TERMS OF REFERENCE

Consulting Services to Prepare a Agro-ecological Landscape Resilience Plan in the Monaragala Hot Spot Area

Climate Smart Irrigated Agriculture Project (CSIAP)

1. BACKGROUND

The Climate Smart Irrigated Agriculture Project (CSIAP) funded by the World Bank aims to improve the productivity and climate resilience of small-holder agriculture in selected climate hot spot areas. Sri Lanka is one of the worst climate affected countries in the world, and being largely an agricultural country, climate change impacts have increased agricultural vulnerability threatening the productivity and well-being of farmers. The drivers of this vulnerability are predominantly manifested in restricted access to irrigation water, insufficient protection of farmlands from floods, limited adoption of climate smart technologies and low levels of diversification in agricultural production. The project aims to address these key causes of agricultural vulnerability in selected climatic hot spot areas. This will involve an approach that addresses response to long-term trends in climate change, adopting a catchment scale approach to water management, integrating agriculture and water management with farmers and Farmer Organizations (FOs) to improve water/soil management, adoption of suitable on-farm water management and crop production technologies.

Equally important for climate resilience is biodiversity, which plays a major role in balancing production system and in the larger landscape maintaining ecological integrity that contributes to natural cycles. Successful integration of biodiversity conservation into agricultural production systems is fundamental to maintaining functional ecosystems that provide critical ecosystem services such as. the provision of water and regulating water quality, maintenance of natural soil quality, nutrient recycling, pests and disease control, pollination, function of nutrient cycles and climate regulation. Sustainable management of natural resources will ensure ecosystem resilience and in turn safeguard agricultural productivity in the face of changing climate trends through the direct connections that exist between the natural resources, land and ecosystems, on which agriculture is practiced.

The ecological footprint of modern agriculture on Earth is substantial. With increasing human populations and changing consumption patterns, agriculture has been facing increasing challenges in meeting expanding production needs within growing environmental constraints. Modern day farming, unfortunately, has not been compatible with nature conservation and vice versa, where traditionally, farming and ecosystem conservation aims to segregate land as production areas and protected areas that are mutually exclusive from each other. In this approach, farmers and wildlife are a problem to each other and often ends in severe socio-economic conflict. Further declining environmental conditions such as biodiversity loss, deforestation, water shortages, desertification, soil erosion, climate change, and various other dynamic factors make it increasingly difficult to improve agricultural productivity unless there is a fundamental change in the way farming systems are looked at.

There is ample scientific evidence to showcase that farming systems are able to make important contributions to biodiversity conservation, with forms of land use that support the objectives of biodiversity conservation rather than conflict with them. The fact that natural biological diversity strengthens agroecosystem resilience in production landscapes is well established. It requires innovations within relevant agricultural planning and management strategies. The human elephant conflict (HEC), which is particularly significant in all the HSAs, is a good case in point where agricultural expansion, human settlements have come on a direct collision course with biodiversity conservation due to lack of integrated planning. In order to avoid further intensifying HEC, innovative landscape level strategies need to be established where wildlife and humans can co-exist in the same landscape.

As land becomes increasingly scarce and impacts of climate change becomes more evident, formulating effective management responses that seek to balance conflicting demands of land-use in the larger landscape and mainstreaming biodiversity and ecosystem services in non-conservation land becomes important. In production landscapes such as paddy lands and agricultural farms, the challenge is to find ways to promote the conservation of biological diversity and the sustainable use of ecosystem services by farmers. In other words, "mainstreaming agrobiodiversity/agroecology" where land-use systems can manage to produce food while protecting natural ecosystems and the services they provide. This is very important in managing climate induce vulnerabilities of production systems in the long-term.

Agroecological resilience can be approached at two levels – landscape level and farm level.

