Formulation of a Comprehensive Disaster Preparedness Plan (CDPP)

for Paragoda West Grama Niladhari Division of Bulathsinhala, Divisional Secratary Division Kalutara District, Sri Lanka

Project Report

Sri Lanka Preparedness Partnership (SLPP)

August 2019

BILL & MELINDA GATES foundation

adpc

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Divisional Secratary Division Kalutara District,
Sri Lanka

Project Report

Developed By Disaster Management Center

under

Sri Lanka Preparedness Partnership (SLPP)

August 2019

Acknowledgement

This endeavor is an output of the program "Strengthening Capacity of Government, Local Humanitarian Organizations and the Private Sector on Preparedness for Response in Asia" funded by Bill and Melinda Gates Foundation and implemented by the Asian Disaster Preparedness Center (ADPC), Bangkok.

Under this program, the Sri Lanka Preparedness Partnership (SLPP) was formalised with the participation of the Government disaster risk management focal points, the Disaster Management Center (DMC) and National Disaster Relief Services Center (NDRSC), the Ceylon Chamber of Commerce[1] coordinating the private sector and local non government partner Janathakshan (GTE) Ltd[2].

Developing a Comprehensive Disaster Preparedness Plan (CDPP) for a selected Grama Niladhari (GN) Division was identified as a key task under the government sector.

The purpose of this CDPP is to bring all relevant stakeholders together to prepare at – risk communities. This will facilitate a more collaborative and systematic emergency management approach avoiding duplication of interventions, roles and responsibilities as well as maximum use of available resources.

The project was implemented by SLPP in collaboration with Janathakshan GTE Ltd and Asia Lanka Social Development Co-operation (ALSDC)[3].

SLPP acknowledges the contributions of Mr.U.D.C. Jayalal, District Secretary, Kalutara, Mr.P.R. Prasad Perera, Divisional Secretary, and staff, Bulathsinhala, Mr. P.W.G.K. Kapila, Grama Niladhari, Paragoda West, community members of Paragoda West and private sector organizations that assisted in implementation of this project.

[1] https://www.chamber.lk/

[2] https://Janathakshan.lk

[3] https://www.facebook.com/pg/asialankasocialdevelopmentcooperation/about/ retrieved 29 July 2019

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Acronyms

ADPC	Asian Disaster Preparedness Center
CDPP	Comprehensive Disaster Preparedness Plan
CEB	Ceylon Electricity Board
DDMCU	District Disaster Management Coordinating Unit
DMC	Disaster Management Center
DS	Divisional Secretary
EOC	Emergency Operations Center
G.C.E.	General Certificate of Examination
GN	Grama Niladhari
HH	Household
NDRSC	National Disaster Relief Services Center
NEOP	National Emergency Operation Plan
NGO	Non-Governmental Organization
SLPP	Sri Lanka Preparedness Partnership
VPN	Very Personal Network

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The Project

The Sri Lanka Preparedness Partnership (SLPP) [4], has been established with the participation of the Government disaster risk management focal points the Disaster Management Center (DMC) and the National Disaster Relief Services Center (NDRSC),, Ceylon Chamber of Commerce[5] coordinating the private sector and Local-non government organization Janathakshan (GTE) Ltd[6], under " Strengthening Capacity of Government, Local Humanitarian Organizations and the Private Sector on Preparedness for Response in Asia " Project. This endeavor is funded by Bill and Melinda Gates Foundation and implemented by the Asian Disaster Preparedness Center (ADPC), Bangkok.

The sector level priority actions have been identified, and budgets were developed accordingly. DMC led the government sector priority actions together with NDRSC while collaborating with Jannathakshan (GTE) Ltd and Ceylon Chamber of Commerce.

Developing a Comprehensive Disaster Preparedness Plan (CDPP) for a selected Grama Niladhari (GS) Division was identified as a key task under the government sector.
The process commenced with reaching consensus on a concept paper by partners of the SLPP. The goal was to step beyond a mere plan and to formulate a model for emergency response preparedness with realistic and measurable objectives, outputs, and activities that strengthen the coping capacity of the community that could be tested by a simulated exercise to respond to a scenario similar to the 2017 flood.

After several consultation meetings, Paragoda West GN Division in the Bulathsinhala DS Division of Kalutara District was selected as a pilot to initiate the CDPP. The perception of the Divisional Secretary was that this was the most vulnerable area in the Division without access during floods. The project was implemented by SLPP in collaboration with Janathakshan GTE Ltd and Asia Lanka Social Development Co-operation (ALSDC)[7].

