in vegetable cultivation in the country. The following purposes will be achieved by implementing the subproject. • Continuing research and development activities of horticultural; crops by HORDI and Faculty of Agriculture-University of Peradeniya and sharing technology and knowledge with local and foreign universities, agriculture schools, private agricultural firms, other academic centers, and stakeholders • Conducting development programs to transfer new technologies which are developed by the research divisions to the agriculture extension officers, vegetable farmers, students (School, School of Agriculture & University) Entrepreneurs in the private sector. • Improve the research extension linkage by coordinating research extension dialogue, technology demonstrations at farmer fields.

	Coordinating and testing of adaptability on research-proven technologies of HORDI at field level. • Transferring Technologies released by the Food Research Unit and the findings regarding the new disease identification and confirmation through molecular techniques to farmers and other stakeholders • Continuing to diagnose to identify the pest and diseases attacks, nutrient deficiency, and other challenges for the horticultural crop management. Giving recommendations and creating awareness of the stakeholders to overcome the issues. Meantime, conducts the analysis to identify the residual impacts of the agriculture inputs and the management activities. To achieve this objective HORDI carry out soil sample analysis, fertilizer sample analysis, compost analysis, water sample analysis, plant sample analysis, bio-efficacy testing of special fertilizer, training programs, quality analysis laboratory reports, research facilities, advising and consulting, and awareness programs are being conducted • Releasing new crop varieties- Continues research activities to release the high yielding, pest and diseases resistant, drought resistant and high food quality contains crop varieties. • Supplying quality seed and planting material to seed production farmers, private institutions, and other interested groups for multiplication. Through this program, hope to enhance the local seed supplying The ultimate effort of the ASMP is to establish good agriculture practices (GAP) in the farming activities by introducing new technologies.
Beneficiaries	Sri Lanka's agriculture is characterized by a non-plantation sector and a plantation sector. Of the country's approximately 2.3 million hectares of agricultural land, 80 percent is used for non-plantation food crops, comprising rice, maize, fruits, vegetables, and other crops that are primarily grown on smallholder farms. About 1.65 million smallholder farmers operate on average less than 2ha and contribute 80 percent of the total annual food production. Agriculture has been an important driver of poverty reduction and accounted for about one-third of the decline in poverty over the past decade. Poverty reduction in rural areas in Sri Lanka was driven by higher agricultural wages which grew annually by an average of 5.7 percent from 2006 to 2013 and caused rural poverty to fall more rapidly than in other sectors. However, there is a risk that these income gains may not be sustainable if agricultural productivity does not improve and the sector does not start to modernize through diversification, commercialization, and value addition. The share of agriculture in Sri Lanka's GDP was approximately 7% in 2019. Out of the total population in Sri Lanka, 27.1% engage in agricultural activities. Agriculture accounted for 7.4% of the GDP (gross domestic product) in 2020. Present challenges of the all-agricultural production sectors are a limited resource (land, irrigation water, etc.), increasing cost for the agricultural inputs such as fertilizers, agrochemicals, and seed & planting materials. Among them, seed and planting material plays a vital role in agriculture inputs. Making seed and planting material available in plenty for safeguarding, maintenance of high standards, and protection of genetic and physical purity of the seed and planting material is the important service that should be delivered for the sector.

	The successful cultivation of both temperate and tropical vegetables is observed in Sri Lanka. At present the production amounts to about 600,000 Mt annually and no imports are being made to fulfil the country's requirements of vegetables. The yields of major vegetables produced in Sri Lanka as at present are 10–70% below the potential yields in countries like Japan, USA, and India. Further, the per capita vegetable consumption in Sri Lanka is 50% lower than the levels recommended by the World Health Organization (WHO). The vegetable production in Sri Lanka is burdened by decreasing arable lands due to rapid urbanization and ever-increasing demand for food by an exponentially growing population. All the major commercial vegetable-based cropping systems in Sri Lanka predominantly follow the conventional production technologies using agrochemicals. However, there is a growing trend of sustainable vegetable production in organic farms, home gardens, and peri-urban systems. Thus, it is clear that technological innovations are vital in local vegetable cropping to increase yield productivity, production efficiency, food quality, and food safety. Technological trends that would benefit the modern vegetable production in Sri Lanka include rapid multiplication and production of propagules, development of modern nursery techniques, micro irrigation along with fertigation and greenhouse crop production, proper pruning, training and pollination strategies, Good Agricultural Practices (GAP) and Integrated Crop Protection Technologies (ICPT), traceability initiatives, and methods to ensure quality and safety of food. ASMP hopes to enhance the irrigation facilities at Gannoruwa, and Dodangolla that directly benefits to the all the farmers who are engaging in the vegetables production in Sri Lanka. The farmers, and entrepreneurs who have undertaken the agriculture production especially vegetables will receive the direct benefits from this subproject and ultimately, whole nation gets benefits as the consumers. Furthermore, the university students who are pursuing bachelor of science in agricultural science in the faculty of agriculture,at the University of Peradeniya conduct their research activities at the university experimental station in Dodangolla. This subproject will help to increase the research facilities at Dodangolla research station and it will serve the university undergraduates and postgraduate students research activities and it will result in a massive contribution to the agriculture sector in the country.
Alternatives considered (Different ways to meet the project need and achieve the project purpose)	There is no private sector program for conducting research and development activities in the country on horticultural crops. HORDI is the mandatory institution responsible for this service. Currently, HORDI does not have adequate facilities to support the horticultural crops planting material production since they have limited resources. Dissemination of new crops varieties to farmers/ growers needs additional trustworthy support from the outsider. Even though there is private sector involvement in seed production, their services are very narrow and are limited to their own needs only. Hence, there is a gap to be filled and the government sector involvement is essential. The farmers keep trust in the government sector service since there is a trustworthy service and DOA has improved human capital to deliver the service.

	The faculty of agriculture is the leading academia in agriculture science in Sri Lanka. They have undertaken a remarkable responsibility for the agriculture sector development of the country. For more than seven decades, they have contributed to the sector by introducing modern technology through research activities and producing agriculture professionals in the country. The university experimental capacity has also been identified to be strengthened under ASMP. Therefore, ASMP together with DOA have identified the need for a subproject and decided to enhance the planting material production facilities through the capacity building program. Rehabilitation of existing irrigation facilities and improving the lands that are used for the vegetable seed production and research facilities of the two institutions has been identified as the only alternative under this subproject since it gives the maximum output for the least investment. There is no alternative to be considered since there is well established system in the sector.

D. SUBPROJECT DESCRIPTION

Proposed start date (duration)	March 2022 (03 Months)
Proposed completion date	May 2022
Estimated total cost	SLRs 6.0 Mn
Land ownership	HORDI- Gannoruwa is located in Gannoruwa on the state land that is under the purview of the DOA. The university experimental station is located on the land that belongs to University of Peradeniya and vested to the Faculty of Agriculture.
Planned interventions	The following activities are included as the civil works of the subproject at three different locations. 1. Rehabilitation and upgrading of existing irrigation facilities and establishment of sprinkler irrigation system for 5.0ha land of HORDI-Gannoruwa. Identified land lots to be established the sprinkler system is mentioned below; - HORDI research cultivation area – 1.0ha - Vegetable Research main area- 1.6ha - Organic research area 1- 0.6ha - Organic Research area 2- 0.6ha 2. Improvement of existing cultivation land's drainage facilities of HORDI- Gannoruwa– 5.0ha 3. Rehabilitation and upgrading of existing irrigation facilities and establishment of sprinkler irrigation system for open cultivation area in farmland of University Experimental Station- Dodangolla The bill of quantities (BOQ) and the subproject estimation for the establishment of the sprinkler irrigation system at HORDI is annexed as Annex 4.
Beneficiary selection	The whole capacity building program pertaining to the department of agriculture was collectively negotiated by MOA, DOA and ASMP. Then,

criteria and process	DOA has prepared the capacity building needs with participation of the relevant research institutions, planting material production center and the seed certification service. Accordingly, the subproject activities were identified by the sector experts in the DOA.
Vulnerable groups and Gender	Generally, agriculture sector development directly gives benefits to vulnerable groups and women since the majority (80%) of the farmers and agriculture sector laborers belong to the low-income category. The project helps to enhance the farmers' livelihood and the food security for low-income community.