- At the farm level, the main goal is to integrate strategies to enhance and maintain agrobiodiversity, so that farming relies primarily on ecosystem services and move away from harmful artificial inputs. Greater agroecosystem diversity (both at landscape and farm levels) will buffer against climate change induced impacts (shifting rainfall and temperature patterns) and possibly reverse downward trends in yields over the long term depending on how crops respond to the shock. There are many agroecological management practices that increase agroecosystem diversity and complexity as the foundation for soil quality, plant health, and crop productivity.

- At the landscape level, the main goal is to promote strategies that bring about greater harmony between conservation and production land use practices/activities through upstream planning. Farms are nested within larger landscapes and thus interact with other land uses. The overall performance of such farms depends on how effectively they take advantage of the suite of ecosystem services provided by surrounding natural ecosystems. Climate-smart agriculture follows a landscape approach, which builds on the principles of natural resource management systems that recognize the value of ecosystem services to multiple stakeholders. Coordination at the landscape level facilitates the integrated management of production systems and the natural resources that underpin ecosystem services needed for all sectors. Managing landscapes demands an understanding of how the needs of local communities can be addressed without eroding biodiversity and disrupting the functioning of ecosystems. To achieve successful outcomes, the people who have an impact on the landscape must come together to plan and negotiate acceptable practices and management actions.

This assignment is a study in the Monaragala District, to specifically look at the landscape defined in the Hot Spot Area (HAS) Agricultural Development Plans for Wellawaya, Thelulla and Buttala ASC under CSIAP, to understand its ecological character, both in production and non-production habitats, current issues and challenges and seek opportunities to bring in greater environmental and social resilience through appropriate integration of sustainable agroecological practices within the HSA.

2. OBJECTIVE OF THE CONSULTING ASSINGNMENT:

The objective of the consultancy service is to develop an Agro- ecological Landscape Resilience Plan (ALRP) as a climate smart intervention for the proposed Monaragala District Agricultural Hot Spot Area. See Annexure (I) for the map of the Monaragala District Hot Spot Area.

2.1 SCOPE OF WORK:

(a) To assess the current land use pattern and status of the Monaragala District HSA and assess current/future demands that is shaping use of land/natural resources within it.

(b) To review the ecological character of the Monaragala District HSA, map existing forests patches, corridors and other important ecosystems within it including food production areas.

(c) Identify issues, threats and drivers of change that have and will continue to shape the ecological character and balance within the landscape. The focus here should be centred mainly around ecosystems within and adjacent to HSA landscape that support the food production ecosystems.

(d) To determine critical ecological networks within the HSA landscape and the economic value of key ecosystem services, especially focusing on benefits to food production ecosystems.

(e) To study the extent of the HEC over the last 10 years, with a particular emphasis on HEC levels (number and intensity) that exist in the landscape today and how it will increase and intensify with agricultural expansion and productivity improvement that are planned under the HSAAD plan. Mapping of the potential movement paths of elephants in particular (normally an elephant is assessed to move 2800sq Km a year). This is essential to suggest mitigation measures due to HEC.

(f) To understand the social impacts of the HEC on community living and livelihoods including impacts on vulnerable groups.

(g) To identify key stakeholder groups in the HSA landscape, assess their level of interest and influence its future land-use and identify means of engaging them for fostering greater harmony between conservation and production land use practices – to improve climate resilience of the HSA landscape. The involvement of local communities in a participatory approach will be very useful

(h) To identify appropriate landscape level management strategies that will promote integrated management of agricultural areas and the natural resources that underpin ecosystem services that are essential for food production and buffer against climate risks.

(i) To prepare an ALRP for the Monaragala District HS Area, that will include;

- An area map showing the current land use with production/non-production zones, environment/conservation threats including locations of HEC, areas of opportunities for environmental restoration for enhancing the agroecological resilience of the landscape. This will also include proposals for levelling to enable farming with required sustainable measures.

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3. KEY TASKS:

TASK 1: Ecological Characterization of the Monaragala District HSA landscape

Key baseline information covering socio-economy, hydrology, agronomy, livelihood and community development etc[1] that describes the production economy of the Wellawaya, Thelulla and Buttala ASC area landscape is available through the respective HSAAD plan. These have been done through the review of available socio-economic data supplemented with targeted and well-structured PRAs, field assessments, ground surveys, stakeholder consultation etc through project planning teams and consultancies.