The purpose of the CDPP was to bring all relevant stakeholders together to prepare a communities at risk of disasters. This will facilitate more collaborative and systematic emergency management approach avoiding duplications of interventions, roles and responsibilities as well as maximum use of available resources.

[4] https://app.adpc.net/countries/sri_lanka

[5] https://www.chamber.lk/

[6] https://app.adpc.net/countries/sri_lanka

[7] https://www.facebook.com/pg/asialankasocialdevelopmentcooperation/about/ retrieved 29 July 2019

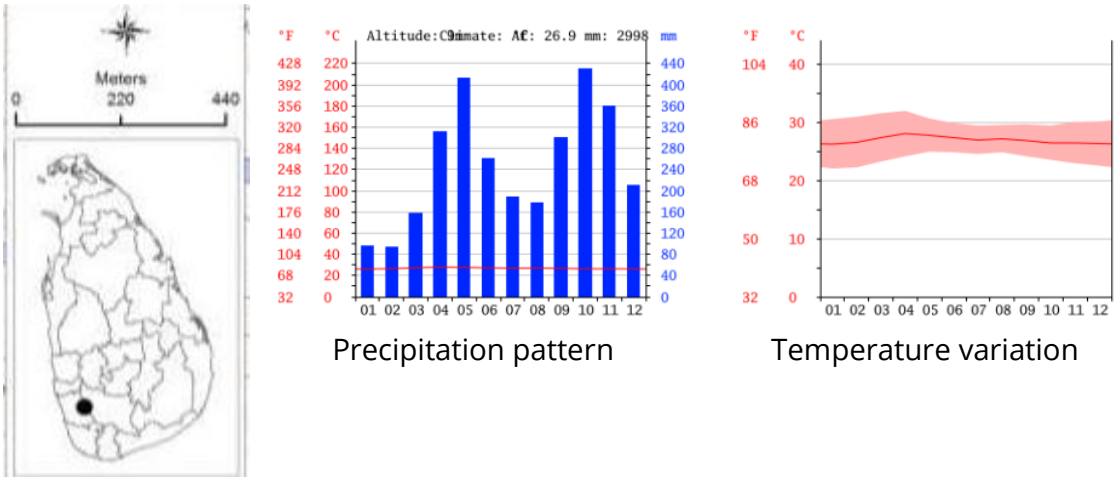
Project Objectives

- Carryout a situation analysis of the disaster vulnerability of the area
- Carryout consultation with all stakeholders for awareness creation and consensus for the project
- Compile a GIS database for the project area on the demography, household information, infrastructure, livelihoods and flood inundation
- Identify the existing gaps and initiate the development of an End-to End Early warning system for the area
- Upgrade a suitable safe location for displaced persons from flood
- Carryout capacity building of stakeholders for emergency response
- Advocacy for Household Preparedness Plans
- Advocacy for business continuity of micro enterprises in the area
- Develop Standard Operation Procedures (SOP) for government stakeholders for emergency response in the area
- Carryout simulation drills to build capacity for evacuation

Background Information of the Project Area

The project area (Paragoda West GN Division) covers 4.14 sq. km. and is located in the Bulathsinhala Divisional Secretariat area of the Kalutara District in the south-west lowland wet zone of Sri Lanka. This climate is considered to be Af according to the Köppen-Geiger climate classification. There are two monsoons: south-west monsoons during May - July, the north-east monsoons during November-January and inter-monsoonal rain.

Precipitation pattern and temperature variations are depicted in Figure 1 below.



Precipitation pattern

Temperature variation

Figure: 1 Location and climate variables of the Project Area[8]

Paragoda West GN Division lies in the proximity of the Sinharaja forest reserve. Average annual rainfall varies between 3000-6000mm without a distinct dry period. Locals believe that it rains 300 days of the year. The Kukule River, which is a major mid-basin tributary of the Kalu River runs along the border of Paragoda West. The river originates from the south western slope of Sinharaja forest at an elevation of 2000 m above mean sea level (amsl). The catchment area is characterized by undulating topography with medium steep ridges and valleys. The Kukule Ganga Dam is a 110 m (360 ft) run-of-river-type gravity dam built across it. The dam feeds an underground hydroelectric power station. The community believes that its construction has increased flood vulnerability of the area, a view that is denied by the reservoir management.