E. DESCRIPTION OF THE SOCIOECONOMIC CONDITIONS

Institute Profile

1. <u>Horticultural Crops Research and Development Institute (HORDI)</u>

The HORDI is a de-centralized organization. The central administration has been established at the head office in Gannoruwa but island wide research and development activities and the services are delivered by the HORDI in addition to services provided by the regional sub units. There are ten sub units comes under HORDI,

1. Regional Agriculture Research & Development Centre – Bandarawela
2. Agricultural Research Station -Seetha Eliya
3. Agriculture Research and Development Center -Girandurukotte
4. Agriculture Research Station -Kalpitiya
5. Agriculture Research Station -Thelijjawila
6. Adaptive Research Unit – Wagolla
7. Adaptive Research Unit – Wariyapola
8. Adaptive Research Unit – Thibbatumulla
9. Adaptive Research Unit – Thabbowa
10. Food Research Unit – Gannoruwa

The HORDI is a prime research and development institute among the agricultural research stations of the country. It consists of all the sections that want to continue the improved research and development activities at a higher standard level. There are Seven Sections that comes under HORDI,

1. Plant Breeding Division
2. Plant Pathology Division
3. Agronomy Division
4. Entomology Division
5. Soil and Plant Nutrition Division
6. Food Contaminant Analytical Division
7. Extension and Communication Division

<u>Plant Breeding Division</u>

Division of plant breeding is employed in developing new vegetable varieties to cope with the market demand, consumer preference, climate change, and biotic & abiotic stresses using conventional and modern breeding tools. In achieving the above goals current research and development activities are being focused on the following area.

- Germplasm collection, evaluation, and selection for rational utilization of germplasm in crop improvement program of vegetable crops

- Development of high-yielding vegetable varieties in cooperated with other preferable quality characters suitable for diverse environments.
- Development of climate-smart varieties to mitigate climate change
- Development of pest and disease-resistant varieties to reduce the usage of chemicals in vegetable cultivation and ensure sustainable agriculture industry

The services delivered by the plant breeding division;

- Production of new vegetable varieties
- Breeder seed production of new varieties produced
- Awareness of farmers
- Training Programs (Farmers, Students, Officers)
- Contributing to Technology Programs (Radio, Television)
- Conducting research on imported seeds and finding out whether they are suitable for cultivation in the country.
- Awareness on techniques (Tissue Culture, Mushrooms)
- Providing planting material

Plant Pathology Division

The Plant Pathology division is responsible for identification of plant diseases, development of integrated disease management packages, fungicides screening, seed and plant health test, advisory service for disease control. New technologies are disseminated by training classes, plant clinics, leaflets, and research papers. The plant pathology division provide following service to the sector;

- Disease Diagnosis and Advisory Service
- Providing Teaching and Training Facilities
- Participate as Resource Persons

Disease identification is one of the major tasks assigned for this division. The plant pathology division of HORDI continues a remarkable duty in prior identification of pest and disease attacks' outbreaks and taking necessary actions to mitigate the vulnerable situations. Currently, the division has been modified to detect and confirm diseases through molecular biology techniques. Using this technique, the following new diseases were traced during the recent period;

1. **Aloe vera** soft rot (Dickya chrysanthemi)
2. Target spot of **tomato** (Corynespora cassiicola)
3. Corynespora blight of **cucurbits** (Corynespora cassiicola)
4. Bacterial wilt of **cucurbits bean and weed** hosts (Ralstonia solanacearum)
5. Fusarium crown and root rot of **tomato** (Fusarium radices-lycopersici)
6. **Moringa** (Drumstick) diseases (Drechelera sp.) and (Lasiodiplodia theohromae)
7. **Tomato** canker disease (Clavibacter michiganensis subsp. Michiganensis)
8. **Watermelon** fruit blotch (Acidovorax avenae)

Agronomy Division

	The main activity of the division is conducting agronomic research with the propound objective of increasing the production and productivity of vegetables, ornamentals, and root and tuber crops. Through the developing agronomic technologies, the division is working to minimize the gap between potential and actual yield and quality of the crops and increase the overall vegetable and root & tuber crops production of the nation. The division offers a different kinds of agronomy related services to the public, mainly on vegetables, flowers, and root and tuber crop cultivations and home gardening. **Services** • Provision of planting material and seeds of traditional - varieties for farmers that requested. • Solving farmers problems on vegetables • Participating for research extension dialogues requested by extension divisions. • Participating and conducting lectures for pre-seasonal training programs **Entomology Division** The main activity of the division is conducting research and development activities related to the diagnosis and management of pests in vegetables and root crops **Soil and Plant Nutrition Division** Division of Soil and Plant nutrition mainly conducts research on soil fertility, plant nutrient management, organic farming, environmental pollution, food safety, and soil microbiology and soil physics relevant to vegetables. The division promotes farmers for soil test-based fertilizer application in the food crop sector. Further provides analytical services on request for soil, plant, water, and chemical fertilizers, compost, and manures and offers advice on their use of them. The division also undertakes training programs on soil fertility and plant nutrition, correct use of fertilizers, organic farming with special reference to nutrient and soil management, and other related topics for farmers, students, extension officers, and the interested public. Students from universities and other government and private institutions are being trained for the laboratory analytical works of organic farming. The division consists of laboratories for soil, fertilizer, plant, water analysis, and Soil microbiology. These are equipped with required instruments to measure essential soil chemical, physical and microbial properties. Soil and fertilizer laboratories are accredited for analyzing pH, EC. Phosphorus, Potassium, Micronutrients (Fe, Cu, Mn, Zn), secondary nutrients (Ca, Mg), total trace metals (As Cd, Cr, Pb, Fe, Cu, Mn, Zn) in soil and total nitrogen, total and water-soluble phosphorous, total potassium, moisture, and heavy metals (Fe, Cu, Mn, Zn, Pb, Cd, Cr, As) in chemical fertilizer. The following services are provided by the division; 1. Soil Sample Analysis 2. Chemical Fertilizer Sample Analysis

3. Compost Analysis
4. Water Sample Analysis
5. Plant Sample Analysis
6. Bio efficacy testing of special fertilizers
7. Undertake university students' researches
8. Training Programs (school and University)
9. Training Program (Diploma Students)
10. Training on Organic Farming

The main activities that are undertaken by the division are as follows**;**

- Improve fertilizer use efficiency by in introducing new technology.
- Promoting of organic agriculture
- Introduction of compost preparation technology
- Promotion of soil and plant test bored fertilizer recommendation
- Detection of heavy metals in environmental samples
- Testing of micro-nutrient in plant samples
- Conducting research on soil fertility and plant nutrient management, soil physics and soil microbiology

Food Contaminant Analytical Division

Main scope of this division is carrying out analysis on food contaminants. Accordingly, residue analysis for pesticide residues and trace elements in food is being continued at the two separate laboratories. In addition, testing for pesticide formulations are also carried out at a separate laboratory division. Considering the capacity of the laboratory, per day nearly forty (40) samples can be analyzed as for pesticide residue analysis or elemental analysis. Nearly seventy pesticides can be analyzed as pesticide residues while 13 elements can be analyzed as trace elements including most toxic elements of Arsenic (As), Mercury (Hg), Cadmium (Cd) and Lead (Pb). Nearly 85 equipment are located at the laboratory including high-end equipment of LC-MS/MS, GC-MS, ICP-MS, HPLC, FTIR and two GCs. The following services are produced by the division

- Pesticide residue analysis in food items of fruits, vegetables, rice and water
- Elemental analysis in food items of fruits, vegetables, rice and water
- Elemental analysis in pesticides as impurities
- Conducting under graduate/student training and research studies.
- Quality analysis for pesticides.

Extension and Communication Division

Research proven new findings and improved varieties in related to the vegetables and tuber crops are disseminated to different groups of people including students, government and non-government organization, farmers and entrepreneurs to enhance production and productivity of vegetables and tuber crops. Coordinating, the industrial training program for students under Diploma and University. Research extension linkage is developed by organizing and coordinating demonstration on new technologies and conducting and coordinating research extension dialogue. Division is

responsible for compilation and preparation of annual research report. The activities performed by the division;

- Timely editing and updating of technical leaflets
- Technology dissemination by telephone calls, radio program, TV Program, paper articles, exhibitions, workshops, training program and demonstration
- Coordinating the research and extension linkage by conducting and coordinating research extension dialogue.
- Coordinating industrial training program for the undergraduates and diploma students.
- Participate for PTWG and DTC with new findings to extension officers at field level and identified the priority issues and problems for research.
- Coordinating exhibitions

The main service of the division is conducting advisory services at farmer premises by visiting and at the office

Figure 6: Cultivation area of HORDI

HORDI has constructed a sump and a pumping station near Mahaweli river to supply irrigation water for the cultivation activities. The pumping main pipeline and distribution pipelines of the irrigation system were established many decades ago and still operated. They have enough irrigation water for their cultivation and research activities. Through this subproject, the irrigation water system of the center will be improved and it will result in water conservation since the sprinkler irrigation system is more efficient than the existing conventional irrigation methods.

