Environmental Screening Report

Green Cucumber Cultivation Program in Batticaloa
(Farmer Clusters Pilot Projects for Technology Demonstration Parks)

Project Management Unit
Agriculture Sector Modernization Project
Ministry of Agriculture
Rajagiriya, Sri Lanka.
September 2019
Table of Contents

Abbreviations .......................................................................................................................... 3
1. Project Identification ........................................................................................................... 4
2. Project Location ................................................................................................................ 4
3. Project Justification .......................................................................................................... 5
4. Project Description .......................................................................................................... 6
5. Description of the existing environment ........................................................................... 7
6. Description of Proposed Agricultural Activities ............................................................ 9
7. Public Consultation .......................................................................................................... 11
8. Environmental Effects and Mitigation Measures ............................................................... 12
  8a. Screening for Potential Environmental Impacts .......................................................... 12
  8b. Environmental Management Plan ............................................................................... 15
9. Cost of mitigation ............................................................................................................ 18
10. Conclusion and Screening Decision ............................................................................ 19
10. EMP Implementation responsibilities and Costs ............................................................ 20
11. Screening decision recommendation ............................................................................ 20
12. Details of Persons Responsible for the Environmental Screening .................................. 20

Annex 1: Location Map ......................................................................................................... 21
### Abbreviations

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

Environmental Screening Report

1. Project Identification

<table>
<thead>
<tr>
<th>Project title</th>
<th>Green Cucumber Cultivation Program in Baticaloa (Farmer Cluster Project for Technology Demonstration Parks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Proponent</td>
<td>Agriculture Sector Modernization Project (ASMP)</td>
</tr>
</tbody>
</table>

2. Project Location

| Location (relative to the nearest town, highway) | The Green Cucumber (*Botanical Name*– *Cucumis sativus*) is a vegetable crop cultivated on uplands by the framers who are living in selected areas in Koralai Pattu North and Munnai South Eruvil Pattu DSDs in Baticaloa district belongs to eastern province. This crop was introduced by Department of Agriculture (DOA) as pilot project in selected area and it was good alternative crops for farmers to get maximum output from their uplands. Improved varieties of Green Cucumber is cultivated by the farmers in 5 GNDs of Koralai Pattu North & Munnai South Eruvil Pattu DSDs in the district (Project Location map is attached as Annexure I). The beneficiary farmers identified for the sub project presents in Table 1. |

| Table 1: Beneficiary farmers identified for the sub project |
|--------------|-----------------|
| SN | DSD                | GND                 |
| 1  | Koralai Pattu North | Mankenny           |
| 2  | Vammivetturan      | Paalchenai          |
| 3  | Uriankutlu         |                     |
| 4  | Munnai South Eruvil Pattu | 213 B- Kathiravi 

Definition of Project Area (The geographical extent of the project & areas affected during construction)

| The approximate land extent of Manmunai South & Eruvil Pattu DSD is 6,300ha and per capita land consumption is 0.1ha and approximate land extent of Koralai Pattu North DSD is 58,900ha and per capita land consumption is 2.6ha. There are 500 farmers selected for this technology demonstration park. Altogether 500 farmers will produce the green Cucumber (*Botanical Name*– *Cucumis sativus*) in 500 farmlands. Batticaloa is an agricultural economy based district and rice production is the main agricultural activity undertaken by farmers in lowlands. Almost all farmers have both lowlands and uplands for their livelihood activities. Since there is well-established and managed irrigation system, farmers cultivate paddy on lowland in two term (Yala & Maha Seasons) per year. During Yala season (May to August), cultivation activities are limited to paddy on lowlands with water scarcity. Farmers have cultivated perennial crops such as coconut, fruits and timber trees on upland for their household consumption. Since it is receiving high rainfall during Maha season (September to March), some farmers are cultivating seasonal crops on their uplands. |

### Adjacent land and features

The average plot size of farmers utilize for Green Cucumber cultivation is 1 acre. Approximately 500 farmers will cultivate Green Cucumber on 500 acres in the area. The project area is in the close vicinity of sea and flood plain of Verugal Aru. The predominant land-use type of the project area is agriculture. Many bare lands including abandoned agricultural lands with a very few large trees present in the area and farmlands are occasionally covered with vegetation mainly grass and shrubs during off-seasons of cultivations.