One of the key information gaps is the ecological character of the production landscape. This assignment will seek to close this gap by including the following to provide a description for the Hot Spot Area landscape.

1.1 Land-use and socio-economic features:

- Land-use pattern across the HSA with clear demarcation of aquatic habitats, production and non-production lands.
- Population and settlement patterns.
- Livelihood distribution patterns and where possible poverty statistics mapped on the HSA landscape.
- Forest dependency of buffer zone communities of key ecosystems and trends of natural resource utilization
- Archaeological and cultural sites distributed across the HAS landscape, if any.

1.2 Ecological features:

- Key eco-systems within the Monaragala District HSA, their conservation status and bio-diversity.
- Spatial distribution of these key ecosystems (on a map).
- Boundaries of any forest patches, wetlands and other significant natural ecosystems within and in close proximity to the Monaragala District Hot Spot Area.

[1] As part of the contract all raw data should be submitted along with coordinates of all survey and transect locations.

- *Note: The distance from the HSA boundary, that would be covered in mapping ecosystems will need to be agreed with the PMU.*

- Location and type of each forest/significant natural ecosystem according to standard classification.
- Locations of other Protected Areas and internationally designated areas (e.g., Cultural and Archaeological, World Heritage and International Biosphere Reserves etc) within or in close proximity to the HSA landscape, if any.
- Land ownership and institutional jurisdiction of key land uses.
- Important ecological networks within the HSA landscape including ecologically important small areas that may be interspersed within the production systems but still offer important connectivity.
- Ecological changes taken place during last 2- 3 decades (if possible, via historical remote sensing data).

1.3 Human Elephant Conflict

- Assess the status of HEC in the landscape over the last 10 years, it's magnitude, distribution and impacts.
- Analyze impacts of HEC on different groups in terms of impacts to community assets, livelihoods, access restrictions, women, vulnerable groups etc.
- Study the root causes of HEC in the area and its historical background.
- Preparation of following maps;
  i) Areas subjected to HEC with its intensity, and distribution,
  ii) Existing elephant corridors and their locations in the landscape
  iii) Current elephant movement pattern within the area, that is known, to assess if these patterns deviate from corridors.
- Study people's attitudes on HEC, traditional knowledge and practices on mitigation of HEC.
- Assess the current status of existing electric fences, its locations (whether it is on administrative boundaries or ecological boundaries) it's distribution, effectiveness and recommend actions for their improvements.

TASK 2: Key Ecosystem services & Economic Evaluation

Determine key ecological and ecosystem service zones within the landscape.

2.1 Carry out a full ecosystem service assessment for a sample of key representative ecosystems (based on the full list of ecosystem services identified within the Millennium Ecosystem Assessment, 2005) present within the Monaragala District HSA landscape. The selection of sample ecosystems for service assessment should be agreed upon with the PMU.

2.2 Assess the economic values and opportunity cost of ecosystem services for each different ecosystem type in the representative sample identified in 2.1, with particular attention on those ecosystem services that strengthen agricultural resilience and farmer well-being in the concerned landscape.

TASK 3: Analysis of threats and opportunities for agroecological resilience in the Monaragala District HSA landscape

- Based on findings of Task 1 & 2 and feasibility studies conducted by the PMU, this section will identify key social and environmental challenges/opportunities within the landscape (existing and emerging) with long-term positive/negative implications on its ecological functionality, agricultural productivity and community well-being.
- The status with regard to resilience of the landscape to these identified key environmental challenges will be described explicitly. The past flood and drought production periods (over 10 years) will be looked at to identify changes in food production, adoption of alternative crops, etc.
- Landscape resilience will be defined and determined by a set criteria/indicator agreed between the consultant and the PMU.