2. University Experimental Station- Dodangolla

This station has facilities for residential training programs, agricultural demonstrations and research trials. Students of the University of Peradeniya and students from other Sri Lankan and foreign universities conduct their Bachelors, Masters and Doctoral field experiments at this station. In addition, leading local and foreign private organizations use the unit for research purposes. Very importantly, the unit offers very good facilities for academia of the University of Peradeniya to conduct research programs. The station gives treasured research opportunities for undergraduate and postgraduate levels. The main research areas are.;

	• Crop Physiology and Agronomy based research • Protected Culture and Organic Agriculture • Site specific soil management • Land use planning • Spatial variability of soil properties Nearly 79 ha (195 acres) extent farmland has separately allocated spaces for the training & research, facilities (for researchers and service seekers), production units, and biodiversity & plantation fields. As well farm conducts training programs in, • Mushroom Cultivation • Protected Culture • Tissue Culture • Organic Farming and • Farm Machinery, on the request of outside organizations, farmer groups etc. This station has residential facilities to accommodate approximately 60 students. The student hostel consists of three dormitories to accommodate males and females separately. Within this hostel premises there is a lecture hall with adequate facilities and lodging facilities, meals and recreation facilities. A sophisticated glass house, two poly tunnels with different levels of shading and net houses are available for research and training activities. A tissue culture laboratory was established in 2008 for training and production requirements. This laboratory consists of all instruments to practice low-cost tissue culture techniques. Presently, the laboratory is being used to produce Anthurium and Banana plantlets for sale. The plant nursery has all the facilities for good management of plants and for plant propagation practical training. These include facilities to conduct training programs on budding, grafting, layering, and other plant propagation techniques using well-trained and skilled staff. This nursery supplies sufficient numbers of quality annual and perennial horticultural crop plants to the plant sales center at the Faculty of Agriculture of the University at Peradeniya and sells the propagules on site at the farm. The mushroom unit was developed in 2009 to enhance the knowledge of mushroom cultivation of undergraduate students and external trainees. The unit is offers practical knowledge on all the techniques of oyster mushroom production. It encourages trainees to initiate mushroom cultivation as self-employment programs. In addition, this unit provides research facilities for undergraduate students and academia of the university. There is a land reserved for organic agriculture experiments. This field has not received any agro chemicals for the last 10 years. The unit has a compost production unit, which is used for practical classes by students and for research. Approximately 25% of the unit is reserved to commercial vegetable and fruit production. A wide range of vegetables and fruits such as mango, banana, jack fruit, Anona and pomegranate are grown on this land. This station has a high degree of bio diversity, with about 150 species of plants within its premises. This is an added bonus, which is used extensively for student practical. The experimental unit offers a unique opportunity for student training, research and demonstrations.

	Perennial crops, principally Teak, Coffee and Coconut cover approximately 50% of the land area of the farm.   **Figure 7: Open cultivation land of the experimental station** A tube well has been constructed in the University Experimental Station-Dodangolla. This tube well has the capacity to supply all water requirements of the station including irrigation. The distribution pipeline network has been placed to cover all cultivation plots of the center. Through this subproject, the irrigation water system of the center will be improved and it will result in water conservation since the sprinkler irrigation system is more efficient than the existing conventional irrigation methods.   *Figure 8: Main Pipeline and the pump house at Dodangolla* DOA and University of Peradeniya annually allocate funds for the recurrent expenditures to undertake the services and the research activities undertaken by these two institutions but there are low allocations for the capital investment. ASMP and DOA together conduct the consultation sessions with relevant officials and identified to need of strengthening the HORDI, and University Experimental Station's services through capacity building component of ASMP.
Project Benefits	The project will directly result the establishment of irrigation facilities HORDI- Gannoruwa and University Experimental Station- Kundasale, Ultimately, it gives the benefits to the farmers who have engaged in cultivation in the country and the consumers as well who can reach healthy foods. The following benefits will be achieved to the agriculture sector of the country by implementing the subproject. • Development of high-yielding vegetable varieties in cooperated with other preferable quality characters suitable for diverse environments. • Development of climate-smart varieties to mitigate climate change

	• Development of pest and disease-resistant varieties to reduce the usage of chemicals in vegetable cultivation and ensure sustainable agriculture industry • Production of new vegetable varieties • Breeder seed production of new varieties produced • Conducting research on imported seeds and finding out whether they are suitable for cultivation in the country. • Providing planting material to seed and planting material development center and private parties for multiplication • Provision of planting material and seeds of traditional - varieties for farmers that requested. • Research and development activities related to the diagnosis and management of pests in vegetables and root crops • Improve fertilizer use efficiency by in introducing new technology. • Conducting under graduate/student training and research studies. • Coordinating the research and extension linkage by conducting and coordinating research extension dialogue. • Coordinating industrial training program for the undergraduates and diploma students. The ultimate effort of the ASMP is to establish good agriculture practices (GAP) in the farming activities by introducing new technologies.
Social Impact	The proposed subproject will be implemented within the government premises which is earmarked for the vegetable seed production and research activities. Hence there is no direct contact of subproject activities with the community. As the subproject activities, rehabilitation existing irrigation facilities and establishment of sprinkler irrigation system at University Experimental Station- Dodangolla and HORDI- Gannoruwa are included. The area identified for the civil works are allocated for the assigned activities. Hence, there is no social impact emerging by the subproject activities. There are no assets or activities that will be disturbed or affected by the subproject activities. The magnitude of the proposed project interventions is very low. accordingly, the anticipated negative social impacts of the proposed project will be minor or insignificant. Only possible impacts regarding the health & safety of the HORDI, and University Experimental Station staff and the contractor staff during the establishment of sprinkler irrigation system are anticipated. Summarised social impacts and mitigation measures are shown in table 2. However, the following impacts are listed to get emphasis in the project selection and implementation. 01. Construction impacts such as dust, noise, and vibrations 02. Labour influx for establishment of establishment of sprinkler irrigation systems 03. Occupational health and safety hazards, and on impacts on the environment during the construction period All environmental related issues and mitigation measure are in the EMP under ESR.

Mitigation Measures	Proposed migratory measures for the negative social impacts listed above. **01. Construction impacts such as dust, noise, and vibrations** Anticipated impacts due to the construction will be generic and most of the impacts will be mitigated by following good construction practices. Noise and vibration will be reduced by maintaining the construction machinery and limiting the construction activities in the daytime only. Since the proposed site to establish the sprinkler irrigation systems is free from other activities as well as located separate from human settlement, public accesses, office buildings, staff quarters, or any community gathering centres, there are no impacts for the outsiders. But contractor staff and supervision staff may face inconveniences due to construction-related impacts such as dust, noise, and vibration. Hence, the construction contractor will be responsible to implement the minimizing, preventing, and mitigation measures proposed in the SIMP and EMP. **02. Labour influx for establishment of sprinkler irrigation systems establishment activities** There is no high labour demand in civil works envisage with this subproject. If labour will be hired where possible from the local community and the contractor will give priority to women when hiring. Worker Code of Conduct will be included as part of the employment contract - that establishes the workers' commitment in attitudes and behaviour preventing, combating, and responding Gender-Based Violence (GBV). During implementation, robust measures will be implemented to prevent sexual harassment/GBV including training of workforce and sanctions for non-compliance (e.g., termination). **05. Public/ occupational health and safety Hazards, and on impacts on the environment** All measures in the Environment Management Plan (EMP) will be implemented in regard to management. Necessary COVID19 safety measures and protocols will be implemented as per the government, WHO, and World Bank interim guidelines on COVID-19 by all construction workers. Training and awareness will reduce the direct exposure to minimize the risk.

F. STAKEHOLDERS ENGAGEMENT AND PUBLIC CONSULTATION

1. Stakeholders and Public consultation

Stakeholders' engagements

The Department of Agriculture is the main project partner agency of this subproject. The staff of the HORDI, and Agriculture Faculty (University of Peradeniya) jointly prepared their capacity needs and submitted them to the ASMP. Several discussions were undergone to finalize the subproject activities between the HORDI, university staff and the ASMP. For more transparency, the relevant institution staff were represented the technical evaluation committee of this subproject.