### 3. Project Justification

#### Need for the project

*(What problem is the project going to solve)*

The cucumber is one of the most important market vegetables in the tropics and it is also the basis of an extensive pickling industry. In Sri Lanka, cucumber is best eaten sliced as a salad or as an appetizer with other vegetables because of its distinct flavour and texture. This crop can be grown throughout the year in the wet-zone and during Maha season in the dry-zone to an elevation of about 1,000 m. Under proper irrigation system, cucumber can be grown even in Yala season in Dry Zone. Green Cucumber has good demand for the export market.

The average land extent utilized for cultivation is 1 acre per farmer and they pump water from their own dug wells during the drought season. The farmer extension service is delivering by the Department of Agriculture and there is a well-established marketing system for inputs of cultivation. The average seeds requirement per 1 acre land extend is about 7,500 and seeds will be provided to farmers at zero interest credit basis. *Buyback* agreement will be signed between the farmers and the organization which is exporting Green Cucumber before commencing the project. Total harvest will be purchased by the company at a predetermined price and farmers will not face any marketing issues. The farmers hire local labours from their neighborhood during the peak season of the cultivation cycle. The highest demand for labors of Green Cucumber cultivation is harvesting. Apart from family labour, farmers hire labors for weed control controlling activities and manuring activities.

Watering is an important factor of Green Cucumber cultivation and farmers irrigate the crop using water pumps and dug wells. This water system is highly cost and water losses are also high due to traditional methods applied. Due to the weakness of the irrigation method, cost of production of Green Cucumber is high and farmers receive low-profit margins. Therefore, new technology on watering should be introduced to minimize the cost of production and increase the profit margin.

#### Purpose of the project

*(what is going to be achieved by carrying out the project)*

The project will benefit 500 farm households who will be served with improved irrigation facilities and better irrigation management system. The main objective of the project are:

- Produce 12,000 MTs of green cucumbers in Batticaloa area while ensuring a good profit to the farmers who will become eventually entrepreneurs.
- Entrepreneurship development for selected 400 rural farmers.
including 50% of women farmers and 250 indirect beneficiaries.
- To enhance the productivity by 35% introducing good agriculture practices (GAP) to green cucumbers fields.

The expected outcomes of the project are:
- Produce 12,000 MTs of green cucumbers in Batticaloa area while ensuring a good profit to the farmers who will become eventually entrepreneurs.
- Entrepreneurship development for selected 400 rural farmers including 50% of women farmers and 250 indirect beneficiaries.
- To enhance the productivity.

The farmers who are engaging with farming activities in the project's intervention area will follow the Good Agricultural Practices (GAP) introduced by the Department of Agriculture. ASMP will facilitate to implement GAP by introducing new technologies and enhancing farmers’ capacities.

Alternatives considered (different ways to meet the project need and achieve the project purpose)

| Alternatives considered | None |

### 4. Project Description

<table>
<thead>
<tr>
<th>Proposed start date</th>
<th>July 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed completion date</td>
<td>September 2019</td>
</tr>
<tr>
<td>Estimated total cost</td>
<td>SLRs. 315,400,000</td>
</tr>
<tr>
<td>Present land ownership</td>
<td>Private</td>
</tr>
</tbody>
</table>
| Description of the project (with supporting material such as maps, drawings etc attached as required) | The proposed sub project is mainly focused to introduce the new technology for cultivation activities. The civil works of sub project includes:
  - Installation of individual Sprinkler irrigation systems for 500 farmers
  - Supplying Plastic crates
  - Installing PVC pipe, 8” radius, 40’ length
  - Supplying Water pumps (2”)
  - Seeds, Fertilizer, Chem. & LP etc
  - Labor, Cattle manure & fuel

  ASMP will aid to install Sprinkler irrigation systems for 500 individual farmers. Each farmer will receive sprinkler watering system for 1 acre extent land of Green Cucumber cultivation.