[8] https://en.climate-data.org/asia/sri-lanka/western-province/kalutara-717638/ retrieved 20th July 2019.

Table 1 below depicts the demographic data of the project area[9].

Table 1: Demography of Paragoda West 2019

	Age Category (persons)				Age Category (%)			
	Less than 15	**15 - 60**	**More than 60**	**Total**	**Less than 15**	**15 - 60**	**More than 60**	**Total**
Male	129	363	74	566	11.4	32.0	6.5	50.0
Female	114	338	115	567	10.1	29.8	10.2	50.0
Total Population	**243**	**701**	**189**	**1133**	**21.4**	**61.9**	**16.7**	**100.0**

The age - dependency ratio of above 60% is higher than the national value of 51.7 for 2018[10]. Figure 2 below depicts the housing distribution and infrastructure of Paragoda West.

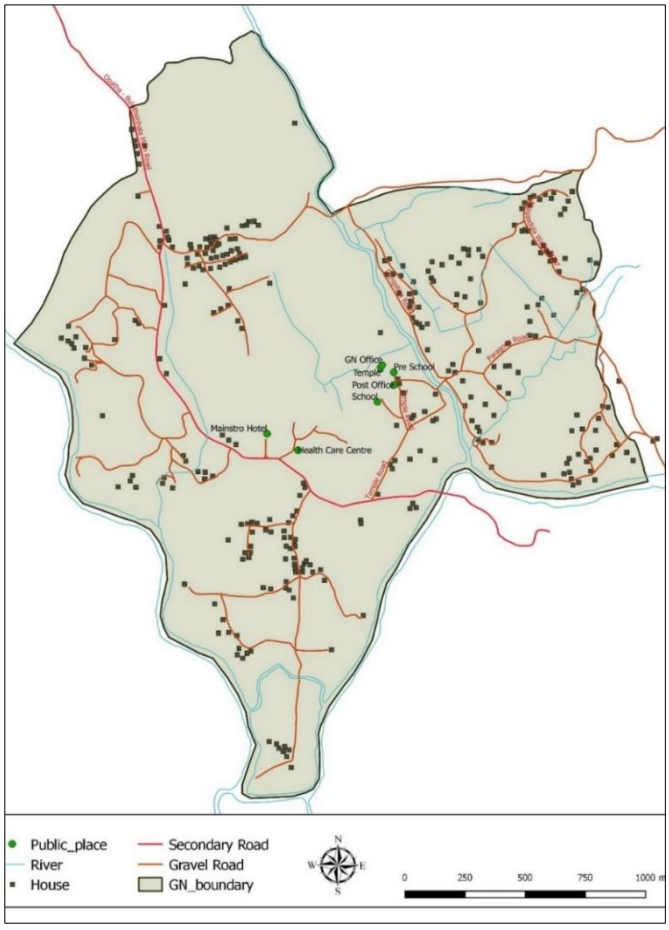


Figure 2: House distribution and Infrastructure of Paragoda West[1].

[9] Based on the GIS Database compiled for Paragoda West

[10] https://www.theglobaleconomy.com/Sri-Lanka/Age_dependency_ratio/ retrieved 30 Jul 2019

Table 2: Building Information

Type	No. of units	Remark
Occupied houses	315	
Non-Occupied houses	9	
Retail shop	7	
Temple	1	(2 buildings)
School	1	(3 buildings)
Preschool	1	
Post Office	1	
Health care Centre	1	
Hotel	1	
Total	**337**	

Table 3 provides the categories of houses.

Table 3: Category and number of floors[11]

Stories	No. of Units	%
One / single story	291	92.4
2 floors	24	7.6
Total	**315**	**100.0**

Category	No. of Units	%
Permanent	303	96.2
Semi-permanent	9	2.9
Improvised	3	1.0
Total	**315**	**100.0**

[11] ibid

Table 4 provides drinking water source.

Table 4: Source of drinking water[12]

Water source	No. of Units	%
Pumped water supply (private)	137	43.5
Dug Well (private or neighboring)	150	47.6
Tube well (private)	6	1.9
Public well/tube well	11	3.5
Agri well	2	0.6
River/Oya/canal/stream/tank	8	2.5
Other (specify)	1	0.3
Total	**315**	**100.0**

Table 5 provides the source of energy. Table 6 provides a reflection of educational achievements of the community.