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

Table 1: Responsible Officers in HORDI Project Activities

SN	Name	Designation	Contacts
1	Dr. (Ms.) S.K. Wasala	Additional Director General of Agriculture (Research)-DOA	samanthiwasala@gmail.com
2	Prof. K.W.L.K. Weerasinghe	Senior Lecturer-Faculty of Agriculture, University of Peradeniya	0714462995
HORDI- Gannoruwa			
3	Ms. W.A.P.G.Weeraratna	Director/ HORDI	gethweerarathna@yahoo.com
Plant Breeding Division			
4	Ms.N.L.A.T.S. Nanayakkara	Head of the Division Assistant Director of Agriculture (Research)	subodhinit@gmail.com
5	Ms. H.M.P.S. Kumari	Assistant Director of Agriculture (Research)	pabakumari68@yahoo.com
6	Ms. H.M.V.T.Welegama	Assistant Director of Agriculture (Research)	tharanganiwelegama@gmail.com
7	Ms. R.G.S.Iroshani	Assistant Director of Agriculture (Research)	shyaliiroshani@gmail.com
8	Ms. N.B.U.Dissanayaka	Assistant Director of Agriculture (Research)	bhagyadissanayaka@ymail.com
Pathology Division			
9	Ms. W.A.P.G.Weeraratna	Agriculture Principal Scientist (Plant Pathology)	gethweerarathna@yahoo.com
10	Ms. M.S.W.Fernando	Assistant Director of Agriculture (Research)	sobashinifernando@gmail.com
Agronomy Division			
11	Ms.D.P.Karunananda	Agriculture Principal Scientist (Agronomy)	dayani.karunananda@gmail.com
12	Ms.K.A.D.S.D. Kahadawaarachchi	Assistant Director of Agriculture (Research)	dilrukshi_sandya@ymail.com
13	Ms.K.H.S.T.Deshabandu	Assistant Director of Agriculture (Research)	khstdeshabandu@yahoo.com
14	Ms. H.M.P.T.K.Hettigedara	Assistant Director of Agriculture (Research)	hettigedara64@yahoo.com
Entomology Division			
15	Mr.S.S.Weligamage	Agriculture Principal Scientist (Entomology)	senaniweligamage@gmail.com

	16	Mr. K.M.D.W.P. Nishantha	Assistant Director of Agriculture (Research)	wpnishantha@yahoo.com
	17	Ms.P.H.Ranaweera	Assistant Director of Agriculture (Research)	ranaweerapra@yahoo.com
	Soil and Plant Nutrition Division			
	18	Ms. N.R.N. Silva	Principal Agriculture Scientist (Soil Science)	renukasilva@yahoo.com
	19	Mrs. K.K.K. Nawarathne	Assistant Director of Agriculture (Research)	kkknawaratna@yahoo.com
	Food Contaminant Analytical Division			
	20	Ms.C.Magamage	Principal Agriculture Scientist (Analytical Chemistry)	champamgmg@gmail.com
	21	Ms.P.W.Y. Lakshani	Assistant Director of Agriculture (Research)	jayayoshil@yahoo.com
	Extension and Communication Division			
	22	Ms.K.A.S. Thilakarathne	Assistant Director of Agriculture (Development)	arunisriya@gmail.com
	University Experimental Station- Dodangolla			
	23	K.G.S.N. Amarasiri	Farm Manager	

Stakeholders' consultation

During the social and environmental screening process, the staff of DOA, University of Peradeniya, and HORDI 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 DOA and University 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 service of the institute.

Table 2: Consultation outputs

Locations / Sub Units / Fields Visited	Participants with Designations	Matters Discussed
DOA- Peradeniya- 19.01.2022		
ADG (Research) Office, DOA	Dr. (Ms.) S.K. Wasala Additional Director General (Research)	Overall capacity building plan to be implemented with ASMP assistance
Faculty of Agriculture, University of Peradeniya- 19.01.2022		
Faculty of Agriculture	Prof. Buddhi Marambe Senior Professor	Requirement of establishment of sprinkler irrigation system with land improvement
	Prof. K.W.L.K. Weerasinghe Senior Lecturer	
HORDI Gannoruwa-19.01.2022		
Director Office, HORDI	Ms. W.A.P.G.Weeraratna Director/ HORDI	Proposed subproject activities
Analytical Laboratory (Pesticide residuals & Heavy metals)	Ms.P.W.Y.Lakshani, Assistant Director of Agriculture (Research)	• Routine functions of the lab Overall environmental and social risks/impacts • Safety precautions that are implemented • Rehabilitation of existing irrigation system and establishment of sprinkler irrigation system land
	Ms. Chamila Vaidyarathne Research Assistant	
Sample Receiving Point	Mr.Asanga Panditharathna Sample receiving Officer	
Plant Pathology Division	Ms.Kanchana Dissanayake, Programme Assistant	
	Ms.Shyamali Kohombange	

		Research Assistant	drainage improvement in farmlands • Waste disposal
		Ms. Nishani Research Assistant	
		Ms.Nishadi Samarakoon Research Assistant	
		Ms.N.M.S.Maheshika Technical Assistant	
		Ms.W.Anurudhdhika Technical Assistant	
		Mr.R.W.Weerasekara Technical Assistant	
	Soil & Plant Nutrition Division	Ms.Renuka Silva Principal Senior Scientist (Soil Science)	
	Microbiology Laboratory	Ms.Kumudu Nawarathna, Assistant Director of Agriculture (Research)	
	University Experimental Station, Dodangolla- 20.01.2022		
	University Experimental Station	Mr.W.M.I.N.D.Abeysingha, Technical Officer	• Site identified to establish the sprinkler irrigation system and improvement of cultivations land • Available water source for irrigation

G. GRIEVANCE READDRESSED MECHANISM (GRM)

A GRM will be in place to promptly address any grievances including any unforeseen impacts that may arise during the implementation phase of the project, at no cost to the people. Field level grievances will record by Director (HORDI), and Farm Manager (University Experimental Station) by keeping the registry separately on their premises. The ASMP, University and DOA official will facilitate resolving the grievance. The middle level grievances committee will operate at the DOA and University offices to address the issues which are unsolved or when the affected person is not satisfied with the decision at the field level. The third tier of GRM will operate at PMU headed by the Project Director of ASMP with technical support from the Social Development Specialist to address the issues which are not solved at the initial stages.

H. IMPLEMENTATION AND MONITORING

1. Monitoring

Considering the magnitude of the proposed project interventions and the infrastructure development projects at the selected location, the anticipated social impacts of the proposed activities will be minor or insignificant. There won't be any significant negative social impacts envisaged from the proposed project during the construction stages with the implementation of the given SIMP. Further, there will not be significant negative social impacts during the infrastructure development activities assuming all the proposed mitigation actions are taken appropriately. Therefore, it is not necessary to have a complex monitoring system. However, it is necessary to ensure there are no violations of the regulations and conformity to the national and World Bank standards and guidelines pertaining to environmental and social safeguards.

Therefore, the contractor should be aware of the project management to ensure social management compliance during the implementation of the project. The Director (HORDI), and Farm Manager (University Experimental Station) will undertake the internal monitoring activities with close coordination of ASMP-PMU. Implementation of social and environmental safeguards compliance will be monitored by the social and environmental safeguard specialist at ASMP-PMU.

I. SCREENING OF POTENTIAL SOCIAL IMPACTS

Probable Involuntary Resettlement Impacts	Yes	No	Not known	Details
Will the intervention include new physical construction work?	√			Establishment of Sprinkler Irrigation systems
Does the intervention include upgrading or rehabilitation of existing physical facilities?	√			Rehabilitation of existing irrigation facilities
Is the intervention likely to cause any permanent damage to or loss of housing, other assets, resource use?		√		No such impacts are anticipated
Are the sites chosen for this work free from encumbrances and is in possession of the government/community land?		√		Selected land belongs to DOA and vested to HORDI, and University experimental station land is under the purview of the University of Peradeniya and vested to the Agriculture Faculty
Is this subproject intervention requiring private land acquisitions?		√		No land acquisition taken place
If the site is privately owned, can this land be purchased through negotiated settlement?				N/A
If the land parcel has to be acquired, is the present plot size and ownership status known?				N/A
Are these land owners willing to voluntarily donate the required land for this sub-project?				N/A
Whether the affected land owners likely to lose more than 10% of their land/structure area because of donation?				N/A
Is land for material mobilisation or transport for the civil work available within the existing plot/ Right of Way?	√			The accesses to proposed sites are free from other encumbrances.
Are there any non-titled people who are living/doing business on the proposed site/project locations that		√		No such impacts are anticipated

Probable Involuntary Resettlement Impacts	Yes	No	Not known	Details
use for civil work?				
Is any temporary impact likely?	√			Dust, Noise, vibration, etc.,
Is there any possibility to move out, close of business/ commercial/ livelihood activities of persons during constructions?		√		No such impacts are anticipated
Is there any physical is placement of persons due to constructions?		√		No such impacts are anticipated
Does this project involve resettlement of any persons? If yes, give details.		√		No such impacts are anticipated
Will there be loss of /damage to agricultural lands, standing crops, trees?		√		No such impacts are anticipated
Will there be loss of incomes and livelihoods?		√		No such impacts are anticipated
Will people permanently or temporarily lose access to facilities, services or natural resources?		√		No such impacts are anticipated
Are there any previous land acquisitions happened and the identified land has been already acquired?		√		No such impacts are anticipated
Are any indigenous people living in proposed locations or affected/benefited by the project intervention?		√		No such impacts are anticipated

Assuming that all mitigation measures are implemented as proposed, the following effects can be predicted during the infrastructure development activities.