  Apart from the main project, ASMP has been designed to establish a model farming group including 5 farmers. One tube well, 10,000 liters capacity storage tank will be provided for the farmer group and the five farmers will receive a sprinkler system for a plot size of 1 acre. Solar powered pumps will be installed to lift the water because one of the prime objectives of this project is to introduce sustainable agriculture and transit to renewable energy sources. |
The farmers mainly produce the Green Cucumber and ASMP will find buyers in private sector to sell their products. The private sector green cucumber exporters encourage farmers by giving assistance for the agricultural inputs.

Project Management Team

A Project Management Unit (PMU) has been established under the Ministry of Agriculture to implement proposed project activities.

**Contact Persons**

**Project Director**
Agriculture Sector Modernization Project
Ministry of Agriculture
No. 288, Sri Jayawardenapura Mawatha
Rajagiriya
Tel: +94 112 877 550
Fax: +94 112 877 546
Email: agriculturesectormodernizationproject@hotmail.com
Web: https://www.asmp.lk/

Environmental and Social Safeguards Specialist
Agriculture Sector Modernization Project
Ministry of Agriculture
No. 288, Sri Jayawardenapura Mawatha
Rajagiriya
Tel: +94 112 877 550
Fax: +94 112 877 546
Email: agriculturesectormodernizationproject@hotmail.com
Web: https://www.asmp.lk/

**Nature of Consultations and Inputs Received**

Consultations with Environmental and Social Safeguard Specialist/ PMU

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### 5. Description of the existing environment

#### 5.1 Physical features – Ecosystem components

**Topography and terrain**

Geologically, the project area belongs to the Vijayan Complex of Sri Lanka and the elevation is below 5m AMSL. Generally the project site having a flat to undulating terrain with a low slope (slope <30%). It consists of alluvial flats watered by rivers, mainly from Verugal Aru. The project site falls into dry zone low country of Sri Lanka and the features of this area is a combination of DL2 and DL4 Agro-ecological zones.

**Soil (type and quality)**

The dominant soil group in this area is Alluvial soil. Non Calcic Brown, Reddish Brown Earth, soils on old alluvium, Solodized Solonets, Low Humic Gley soils, Regosols and Grumusols are the other soil groups in this area, according to the soil map of Sri Lanka.

**Surface water (sources, distance from the site, local uses and quality)**

The proposed development is within Mahaweli River Basin and the main surface water source in the Verugali Aru river (which flows <500m distance from the proposed development). Water from this river is being used for irrigation and animal use.
| Quality: Moderate |
| Ground water (sources, distance from the site, local uses and quality) | Ground water from dug wells are used for domestic activities and irrigation, animal uses. The quality of groundwater is comparatively good. |
| Air quality (any pollution issues) | Any major air pollution sources in the vicinity of the project site are not recorded. |

### 5.2 Ecological features – Eco-system components

| Vegetation (trees, ground cover, aquatic vegetation) | During the rapid assessment, it was observed that dense vegetation on uplands appeared to be insignificant. Coastal vegetation including grass and shrubs could be identified. Many bare lands including abandoned agricultural lands with a very few large trees present in the adjacent of the proposed development. The uplands is occasionally covered with vegetation mainly grass and shrubs. |
| Presence of wetlands | Verugal Aru which is flowing <500m away from the project site and several other waterways in the close vicinity of the project site. This area is also the flood plain of Verugal Aru, which undergo flooding occasionally. |
| Fish and fish habitats | Verugal Aru and other waterways in the close vicinity of the project site could be potential fish habitats. |
| Birds (waterfowl, migratory birds, others) | The project area is a potential habitat for both aquatic and migrant birds. |
| Presence of special habitat areas (special designations and identified sensitive zones) | The area has not been identified as a special habitat area according to environment sensitive areas map of CEA. |