TASK 4: HSA Agroecological Landscape Resilience Plan (LRP) Development for the Monaragala District HSA

- Identify and categorize time-based priority requirements (Short/middle/long) to enhance agro-ecological resilience in the Monaragala District HSA landscape.
- Identify appropriate landscape level measures that can restore/enhance ecological functions by promoting practices that strengthen adaptation features at the landscape level (and thereby, greater resilience to the agroecosystems)
    - For example, opportunities for maintaining diversity through a mosaic of agricultural and natural habitats, conserving the remaining natural habitats, measures to improve ecological services such as buffer areas around farms, keeping forest fragments interspersed in production land with better connectivity, restoration of degraded lands, agroforestry etc.
- Based on the above, propose an agroecological landscape map indicating economic potentials, and ecological/watershed needs in the Monaragala District HSA based on conservation/land management challenges/opportunities identified.
- Identify connectivity of the HSA to surrounding PA areas, highlight spatial gaps and opportunities for improving PA connectivity as a HEC mitigation strategy and also to improve landscape resilience through an effective ecological network. The assessment should particularly highlight the;
    - Habitat needs of flagship species and connectivity of forest.
    - Critical wildlife habitats/corridors/roosting sites etc.
    - High quality and conservation value ecosystems,
    - Important ecosystems to be amalgamated to existing PAs.
- Develop a HEC mitigation strategy for the HAS landscape based on the principles of the Action Plan of the Presidential Committee on HEC.
    - Identify viable land management strategies and guidelines for identified ecological zones.
- Stakeholder engagement in the development of management plans for the Monaragala District HSA landscape. The development of the ALRP will need to be participatory in nature and built on stakeholder consensus. As such, the consultant would be required to forge strong multi-stakeholder engagement and cross-sectoral dialogue development and implementation of the zoning plan.[2]
    - Assess key stakeholder aspirations in terms of the HSA landscape resources/benefits and preference for different landscape management interventions.
    - Ensure participation of farmers including adequate representation of women and other vulnerable groups in consultations.

[2] The stakeholder forums will be set up by the CISAP/ PMU and stakeholder analysis has to be carry out by the Consultancy firm hired.

- Develop a Stakeholder Engagement Plan (SEP) targeting
  - effective and continued engagement of key stakeholders in developing and implementing the ALRP including having community feedback mechanism
  - improved collaboration between multiple management authorities and agencies
  - better understanding of impacts of HEC and common practices/existing mechanisms to cope with HEC.
  - Identifying potential opportunities for community contribution, use of participatory approaches and community monitoring of implementation of strategies.
  - Identifying potential land management strategies to address key conservation issues

- Carryout a SWOT analysis to Identify policy, regulatory, socio-economic, institutional, technical and knowledge barriers/opportunities to achieving the proposed landscape level interventions and recommend measures to address these gaps.

TASK 5: Implementation Strategy for the ALRP

Prepare an implementation strategy for the ALRP focusing on institutional, technical financial and stakeholder aspects. Should also build on outcomes of the SWOT analysis carried out under TASK 4 Dissemination of findings and recommendations to Stakeholders by Workshops or any other media as agreed with the Client.

4. REPORTS AND SCHEDULE OF DELIVERABLES

The consult shall deliver following deliverables as acceptable to the client.

No	Type of deliverables	Time frame
1	Inception report outlining the proposed work methodology, program implementation timeline, team of consultants engaged and their program, organizational relationships and key contacts. In addition, it will indicate; • Each consultant's work programs • Schedule of field survey • Plan for stakeholder engagement • COVID contingency measures	within 02 week from the date of Letter of Acceptance.
2	**Mapping of Environmental and Socioeconomic status of the HSA;** To Prepare draft report including detailed maps of the HSA showing current land use, key physical, ecological and socio-economic features including existing ecological networks (within the HSA and in the immediate surrounds), areas with high HEC prevalence, areas with poverty incidence, spatial distribution of production, non-production and settlement areas among others.	Within 18 weeks from the date of Letter of Acceptance.