Key project activities	Potential Social Effects	Significance of Social effect with mitigation in place[1]
Establishment of sprinkler irrigation system for 5.0ha land of HORDI-Gannoruwa.	Emission of dust, generation of noise, and vibration	NS
Improvement of existing cultivation land's drainage facilities of HORDI- Gannoruwa	Emission of dust, generation of noise, and vibration	NS
Establishment of sprinkler irrigation system for open cultivation area in farmland of	Emission of dust, generation of noise, and vibration	NS

[1] 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

Key project activities	Potential Social Effects	Significance of Social effect with mitigation in place[1]
University Experimental Station- Dodangolla		

SOCIAL RISKS & IMPACTS

Activities	Land requirements	Risk of exclusion of vulnerable groups	Construction impacts	Risks due to labour influx	Risk of livelihood impacts	Public/ occupational health and safety	COVID19 risks
Establishment of sprinkler irrigation system for 5.0ha land of HORDI- Gannoruwa.	Land owned by DOA		Yes	Yes		Yes	Yes
Improvement of existing cultivation land's drainage facilities of HORDI-Gannoruwa	Land owned by DOA		Yes	Yes		Yes	Yes
Establishment of sprinkler irrigation system for open cultivation area in farmland of University Experimental Station- Dodangolla	Land owned by University of Peradeniya		Yes	Yes		Yes	Yes

J. INFORMATION ON AFFECTED PERSONS

Any estimate of the likely number of households that will be affected by the sub project?

- [√] No. [ ] Yes. If yes, approximately how many? …….
- No. of HHs losing <10% of their productive assets **- N/A**
- (land/cowshed/shops) …… **N/A**
- No. of HHs losing 10% or more of their productive assets?..... **N/A**

Are any vulnerable households affected? [√] No. [ ] Yes. If yes, please briefly describe their situation with estimated numbers of HHs? N/A

What are the needs and priorities for social and economic betterment of vulnerable people who are affected by this project? N/A

K. SCREENING DECISION and recommendations

After reviewing the answers above, it is determined that the subproject is:

[ ] Categorised as a 'B' project, an Abbreviated Resettlement Action Plan is required

[√] Categorised as a 'C' project, only the Social Screening/ Due Diligence Report is required

L. SOCIAL MANAGEMENT PLAN (SMP)

SN	Issues/ Impacts and risks	Mitigation measures	Institutional responsibility		Mitigation cost
			Implementation	Supervision/ monitoring	
1	Public complaints and lack of community awareness and support for the project implementation	• The staff of HORDI, and University Experimental Station-Dodangolla will be briefed of the project, its purpose, design and outcomes with comprehensive discussion. Consultations will be repeated once the contractor is mobilised. • The GRM will be established to receive and resolve complaints/ grievances related to disturbances caused by construction including GBV related issues. • Awareness will be created of the GRM among staff and contact details will be publicly displayed to report grievances	• Director (HORDI Service) • Farm Manager-University Experimental Station	PMU	Included in EMP
2	Construction related disturbances from dust, noise, and Vibration	• All measures in the EMP will be implemented in regard to management of construction related impacts including impacts to the environment including pollution, deforestation, soil erosion and management of solid waste • A copy of the SMP and EMP should be available at all times at the project supervision office on site • An Officer will be nominated to implement & monitor social/environment safeguards mitigations measures during construction	Contractor	Social/Environment safeguard specialist	Included in construction cost.
3	Labour Influx related issues (e.g. GBV)	• Local labour will be hired where possible and contract will give priority to women when hiring • Worker Code of Conduct will be included as part of the employment contract - that defines workers' commitment in attitudes and behaviour preventing, combating and responding GBV • Contractor will implement robust measures to prevent sexual harassment/GBV including training of workforce and	Contractor	Social/Environment safeguard specialist	Included in construction cost.

SN	Issues/ Impacts and risks	Mitigation measures	Institutional responsibility		Mitigation cost
			Implementation	Supervision/ monitoring	
		sanctions for non-compliance (e.g., termination)			
4	Public/ occupational health and safety Hazards, and on impacts on environment	• All measures in the EMP will be implemented in regard to management. • Provide training and awareness on safety for contractor staff • Necessary COVID19 safety measures and protocols will be implemented as per Government, WHO and WB guidelines by all construction workers • 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	Contractor	Social/Environment safeguard specialist	Included in construction cost.

M. CONCLUSION

The proposed Strengthening Capacity to Enhance Planting Material Production of Vegetables- Rehabilitation and Upgrading existing facilities and Land Improvement at HORDI- Gannoruwa and University Experimental Station- Dodangolla well augers with enhancing the DOA's capacities. It aligns with the sustainability of the agriculture sector modernization under ASMP. The proposed activities will not have impacts in relation to land acquisition or involuntary resettlement. The impacts that can arise can be considered modest and can be reversed with mitigation action.

N. DETAILS OF PERSON RESPONSIBLE FOR THE SOCIAL SCREENING

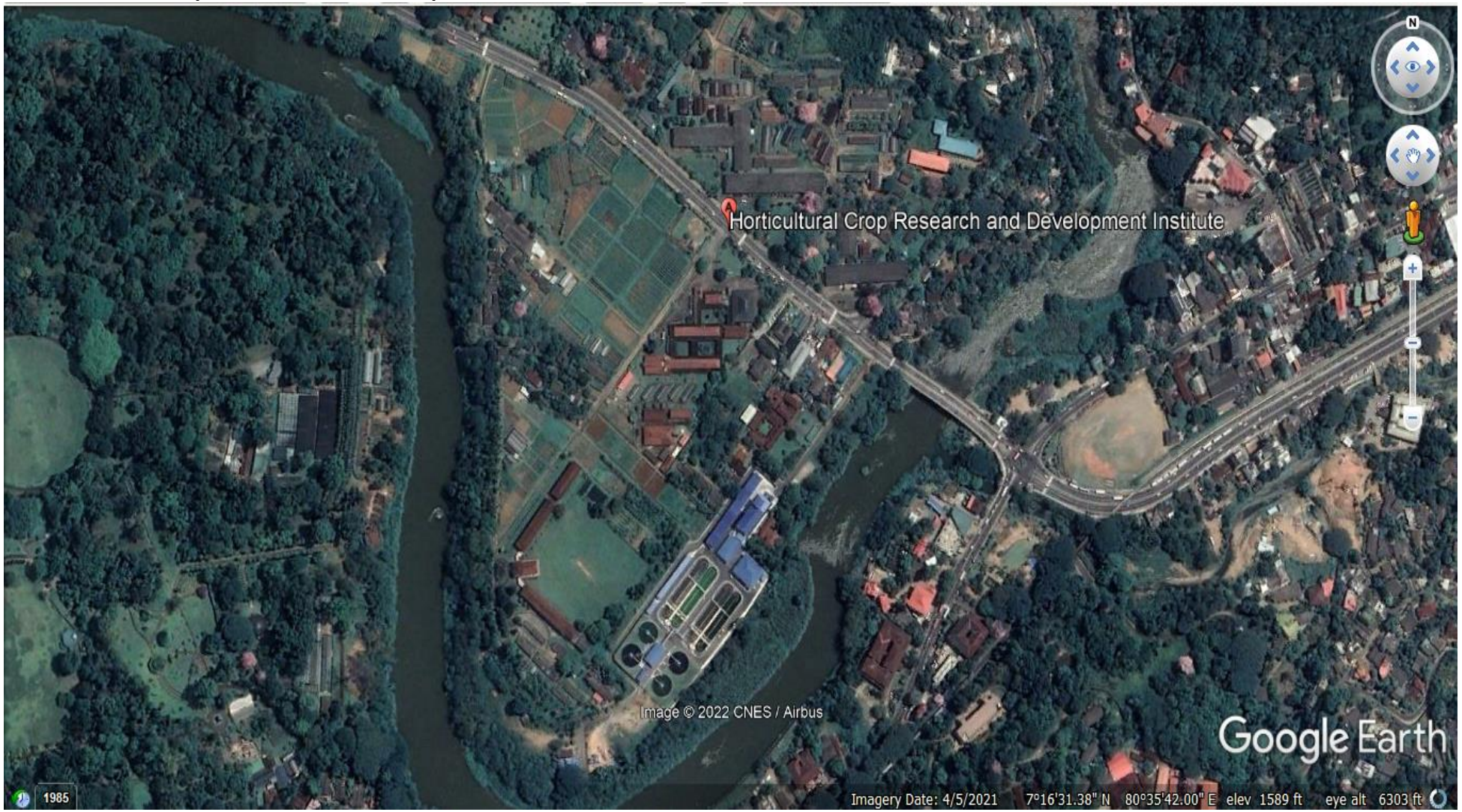
Screening conducted and reviewed by **D.M. Sanjaya Bandara** **Environment and Social Safeguard Specialist** Agriculture Sector Modernization Project **Name/Designation/Contact information**	**Date** **February 2022**  **Signature**
Screening report recommended by **Dr. Rohan Wijekoon** **Project Director**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