### Other features

| Residential/Sensitive Areas (E.g., Hospitals, Schools) | The subproject activities will be undertaken at households’ level privately owned by farmers. |
| Traditional, economic and cultural activities | The total population² of Munnai South Eruvi Pattu DSD is 64,644 comprises 48.4% males and 51.6% females. Per head land use is around 0.1ha and per household land use is 0.4ha. Out of total workforce, 28.2% is employed in agriculture sector activities, 14.3% is engaged with manufacturing sector, 13.9% is employed in industrial sector and 12.1% is engaged with skilled labor category. Other sector are minor and low contribution to the economy. With compared to other area selected for ASMP, this district shows high percentage of occupants in manufacturing sector and skilled labor sector The average monthly household’s income is SLRs. 40,356/= and the average monthly household’s expenditure is SLRs. 32,807/=. The community who lives below the poverty line is around 11.3 %-(Statics in 2012/13). The percentage of population who is living below the poverty line is much higher than other ASMP benefitted area. The total population³ of Koralai Pattu North DSD is 22,896 comprises 49.0% males and 51.0% females. Per head land use is around 2.6 ha and per household land use is 9.8ha. Out of total workforce, 28.2% is employed in agriculture sector activities, 14.3% |

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is engaged with manufacturing sector, 13.9% is employed in industrial sector and 12.1% is engaged with skilled labor category. Other sector are minor and low contribution to the economy. With compared to other area selected for ASMP, this district shows high percentage of occupants in manufacturing sector and skilled labor sector. The average monthly household’s income is SLRs. 40,356/= and the average monthly household’s expenditure is SLRs. 32,807/-. The community who lives below the poverty line is around 11.3 %-(Static in 2012/13). The percentage of population who is living below the poverty line is much higher than other ASMP benefitted area.

The primary income source of the majority households is agriculture. More than 90% of households have both upland and paddy lands. Farmers cultivate their paddy land in both Yala and Maha seasons under irrigation system. The farmers have constructed their residential houses on upland and timber trees & fruit bearing trees are planted in balance part of the land. During the Maha season (September to March), intercropping is done on upland.

The traditional, economic and cultural activities not observed.

<table>
<thead>
<tr>
<th>Archeological resources (recorded or potential to exist)</th>
<th>The proposed subproject will be located on privately owned lands and there is no archeological or Physical Cultural Resource (PCR) to record or potential to exist.</th>
</tr>
</thead>
</table>

6. Description of Proposed Agricultural Activities

6.1 Cultivation

Existing Condition of the Crop

The subproject concern the introducing of new technology for the farmers who are practicing the traditional irrigation system for Green Cucumber cultivation. Screening revealed that existing watering system is high cost method and it increases water losses and wastes more time. The selected farmers will be encouraged to obtain high yield with more quality from their cultivations with improved irrigation system and it will be indirectly benefitted for customers too since they have opportunity buy high quality vegetable products at local market.

Further, current watering system (Irrigation) encourages spreading diseases since the irrigated water flows over the total cultivation land.

Polluting Processes (point source)

In cultivation some key polluting steps, although limited, takes place; mainly in the cultivating and post harvesting phases.

Land preparation for cultivation

Land preparation should be done at the onset of rainfall for efficient utilization of water. At first, deep ploughing is required to a depth of 30-45 cm using a disk plough. Weeds and crop debris can be incorporated into soil at ploughing. Ploughing should be always done perpendicular to the slope of the land on uplands. Weedy lands may require two ploughings to kill weeds. Then the field must be prepared to a fine tilth without large soil particles using a harrower or appropriate machineries such as rotovators and tine tillers. It is

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important to note that Cucumber plant does not tolerate water
lodged conditions so that a drainage system must be prepared to
remove excess water efficiently from the field.
Farmers incorporate organic manure to soil at land preparation to
improve soil health. The most suitable organic manures are Green
manure (in-situ or ex situ), cattle manure, poultry manure and
quality compost It should be incorporated 10-14 days before
planting at the rate of 10t/ha.