No	Type of deliverables	Time frame
	Draft report with propose recommendations to improve the present environment and socioeconomic status of the HAS Prepared. Propose land use zoning map not only restricted for following zones prepared. • Conservation Zone (forest, wildlife, water bodies including reservations), • Vulnerable Zone • Agricultural Zone (home gardens, Commercial agriculture, inland fisheries, livestock including grazing areas. • Residential Zone (with prediction for expansion within next 5 years) • Land for other agro based livelihood/industries including ecotourism District consultation and verification for implementation. The maps should be produced at a scale of 1:10000 to provide adequate detail and in a digital format as shapefiles compatible with ArcGIS version 10.1.	
3	**Mapping of Human-wildlife conflict (HWC) with special emphasis to Human Elephant Conflict (HEC) status of the HSA** Draft report on the Human Elephant Conflict (HEC) covering Monaraga District HAS prepared with recommendation mitigation for discussion with relevant stakeholders. The report should include maps in addition to the information of; • Areas subjected to HEC with its intensity pattern within the HSA • Elephant movement patterns and season • Existing elephant corridors and their current status (ecology and land use) in the HSA landscape, if any. Prepare~~d~~ a draft HSA based HEC mitigation and management plan incorporating the following; • Conflict Mitigation Measures (Short & long term) including • Habitat protection and forest management • Offsetting the costs of conflict; (Community-based Natural Resource Management, Insurance, Payment for Environmental Services, Reduced Emissions from Deforestation and Degradation (REDD) Community-based Natural Resource Management. • Institutional framework needed to achieve the above • Education to raise awareness of communities and officials. • Action Plan, tentative budget with timeframe Conduct~~ed~~ district level stakeholder verification of the HEC plan for implementation.	within 20 weeks from the date of Letter of Acceptance.

No	Type of deliverables	Time frame
4	Draft Agroecological Landscape Resilience Plan (final outputs of deliverable no. 2 and 3) for the selected Monaragala District HSA landscapes developed. Developed TOT Training manual on community-based mitigation of HEC.	Within 22 weeks from the date of Letter of Acceptance.
5	Developed the final Agroecological Landscape Resilience Plan Conducted 5 TOT training programs on community-based mitigation of HEC.	Within 24 weeks from the date of Letter of Acceptance.
Each of the above deliverables should be provided as 05 printed copies and e-copies in English both in Microsoft Word and PDF. The executive summary of the LRP needs to be provided in the following three languages: Sinhala, Tamil and English. (All raw data collected should be provided in MS Excel format).		

- The consultant will be expected to conduct workshops with relevant stakeholders as necessary and a final workshop with all stakeholders for the dissemination of findings and recommendations.
- Each of the above deliverables should be provided as 04 printed copies and e-copies in English both in Microsoft Word and PDF. The executive summary of the ALRP needs to be provided in the following three languages: Sinhala, Tamil and English. (All raw data collected should be provided in MS Excel format).

5. DATA, LOCAL SERVICES, PERSONAL AND FACILITIES TO BE PROVIDED BY THE CLIEN

- Projects Information when necessary
- Necessary letters of introduction/travel permit to the consultancy team whenever necessary to collecting data and travelling.

6. INSTITUTIONAL ARRANGEMENT

1.The Consultant will submit all deliverables directly to the Project Director, Climate Smart Irrigated Agriculture Project (CSIAP) as described in the table given below.

2.A Technical Review Committee will be appointed by the Project Director - CSIAP to review each deliverable submitted by the Consultant, and the committee would be constituted to monitor the progress, and interact with the consultant on key findings and results. The team may also seek comments and inputs on the consultant's work through Project Director.

7. EVALUATION

Applications will be first screened and only consultant agencies meeting the minimum criteria will progress to the pool for short listing. Shortlisted agencies will be then assessed and scored against the following evaluation criteria noting that an interview will be conducted to the shortlisted agencies.

a. Technical Criteria weight: [70%]

b. Financial Criteria weight: [30%]

Only consultant agencies obtaining a minimum of 70% on the Technical Evaluation would be considered for the Financial Evaluation.