ANNEX 1: LIST OF REFERENCES

1) https://asmp.lk/the-project/
2) https://doa.gov.lk/home-page/
3) https://doa.gov.lk/hordi-home/
4) https://doa.gov.lk/spmdc-home-new/
5) http://agri.pdn.ac.lk/farms/dodangolla/index.php

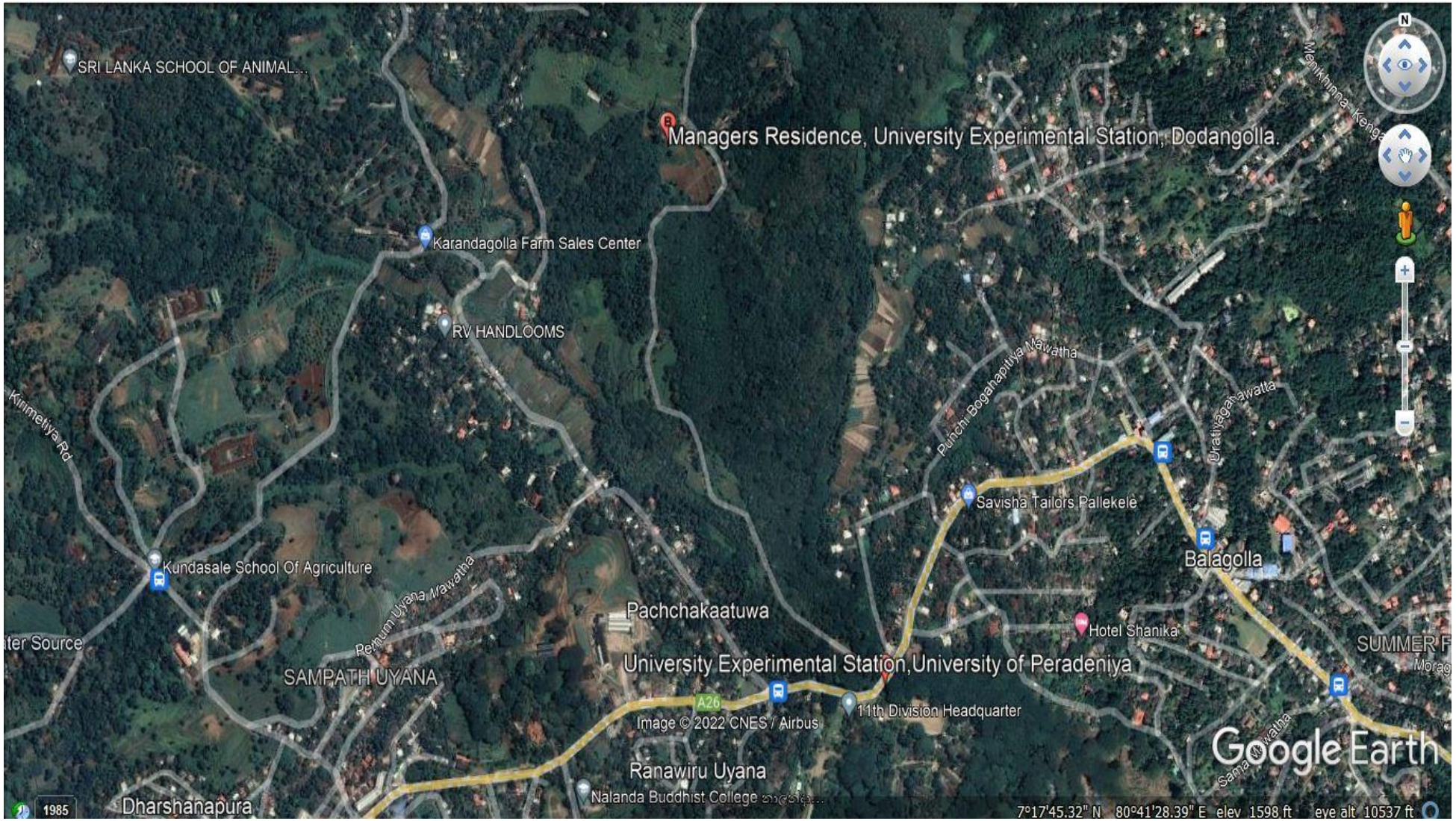
ANNEX 2: GOOGLE MAP/ LOCATION MAP

1. Horticultural Crops Research and Development Institute at Gannoruwa



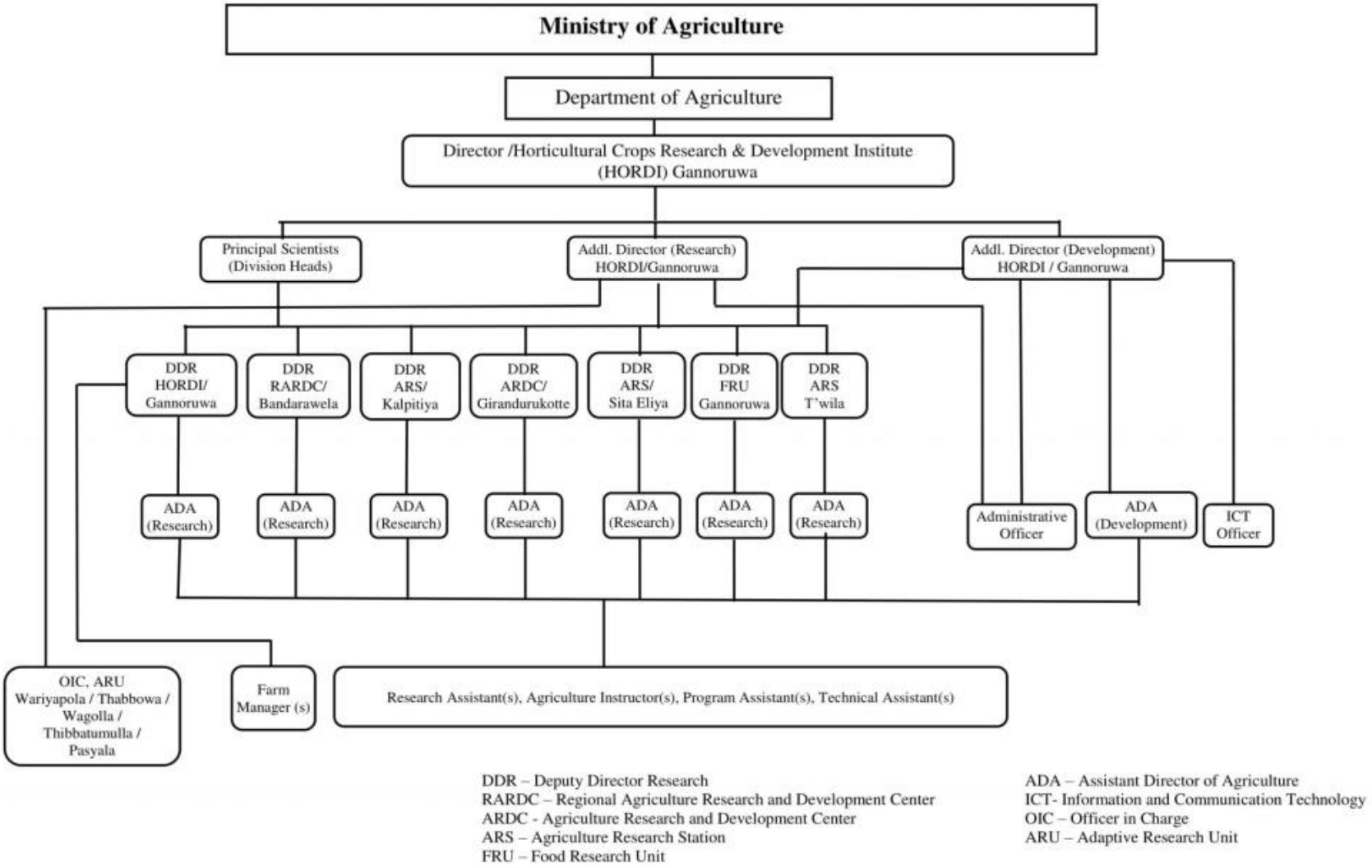
Source: Google Map

2. University Experimental Station at Dodangolla, Kundasale



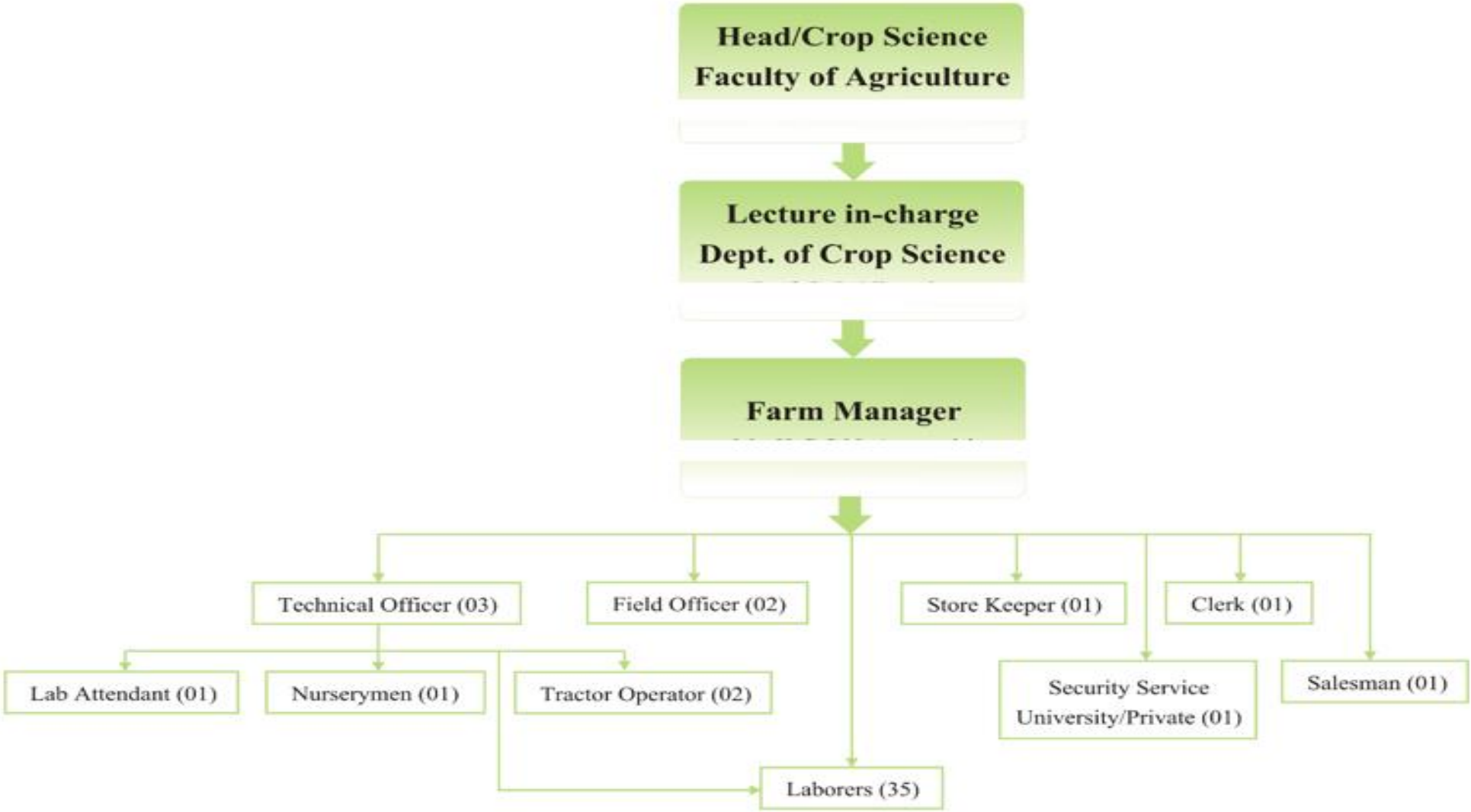
Source: Google Map

ANNEX 3: ORGANIZATIONAL STRUCTURE OF HORDI



Source: HORDI Home page – Department of Agriculture Sri lanka (doa.gov.lk)

ANNEX 4: ORGANIZATIONAL STRUCTURE OF UNIVERSITY EXPERIMENTAL STATION- DODANGOLLA



Source: agri.pdn.ac.lk/farms/dodangolla/about.php

ANNEX 5: BOQ AND ESTIMATION OF ACTIVITIES PROPOSED IN HORDI SITE

ESTABLISHMENT OF AUTOMATED MICRO IRRIGATION SYSTEMS FOR MAINTENANCE AND PRODUCTION OF PARENTAL LINES AND HYBRID SEED PRODUCTION

Horticultural Crops Research and Development Institute (HORDI), Gannoruwa

HORDI Research Land improvement: 4 Major land areas

Area1

An Estimated bill of quantities for supply and installation of a sprinkler irrigation system for 1 ha. area @ Research Centre - HORDI Gannoruwa

Extent of the Area: 1.0ha

Pump to be operated 9-10 m^3/h at 2-3 bar pressure

Sprinkler spacing: 5 m x 5 m

No	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)	Work descriptions
1.0	**Main line & Sub main line**					
1.1	110 mm (4") PVC Pipe supply lines from water source to cultivated lands (6 kg/ cm2) with fittings	m	160	550.00	88,000.00	
1.2	63mm (2”) sub main line PVC pipes Type 600 with fittings	m	120	235.00	28,200.00	Main/Sub main line must be ended with a Flashing end and should be supplied FC unit and properly connect to the main line and use to the existing water pump/Main line
2.0	**Field Control units**					
2.1	63mm (2") 2way Butterfly, flinger type Gate Valve G.I. Handles and joined the PVC Flingers with fittings	Nos	2	7,500.00	15,000.00	
2.2	63mm (2") Non retuned valves with fittings	Nos	2	4,500.00	9,000.00	
2.3	Other fittings		2	3000.00	6,000.00	
3.0	**Laterals with Sprinklers**					

No	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)	Work descriptions
3.1	Laterals - 32 mm Low Density Polyethylene (LDPE) pipe - 4- 4.5 Kg/ cm^2	m	1,600	120.00	192,000.00	All the items mentioned under items 2 & 4.1 (2.1 to4.1) must be supplied and installed
3.2	Double saddle clamps - 63 mm x 1" x 25 mm	Nos	40	375.00	15,000.00	
3.3	Double nipples - Male threaded, 32 mm x 32 mm	Nos	80	100.00	8,000.00	The space between sprinkler heads on each lateral is 5 m