**Planting Spacing**
1 m x 1 m 3-4 seeds per planting hole

| Water requirement | 2 mm water per 1 m² soil surface = 2 litre per day. The water requirement per farmer per day is 8,000 litres to irrigate the Cucumber cultivation. Each farmer will connect the sprinkler irrigation system to his existing water supply line. ASMP and DOA jointly selected the farmers who have their own sources for irrigation. By utilizing the sprinkler irrigation system, water losses will be minimal for the particular land extent |
| Use of fertilizer and pesticides and weedicides | Farmers use chemical fertilizer for the Cucumber cultivation. Urea is used as the nitrogen source, Rock Phosphate and Triple Super Phosphate are used as the phosphate source and Mutrate of Potash is the Potassium source.
Downy mildew (*Pseudoperonospora cubinsis*), Powdery mildew (*Erysiphe cichoracearum*), Soft rot (*Pithium spp*), and Cucumber mosaic virus (CMV) are the common diseases that damage the cucumber cultivation.
To control pest and diseases, there are several crop management methods apart from pesticide application. They are;
  * Selection of quality seeds from a reliable source (select seed from healthy crops)
  * Correct time of planting
  * Use of barrier crops wherever possible
  * Use of recommended fertilizers at correct rate and correct time of application
  * Use of organic manure before planting.
  * High amount of nitrogen fertilizer (urea) may increase the susceptibility to pests. Therefore, excessive use of nitrogen fertilizer must be avoided
  * Use of yellow sticky traps for insects
  * Use of mulches (Straw, Glyricidia, reflective polythene)
  * Spraying of water under high pressure
  * Use of sprinkler/drip irrigation methods
  * Keep the selected field and surroundings free from residues of previous Cucumber crop
  * Destruction of alternate host plants
  * Use of bio pesticides such as neem based pesticides, neem seed kernel extracts

Integrated pest management (IPM) is encouraged to control the pest and diseases in the crop management as per the pest management plan (PMP) prepared for ASMP and for both pest and diseases the
recommended pesticides and the fungicides are applied by the framers. These agrochemicals are recommended by the Pesticides register of Department of Agriculture and PMP as well.

| **Harvesting** | Green Cucumber can be harvested about 60-70 days after planting in 7 days interval. |
| **Post-harvest storage and transportation** | The Cucumber is mainly produced targeting export market and buyers will directly access the farmland and buy the products. The buyers have the yield storage and transportation facilities and it will be an advantage for farmers. |

**Other factors**

| **Solid waste** | The solid organic waste is generated as crop residuals and at post-harvest period. All the crop residuals and post-harvest waste should be burnt or buried under soil to keep the hygienic condition of the farmlands. |
| **Wastewater** | Due to application of integrated pest management mechanism, soil and ground/surface water pollution will be minimalized. ASMP will conduct the awareness creation and training programs for both farmers as well as the officers regarding the integrated pest management as per the Pest Management Plan (PMP). |

**7. Public Consultation**

Community consultations were conducted by the Environmental and Social Safeguard Specialist of ASMP. Following concerns were arisen during the discussions held with farmers and tank users in the area.

1. Linking farmers with DOA to obtain continues technical knowhow throughout the cultivation cycle.
2. Training the farmers to install and operate the sprinkler irrigation systems.
3. Raising awareness on hygienic conditions that should be maintained during harvesting as well as post harvesting periods.
4. Encourage farmers for integrated pest management (IPM) mechanism for better crop production.

Mitigation measures to minimize these identified issues are given in EMP.

The majority of the community is willing to support the project activities as they will benefit from the proposed sub project directly.

Extensive social screening has been covered under the Social Safeguard component.
### 8. Environmental Effects and Mitigation Measures