8. PERIOD OF CONSULTANCY SERVICE

The estimated total duration of this consultancy is about 24 weeks.

9. CORE COMPETENCIES (Key Professionals)

Key Expert	**Professional qualifications and experiences**	
KE-1	Team Leader & Landscape Management Planning Specialist	Extensive knowledge in the field of Landscape planning /Land use planning/Geography/ forestry/Natural Resource Management with an advanced degree in Geography/Land use Planning/Natural Resource management or any other relevant field. At least 15 years of broad working experience of Land use/Landscape planning, Watershed management, Forestry or Protected area management will be preferred. Experience in developing a macro-level landscape management plan for a broad agro-ecological landscape will be advantageous.
KE-2	Human Elephant Conflict Management Specialist	Extensive knowledge and experience in wildlife ecology particularly in elephant behavior, elephant habitat management & human-elephant conflict. At least, 10 years of relevant working experience.

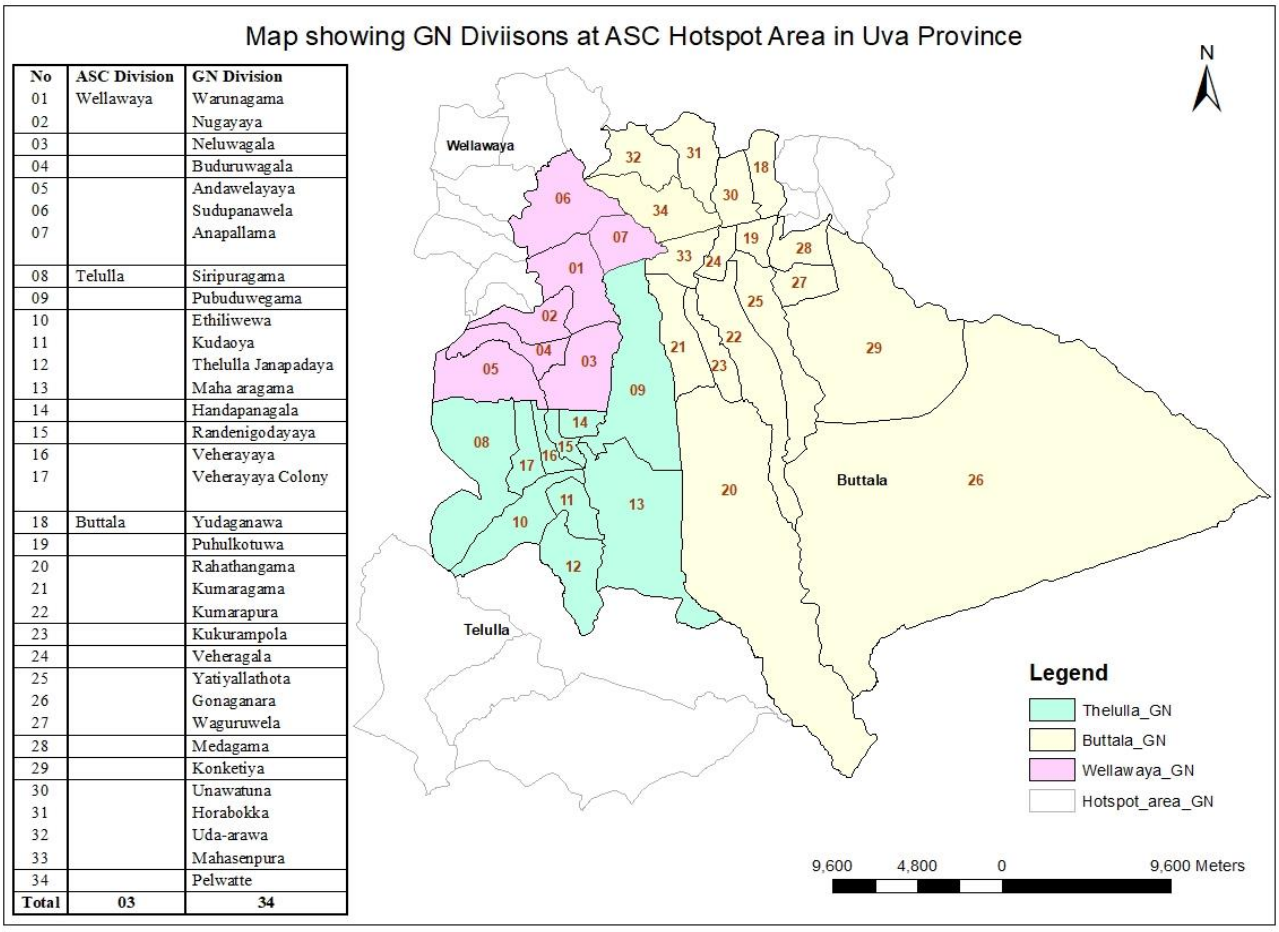
Key Expert	Professional qualifications and experiences	
KE-3	Agroecologist	Hold at least a postgraduate degree in agroecology or related fields, with at least 10 years' field level experience on same disciplines specially in landscapes with protected areas, plantations (Tea/Rubber/Cinnamon etc.) and with multiple land uses.
KE-4	Socioeconomic Development Specialist	Hold a postgraduate degree in Sociology/Socio-Economics/Community Development with sufficient knowledge and experiences (At least 10 years) on livelihood improvement and Community development activities in buffer zone villages of PAs.
KE-5	Ecology and Biodiversity Specialist	Hold a postgraduate degree in ecology or relevant field (biology, ecology, agriculture, natural resources management, etc) with at least 10 years' experiences in biodiversity and ecosystem services assessment.