Table 5: Source of energy for households[13]

Source	No. of Units	%
Main grid (CEB / LECO)	306	97.1
Solar	1	0.3
Kerosene	8	2.5
Total	**315**	**100.0**

Table 6: Educational achievements of the community[14]

	Primary (grade 1-5)	Secondary	G.C.E. (O/L)	G.C.E. (A/L)	Technical/ vocational training	Degree and above	Student
Male	6.35	8.47	15.18	5.21	0.71	0.44	11.39
Female	6.53	7.50	14.92	6.44	0.09	1.06	10.06
Total	**12.89**	**15.98**	**30.10**	**11.65**	**0.79**	**1.50**	**21.45**

Table 7 provides the livelihoods of households. Agriculture consists of small holder cultivation of paddy, rubber and tea. Table 8 provides the household income level.

[12] ibid
[13] ibid
[14] ibid

Table 7: Livelihoods[15]

Gender	Farming	Laborer	Government Employee	Private sector Employee	Self-employed	Retired	Un-employed
Male	3.16	18.48	2.28	9.49	2.41	0.63	16.33
Female	0.76	9.24	1.39	5.57	1.90	0.38	27.97
Total	**3.92**	**27.72**	**3.67**	**15.06**	**4.30**	**1.01**	**44.30**

Table 8: Household income level[16]

Monthly Income (Rs.)	No of houses	%
Less than 200,000 (@ USD 3.2 / day)	219	71.6
200000 - 350,000	75	24.5
350,000 - 500,000	11	3.6
More than 500,000	1	0.3
No response	9	
Total	**315**	**100.0**

101 households are beneficiaries of the government poverty alleviation program (Samurdhi).

[15] ibid
[16] ibid

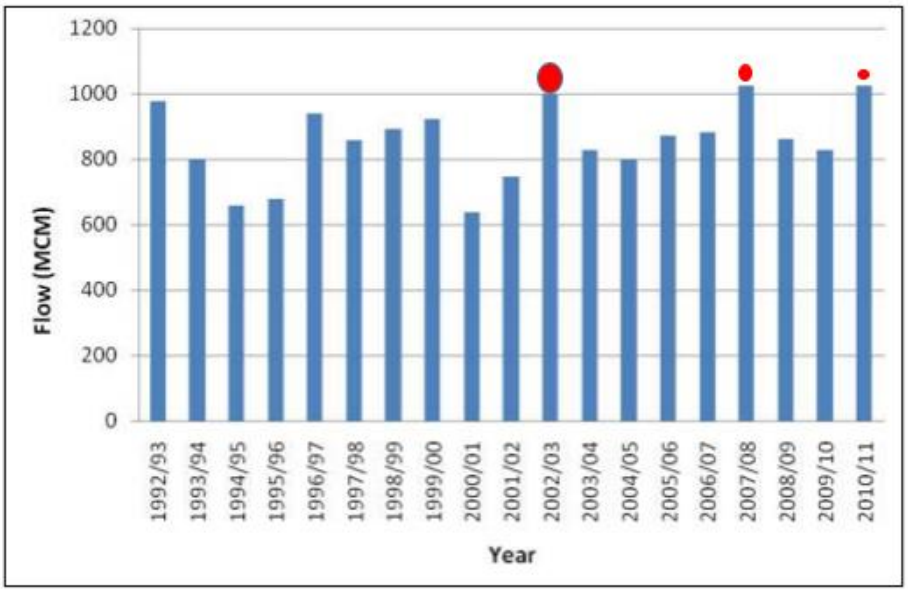
The Disaster Risk Profile

Table 9 below depicts the historical hazard-specific impact on households.

Table 9: Household impact from hazards[17]

Hazard Category	No of households affected	% of Total
1. Flood	207	65.7
3. Landslide	11	3.5
5. High wind	1	0.3

Flooding is of major concern. Major flooding has occurred since 2003 after the Kukule dam has been constructed. This had led to the perception that opening of sluice gates during rain is the causative factor for these floods. Although sudden releases without warning could lead to increased flood vulnerability, intense rainfall on the upper catchments of Kukule River appears to be the cause. Figure 3 below depict the annual flow variation of Kukule River near Paragoda[18].



The red dots mark flood years and their size denotes magnitude of impact.