#### 8a. Screening for Potential Environmental Impacts

<table>
<thead>
<tr>
<th>Screening question</th>
<th>Yes</th>
<th>No</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Will construction and operation of the Project involve actions which will cause</td>
<td>√</td>
<td>No</td>
<td>No disturbances for any existing land use, or water bodies and no negative impact causes are anticipated</td>
</tr>
<tr>
<td>physical changes in the locality (topography, land use, changes in water bodies, etc.)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Will the Project involve use, storage, transport, handling or production of</td>
<td>√</td>
<td></td>
<td>No such impacts are anticipated, There will not be any harmful chemical storage or transport during the construction.</td>
</tr>
<tr>
<td>substances or materials which could be harmful to human health or the environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or raise concerns about actual or perceived risks to human health?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Will the Project produce solid wastes during construction or operation?</td>
<td>√</td>
<td>Low</td>
<td>During the operation solid organic waste will be produced as crop residuals. All the organic waste will be burnt or buried in soil to keep the farmlands in clean (to maintain Hygienic condition)</td>
</tr>
<tr>
<td>4. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?</td>
<td>√</td>
<td></td>
<td>No chemical blasting or any hazardous substance emission is anticipated.</td>
</tr>
<tr>
<td>5. Will the Project cause noise and vibration or release of light, heat energy or</td>
<td>√</td>
<td></td>
<td>Since there are no major construction works, noise and vibration impacts are not anticipated.</td>
</tr>
<tr>
<td>electromagnetic radiation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Will the Project lead to risks of contamination of land or water from releases</td>
<td>√</td>
<td></td>
<td>There will be no such impacts.</td>
</tr>
<tr>
<td>of pollutants onto the ground or into surface waters, groundwater or coastal waters?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Will the project cause localized flooding and poor drainage during construction</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening question</td>
<td>Yes</td>
<td>No</td>
<td>Significance of the effect (Low, moderate, high)</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Is the project area located in a flooding location?</td>
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<td></td>
<td></td>
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<tr>
<td>Will there be any risks and vulnerabilities to public safety due to physical hazards during construction or operation of the Project?</td>
<td>√</td>
<td></td>
<td></td>
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<tr>
<td>Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other water bodies, the coastal zone, mountains, forests which could be affected by the project?</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening question</td>
<td>Yes</td>
<td>No</td>
<td>Significance of the effect (Low, moderate, high)</td>
</tr>
<tr>
<td>--------------------</td>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Flora e.g. for breeding, nesting, foraging, resting, migration, which could be affected by the project?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14 Is the project located in a previously undeveloped area where there will be loss of green field land</td>
<td>✔</td>
<td></td>
<td></td>
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<tr>
<td>15 Will the project cause the removal of trees in the locality?</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Are there existing land uses on or around the location e.g. home gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?</td>
<td>✔</td>
<td>Low</td>
<td>Individual sprinkler systems will be installed on private lands</td>
</tr>
<tr>
<td>18 Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?</td>
<td>✔</td>
<td></td>
<td>Densely populated or built-up areas will not be affected by the project.</td>
</tr>
<tr>
<td>19 Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project</td>
<td>✔</td>
<td></td>
<td>Sensitive land-uses in or around the project site will not be affected by the project.</td>
</tr>
<tr>
<td>20 Are there any areas on or around the location which are occupied by existing agricultural practices which could be affected by the project</td>
<td>✔</td>
<td></td>
<td>Existing agricultural practices will be</td>
</tr>
</tbody>
</table>
### Screening question

<table>
<thead>
<tr>
<th>Location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Significance of the effect (Low, moderate, high)</td>
</tr>
<tr>
<td>Improved by the sub project activities and no negative impacts are anticipated.</td>
</tr>
</tbody>
</table>

### Remarks

<table>
<thead>
<tr>
<th>Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
</tr>
<tr>
<td>There are no areas around the location where legal environmental standards have been exceeded or has been environmentally polluted.</td>
</tr>
</tbody>
</table>