3.4	Ball valves - PVC, 1”	Nos	80	225.00	18,000.00	All the connectors must be properly tightened with thread seals and PVC gum (Solvent cement)
3.5	Male adapters -32 mm x 1”	Nos	80	85.00	6,800.00	
3.6	Line Ends - 32 mm	Nos	80	45.00	3,600.00	
3.7	Polyethylene pipe clips - 32mm	Nos	80	25.00	2,000.00	
3.8	Full circle (any time - 360^0) sprinkler heads - Technical type, 1 m height, 5 m wetting radius and 300 - 400 LPH discharge @ 1.5 - 2.0 bar pressure with > 85 % of Coefficient of Uniformity (should provide with a riser support, tubing and other relevant connectors to connect to the laterals)	Nos	320	650.00	208,000.00	
3.9	Terminal ends/ Flushing ends - 63 mm x 2”	Nos	4	675.00	2,700.00	
4	Cable ties 4"	Nos	650	15.00	9,750.00	
4.1	Field installation materials - including Thread seal, Solvent cement	Lot	2	3,500.00	7,000.00	
4.2	Installation charges	Specify		15,000.00	15,000.00	
4.3	Transport charges	Specify				
	sub totals				634,050.00	
	VAT 8 %				50,724.00	
	Total				684,774.00	
Note: Product samples with catalogues should be attached with the offer for each item.						

Vegetable Research main area

An Estimated bill of quantities for supply and installation of a sprinkler irrigation system for 4 Ac. area (1.6 ha) at Research Centre - HORDI Gannoruwa
Extent of the Area: 1.6ha
Pump to be operated 9-10 m^3/h at 2-3 bar pressure
Sprinkler spacing: 5 m x 5 m

No	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)	W+G6:G26ork descriptions
1.0	**Main line & Sub main line**					
1.1	110 mm (4") PVC Pipe supply lines from water source to cultivated lands (6 kg/ cm2) with fittings	m	50	550.00	27,500.00	Main/Sub main line must be ended with a Flashing end
1.2	63mm (2”) sub main line PVC pipes Type 600 with fittings	m	250	235.00	58,750.00	and should be supplied FC unit and properly connect to the main line and use to the existing water pump/Main line
2.0	**Field Control units**					
2.1	110mm (4") 3way Butterfly, flinger type Gate Valve G.I. Handles and joined the PVC Fingers with fittings	Nos	4	25,000.00	100,000.00	
2.2	63mm (2") 2way Butterfly, flinger type Gate Valve G.I. Handles and joined the PVC Fingers with fittings	Nos	8	12,500.00	100000.00,	
2.3	63mm (2") Non retuned valves with fittings	Nos	6	4,500.00	27,000.00	
2.4	1" mini air release valves with all the fittings to connect to the HC unit	Nos	10	2,000.00	20,000.00	
2.5	Other fittings		4	3,000.00	12,000.00	
3.0	**Laterals with Sprinklers**					
3.1	Laterals - 32 mm Low Density Polyethylene (LDPE) pipe - 4- 4.5 Kg/ cm^2	m	1600	120.00	192,000.00	All the items mentioned under items 2 & 4.1 (2.1 to4.1) must be
3.2	Double saddle clamps - 63 mm x 1" x 63 mm	Nos	100	375.00	37,500.00	supplied and installed.