Figure 3: Kukule River Annual Flow Variation at Paragoda

[17] Based on the GIS Database compiled for Paragoda West

[18] https://ejustice.lk/pdf/eia/Environmental%20Impact%20Assessment%20(EIA)%20Report%20%20Proposed/EIAKukulaText-eng.pdf retrieved 30 July 2019.

Table 10 below depicts the level of historical flood impact on households.

Table 10: Historical flood impact on households[19]

Year	No. of Inundated Houses
2003	117
2007	10
2008	91
2011	34
2012	12
2013	9
2014	67
2017	174
2018	3

The area downstream of the dam is at an elevation less than 10m MSL as shown in Figure 4. Therefore, there is a natural flood vulnerability in the area in the event of intense precipitation on the catchment.

Figure 4: Terrain around Paragoda West[20]

The Irrigation Department operates a river gauging station downstream of Paragoda West at Millakanda. The historical flood flows recorded at Millakanda is given in Table 11.

[19] Based on the GIS Database compiled for Paragoda West

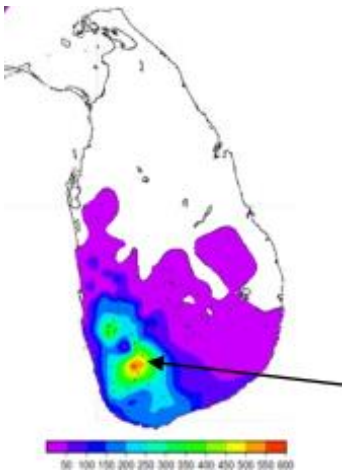
[20] Adopted from https://ejustice.lk/pdf/eia/Environmental%20Impact%20Assessment%20(EIA)%20Report%20%20Proposed/EIAKukulaText-eng.pdf retrieved 30 July 2019.

Table 11: Historical Flood Flows Recorded at Millakanda[21]

Year	Flood Peak m^3 / s	Date
01/02	200.66	14-05-02
02/03	1,020.86	18-05-03
03/04	380.30	20-09-04
04/05	359.50	06-09-05
05/06	356.31	23-06-06
06/07	405.32	28-10-06
07/08	1,320.45	01-06-08
08/09	421.77	18-08-09
09/10	617.85	20-05-10
10/11	528.14	30-04-11
11/12	263.79	13-12-11
12/13	536.43	02-11-12
13/14	869.92	04-07-14

The flood peaks correspond to the flood years at Paragoda West. This opens an opportunity to use threshold levels of flood peaks at Millakanda river gauging station to strengthen flood forecasting for Paragoda West to assist flood emergency management led by Bulathsinhala Divisional Secretary, CEB, Irrigation Department and Disaster Management Centre (DMC).

A Worst-Case Scenario



Kukule catchment

On 25th May 2017, the upper catchment of Kukule Ganga received nearly 553 mm rain in about 24 hours, nearly 1/6th of the average annual rainfall. The extreme water volume rushed down the slope across the open sluice gate of the Kukule reservoir and inundated the downstream area. The flood level at Paragoda West village rose above the street lamp posts. The village school and a few houses located on higher elevations harbored the community members rescued by village responders.

Figure 5: Precipitation intensity May 2017

[21] ibid

Figure 6 below depicts a 3D visualization of the inundation level during the May 2017 flood. The red dots denote the buildings that escaped inundation.