### 8b. Environmental Management Plan

**Contractor’s Responsibility for Mitigating Adverse Environmental Issues**

<table>
<thead>
<tr>
<th>Potential Environmental Impacts and Risk Level</th>
<th>Key project activities causing the impact</th>
<th>Mitigation Measures proposed and action to be implemented by the Contractor</th>
</tr>
</thead>
</table>
| Public complaints and lack of community support for the project implementation | Information Disclosure among Stakeholders | 1. Discussions should be conducted with the beneficiary farmers.  
2. The beneficiary farmers have been selected based on the criteria which were developed at stakeholders meeting and identifying of beneficiary farmers were undertaken transparently.  
3. Residents in the area had been briefed of the project, purpose and design and outcomes with comprehensive discussion. **This should be repeated once the contractor is mobilized.**  
4. The contractor should take note of all impacts, especially temporary issues and safety hazards that will... |
<table>
<thead>
<tr>
<th>Potential Environmental Impacts and Risk Level</th>
<th>Key project activities causing the impact</th>
<th>Mitigation Measures proposed and action to be implemented by the Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>be of concern to the cropping pattern of the farmers. All possible impacts will be mitigated as stipulated in the EMP to mitigate them.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. The contractor will maintain a log of any grievances/complains and actions taken to resolve them.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. A copy of the EMP should be available at all times at the project supervision office on site.</td>
<td></td>
</tr>
<tr>
<td>2 Activities related to installation of sprinkler irrigation systems causes safety issues</td>
<td>▪ Installation of 500 sprinklers systems for 500 farmers</td>
<td>1. Carry out installation works during off cultivation seasons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Use Personal Protection Equipment (PPE) and all safety measure which should be apply during installation and fixing activities.</td>
</tr>
<tr>
<td>3 Exposing and damaging of physical cultural resources</td>
<td>▪ Site preparatory work</td>
<td>Upon discovery of physical cultural material during project implementation work, the following should be carried out;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Immediately stop construction activities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. With the approval of the resident engineer delineate the discovered site area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Through the Resident Engineer, notify the responsible authorities, the Department of Archaeology and local authorities within 24 hours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Submit a brief chance find report, within a specified time period, with date and time of discovery, location of discovery, description of finding, estimated weight and dimension of PCR and temporary protection implemented.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Responsible authorities would be in charge of protecting</td>
</tr>
<tr>
<td>Potential Environmental Impacts and Risk Level</td>
<td>Key project activities causing the impact</td>
<td>Mitigation Measures proposed and action to be implemented by the Contractor</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 4 Spreading of Invasive Alien Species          | ▪ Vegetation clearing ▪ Cultivation of Green Cucumber | 1. Allow to cultivate the cucumber species which are certified by Provide Department of Agriculture (DOA).  
3. Prevent weed spreading via organic manure (Compost) by periodic inspection and manual removal after application. |
| 5 Impaired water quality                        | ▪ Site clearing ▪ Waste from harvest during project operation | Excess water extraction is to be cut-down to preserve ground water table. |
| 6 Solid Waste Disposal                         | ▪ Site clearing ▪ Waste from harvest during project operation | 1. Burnt or buried in soil to maintain the farmlands’ hygienic condition |
| 7 Public/occupational safety hazard            | Installation of 500 sprinkler irrigation systems to enhance watering for crops | **Training**  
1. The farmers and the contractor must ensure that all workers, including managers are trained on occupational health and public safety risks and mitigation measures for the site, prior to commencement of construction. |
<table>
<thead>
<tr>
<th>Potential Environmental Impacts and Risk Level</th>
<th>Key project activities causing the impact</th>
<th>Mitigation Measures proposed and action to be implemented by the Contractor</th>
</tr>
</thead>
</table>
| 8 Temporary loss of livelihood due to inability to grow crops during Installation works | Installation of 500 sprinkler irrigation systems | 1. Implement project activities during the off-season of upland cultivation.  
2. Carry out sub project activities to a strict time table to prevent excessive losses to the farmers. |

### Post construction phase

<table>
<thead>
<tr>
<th>Environmental Enhancement/Landscaping</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Farmers are to be advised to maintain their farm land in a proper manner and be trained on proper crop management.</td>
<td></td>
</tr>
</tbody>
</table>

**9. Cost of mitigation**

<table>
<thead>
<tr>
<th>Environmental mitigation measure</th>
<th>Cost (SLRs)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information Boards, leaflets</td>
<td>25,000.00</td>
<td>Awareness leaflets for organic cultivation practices and integrated pest management</td>
</tr>
<tr>
<td>2 On-site first aid facilities</td>
<td>5,000.00</td>
<td></td>
</tr>
<tr>
<td>3 Training of Farmers and Village level stakeholders on Integrated Pest Management</td>
<td>100,000.00</td>
<td>Should be scheduled to a few sessions</td>
</tr>
</tbody>
</table>
10. Conclusion and Screening Decision