10. OWNERSHIP

The consultant will have no right of claim to the assignment or its outputs once completed. Any reports/ research reports/ process documents produced as a part of this assignment shall be the property of Client (CSIAP), and the consultant will not have any claims and will not use or reproduce the contents of the deliverables/ documents without the specific written permission of the Client.

Annexure 01

No	ASC Division	GN Division
01	Wellawaya	Warunagama
02		Nugayaya
03		Neluwagala
04		Buduruwagala
05		Andawelayaya
06		Sudupanawela
07		Anapallama
08	Telulla	Siripuragama
09		Pubuduwegama
10		Ethiliwewa
11		Kudaoya
12		Thelulla Janapadaya
13		Maha aragama
14		Handapanagala
15		Randenigodayaya
16		Veherayaya
17		Veherayaya Colony
18	Buttala	Yudaganawa
19		Puhulkotuwa
20		Rahathangama
21		Kumaragama
22		Kumarapura
23		Kukurampola
24		Veheragala
25		Yatiyallathota
26		Gonaganara
27		Waguruwela
28		Medagama
29		Konketiya
30		Unawatuna
31		Horabokka
32		Uda-arawa
33		Mahasenpura
34		Pelwatte
Total	**03**	**34**



Hot Spot Area under CSIA Project

Province: Uva **District: Moneragala**

No	DS Division	ASC Division	GN Division
01	Wellawaya	Wellawaya	Warunagama
02			Nugayaya
03			Neluwagala
04			Buduruwagala
05			Andawelayaya
06			Sudupanawela
07			Anapallama
08	Wellawaya	Telulla	Siripuragama
09			Pubuduwegama
10			Ethiliwewa
11			Kudaoya
12			Thelulla Janapadaya
13			Maha aragama
14			Handapanagala
15			Randenigodayaya
16			Veherayaya
17			Veherayaya Colony
18	Buttala	Buttala	Yudaganawa
19			Puhulkotuwa
20			Rahathangama
21			Kumaragama
22			Kumarapura
23			Kukurampola
24			Veheragala
25			Yatiyallathota
26			Gonaganara
27			Waguruwela
28			Medagama
29			Konketiya
30			Unawatuna
31			Horabokka
32			Uda-arawa
33			Mahasenpura
34			Pelwatte
Total	**02**	**03**	**34**