No	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)	W+G6:G26ork descriptions
3.4	Double saddle clamps - 63 mm x 1" x 63 mm	Nos	100	375.00	37,500.00	The space between sprinkler heads on each lateral is 5 m
3.5	Male adapters -32 mm x 1”	Nos	150	85.00	12,750.00	All the connectors must be properly tightened with thread
3.6	Line Ends - 32 mm	Nos	150	45.00	6,750.00	seals and PVC gum (Solvent cement)
3.7	Polyethylene pipe clips - 32mm	Nos	150	25.00	3,750.00	
3.8	Full circle (any time - 360^0) sprinkler heads - Technical type, 1 m height, 5 m wetting radius and 300 - 400 LPH discharge @ 1.5 - 2.0 bar pressure with > 85 % of Coefficient of Uniformity (should provide with a riser support, tubing and other relevant connectors to connect to the laterals)	Nos	850	650.00	552,500.00	
3.9	Terminal ends/ Flushing ends - 63 mm x 2”	Nos	20	675.00	13,500.00	
4	Cable ties 4"	Nos	1800	15.00	27,000.00	
4.1	Field installation materials - including Thread seal, Solvent cement	Lot	2	25,000.00	50,000.00	
4.2	Installation charges	Specify		15,000.00	15,000.00	
4.3	Transport charges	Specify				
	sub totals				1,293,500.00	
	VAT 8 %				103,480.00	
	Total				1,396,980.00	
Note: Product samples with catalogues should be attached with the offer for each item.						

Organic research area 1

An Estimated bill of quantities for supply and installation of a sprinkler irrigation system for 1.5 Ac. (0.6 ha) area @ Research Centre - HORDI Gannoruwa

Extent of the Area: 0.6ha
Pump to be operated 9-10 m^3/h at 2-3 bar pressure
Sprinkler spacing: 5 m x 5 m

No.	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)
1	63 mm HDPE supply lines from water source to cultivated lands (6 kg/ cm2)	m	10	300.00	3,000.00
2	***Head Controlling (HC) unit***				
2.1	63 mm PVC (6 kg/ cm2) two-way unit including 3 steel ball cock valves with valve sockets, 1 T connector, 6 elbows and 1" L-angle support (1 m height) with all the fittings to connect to the HC unit and installation materials, HC unit should be painted using 2 coat of enamel paint	Nos	1	15,000.00	15,000.00
2.2	2" x 63 mm Male adaptors (PVC + HDPE)	Nos	3	750.00	2,250.00
2.3	63 mm Polystyrene Screen filters (120 mesh size, 15 - 20 m3/ hr. flow rate) with all the fittings to connect to the HC unit	Nos	1	4,500.00	4,500.00
2.4	Pressure gauges with all the fittings to connect to the HC unit (Glycerin filled, 0 - 10 bar)	Nos	1	2,000.00	2,000.00
2.5	1" mini air release valves with all the fittings to connect to the HC unit	Nos	1	2,000.00	2,000.00
3.0	90° Elbow - 63 mm High Density Polyethylene (HDPE), 6 Kg/ cm^2	Nos	2	1,000.00	2,000.00
4.0	Main lines/ Sub main lines - 63mm High Density Polyethylene (HDPE) pipe, 6 Kg/ cm^2	m	150	300.00	45,000.00
5.0	Laterals - 25 mm Low Density Polyethylene (LDPE) pipe - 4- 4.5 Kg/ cm^2	m	800	60.00	48,000.00
6.0	Double saddle clamps - 63 mm x 25 mm x 25 mm	Nos	20	275.00	5,500.00
7.0	Double nipples - Male threaded, 25 mm x 25 mm	Nos	40	60.00	2,400.00
8.0	Ball valves - PVC, 3/4”	Nos	40	150.00	6,000.00
9.0	Male adapters - 25 mm x 3/4”	Nos	40	50.00	2,000.00
10.0	Line Ends - 25 mm	Nos	40	15.00	600.00
11.0	Polyethylene pipe clips - 25 mm	Nos	40	12.50	500.00

No.	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)
12.0	Full circle (any time - 360^0) sprinkler heads - Technical type, 1 m height, 5 m wetting radius and 300 - 400 LPH discharge @ 1.5 - 2.0 bar pressure with > 85 % of Coefficient of Uniformity (should provide with a riser support, tubing and other relevant connectors to connect to the laterals)	Nos	160	650.00	104,000.00
13.0	Terminal ends/ Flushing ends - 63 mm x 2”	Nos	2	675.00	1,350.00
14.0	Field installation materials - including Thread seal, Solvent cement	Lot	1	2,500.00	2,500.00
15.0	Installation charges	Specify		10,000.00	10,000.00
16.0	Transport charges	Specify			
	Sub Total				**258,600.00**
	8 % VAT				**20,688.00**
	Grand Total				**279,288.00**
Note: Product samples with catalogues should be attached with the offer for each item.					

Organic Research area 2

An Estimated bill of quantities for supply and installation of a sprinkler irrigation system for 1.5 Ac. (0.6 ha) area @ Research Centre - HORDI Gannoruwa

Extent of the Area: 0.6ha
Pump to be operated 9-10 m^3/h at 2-3 bar pressure
Sprinkler spacing: 5 m x 5 m

No.	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)
1.0	63 mm PVC supply lines from water source to cultivated lands (6 kg/ cm2)	m	50	300.00	15,000.00
2.0	***Head Controlling (HC) unit***				-
2.1	63 mm PVC (6 kg/ cm2) two-way unit including 3 steel ball cock valves with valve sockets, 1 T connector, 6 elbows and 1" L-angle support (1 m height) with all the fittings to connect to the HC unit and installation materials, HC unit should be painted using 2 coat of enamel paint	Nos	4	15,000.00	60,000.00
2.2	63 mm Polystyrene Screen filters (120 mesh size, 15 - 20 m3/ hr. flow rate) with all the fittings to connect to the HC unit	Nos	1	4,500.00	4,500.00
2.3	Pressure gauges with all the fittings to connect to the HC unit (Glycerin filled, 0 - 10 bar)	Nos	1	2,000.00	2,000.00
2.4	1" mini air release valves with all the fittings to connect to the HC unit	Nos	1	2,000.00	2,000.00
2.5	90° Elbow - PVC, 6 Kg/ cm^2	Nos	2	1,000.00	2,000.00
2.6	63mm (2") Non retuned valves with fittings	Nos	4	4500.00	18000.00
2.7	Main lines/ Sub main lines - 63mm PVC pipe, 6 Kg/ cm^2	m	150	300.00	45,000.00
3.0	Laterals - 25 mm Low Density Polyethylene (LDPE) pipe - 4- 4.5 Kg/ cm^2	m	600	60.00	36,000.00
3.1	Double saddle clamps - 63 mm x 25 mm x 25 mm	Nos	20	275.00	5,500.00
3.2	Double nipples - Male threaded, 25 mm x 25 mm	Nos	40	60.00	2,400.00
3.3	Ball valves - PVC, 3/4”	Nos	40	150.00	6,000.00
3.4	Male adapters - 25 mm x 3/4”	Nos	40	50.00	2,000.00
3.5	Line Ends - 25 mm	Nos	40	15.00	600.00
3.6	Polyethylene pipe clips - 25 mm	Nos	40	12.50	500.00

No.	Description	Units	No. of Units	Unit Cost (Rs.)	Total Cost (Rs.)
3.7	Full circle (any time - 360^0) sprinkler heads - Technical type, 1 m height, 5 m wetting radius and 300 - 400 LPH discharge @ 1.5 - 2.0 bar pressure with > 85 % of Coefficient of Uniformity (should provide with a riser support, tubing and other relevant connectors to connect to the laterals)	Nos	220	650.00	143,000.00
3.8	Terminal ends/ Flushing ends - 63 mm x 2”	Nos	2	675.00	1,350.00
3.9	Field installation materials - including Thread seal, Solvent cement	Lot	1	2,500.00	2,500.00
4.0	Installation charges	Specify		10,000.00	10,000.00
5.0	Transport charges	Specify			
	Sub Total				**258,600.00**
	8 % VAT				**20,688.00**
	Grand Total				**279,288.00**
Note: Product samples with catalogues should be attached with the offer for each item.					

ANNEX 6: 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