Summary of environmental effects:

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

<table>
<thead>
<tr>
<th>Key project activities</th>
<th>Potential Environmental Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Significance of environmental effect with mitigation in place</strong></td>
<td></td>
</tr>
<tr>
<td>NS - Effect not significant, or can be rendered insignificant with mitigation</td>
<td></td>
</tr>
<tr>
<td>SP - Significant positive effect</td>
<td></td>
</tr>
<tr>
<td>SN - Significant negative effect</td>
<td></td>
</tr>
<tr>
<td>U - Outcome unknown or cannot be predicted, even with mitigation</td>
<td></td>
</tr>
</tbody>
</table>

**During sub project Implementation**

<table>
<thead>
<tr>
<th>Material transportation and storage</th>
<th>No significant impacts</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation clearing</td>
<td>Clearing of vegetation will collect significant amount of waste which will lead to several environmental issues such as blockage of drainage, siltation of downstream, damage to habitats, spreading of invasive species etc</td>
<td>NS</td>
</tr>
<tr>
<td>Installation of Sprinkler Irrigation systems</td>
<td>No such harm</td>
<td>NS</td>
</tr>
</tbody>
</table>

**During Operation**

<table>
<thead>
<tr>
<th>Solid waste during sub project operation</th>
<th>Solid waste generate through post-harvest</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater</td>
<td>The proposed agricultural activities will be undertaken using only organic fertilizer and integrated pest management practices. Therefore, application of chemical fertilizer, pesticides and insecticides will be minimized. Hence the soil and ground/surface water will not be polluted.</td>
<td>NS</td>
</tr>
</tbody>
</table>
10. **EMP Implementation responsibilities and Costs**
The overall responsibility of ensuring compliance with safeguard requirements lie with the PMU while the contractor will be responsible for implementing the provisions of the EMP. In addition, the PMU will be directly responsible for reviewing the proposed design to ensure that all design related mitigation measures mentioned herein are implemented. The overall supervision will be carried out by the in-house staff of the PMU supported by the Provincial Project Engineer who is responsible for the overall design and supervision of the proposed project. Any consequent design modification will be reflected in the project cost.

Environmental monitoring will be carried out largely through visual observations and compliance monitoring using the checklist provided in the EMF by the Provincial Project Engineer of the PMU and the contractor jointly. The Environmental and Social Safeguards Specialist will need to visit the site on a monthly or quarterly and report on issues and performance on EMP implementation to the PMU.

11. **Screening decision recommendation**
Majority of the potential adverse effects can be classified as general construction related impacts and can be mitigated on site with proper engineering interventions. These potential impacts are temporary in nature. It is recommended to start the project work off-season for upland cultivation and avoid night time work.
Implementation of the Environmental Management Plan is sufficient to mitigate the identified impacts.

12. **Details of Persons Responsible for the Environmental Screening**

<table>
<thead>
<tr>
<th>Screening report completed by</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.A.P Jayaweera/ Consultant-Environment and Social Safeguards</td>
<td>September 2019</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:japjayaweera@gmail.com">japjayaweera@gmail.com</a></td>
<td></td>
</tr>
<tr>
<td><strong>Name/Designation/Contact information</strong></td>
<td><strong>Signature</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening report reviewed by</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.M. Sanjaya Bandara</td>
<td></td>
</tr>
<tr>
<td>Environment and Social Safeguard Specialist</td>
<td></td>
</tr>
<tr>
<td>Agriculture Sector Modernization Project</td>
<td></td>
</tr>
<tr>
<td><strong>Name/Designation/Contact information</strong></td>
<td><strong>Signature</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening report Approved by</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. R.R.A.Wijekoon</td>
<td></td>
</tr>
<tr>
<td>Project Director</td>
<td></td>
</tr>
<tr>
<td>Agriculture Sector Modernization Project</td>
<td></td>
</tr>
<tr>
<td><strong>Name/Designation/Contact information</strong></td>
<td><strong>Signature</strong></td>
</tr>
</tbody>
</table>
Annex 1: Location Map

(Source: https://www.google.com/maps/place)