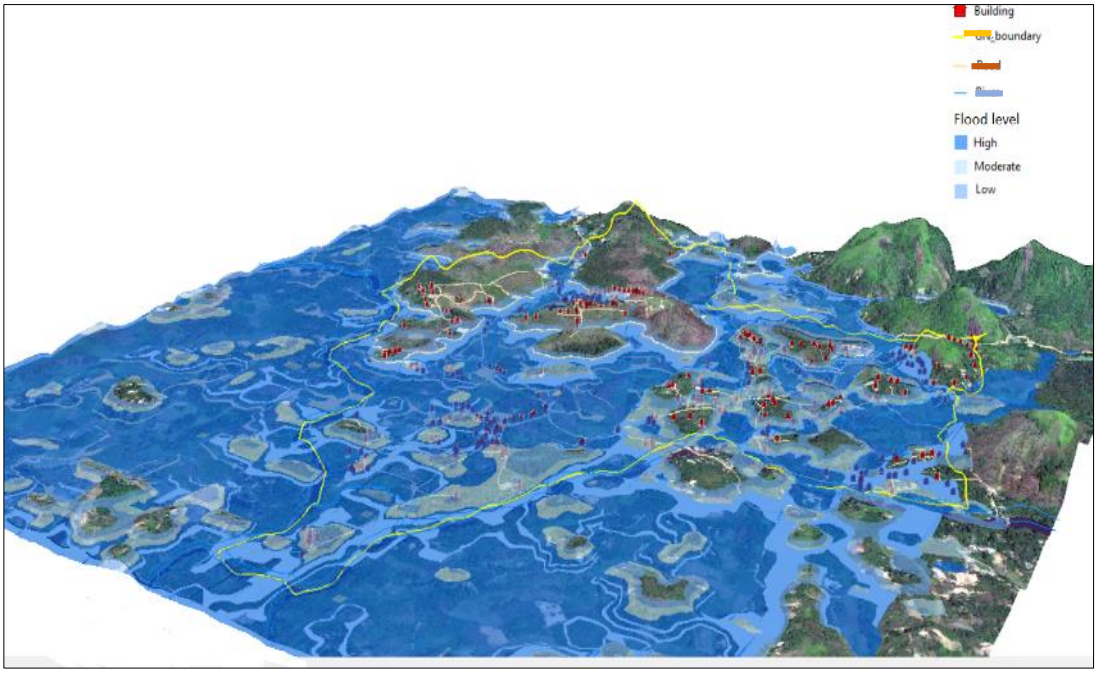


Figure 6: Inundation of Paragoda West 2017[22]

174 houses went under water. Inmates lost most of their belongings (See Fig. 7). The flood water flowed over the street lamp posts. Access to the area was not possible for relief and response.

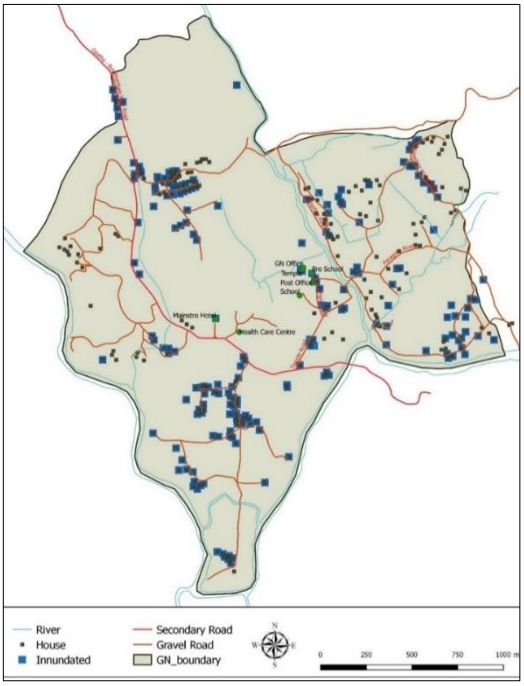


Figure 7: Inundated Houses During May 2017[23]

[22] Based on the GIS Database compiled for Paragoda West
[23] Based on the GIS Database compiled for Paragoda

Electricity supply was cut off.

Navy boats which were mobilized could not navigate as they could not locate routes of access. Boats got trapped in submerged canopy and boatmen had to chop inundated branches to free boats.

People sought refuge at the school building. Others who were uncomfortable with facilities at the school, sought refuge in neighboring houses, which, escaped inundation. The flood waters did not recede up to 10 days. With no access to food supply, the displaced had to depend on boiled jack fruit and available edibles for meals and undergo tremendous hardship[24].

Small holdings of tea, rubber, paddy and other agricultural plots were deposited with debris and silt. Many found it difficult to resurrect them after clearing the debris severely impacting livelihoods and income.

[24] Narrative of the Grama Niladhari of his experience

Potential Exacerbation of Flood Impact Due to Climate Change

National Climate Change Adaptation Strategy for Sri Lanka - 2011 to 2016 and the Water Sector Vulnerability Profile published by Ministry of Environment, 2012, state that intensity of rainfall will increase in the wet zone due to climate change. This is expected to increase the tendency from flood prone rivers to overflow.

The Process of Project Implementation

The sequential steps carried out during project implementation is provided in Figure 8.

1. Project team consensus on the Paper

   Stakeholder Consultation
   District Secretariat
   Divisional Secretariat
   Grama sewa Niladhari
   Community

2. Seeking authorization to upgrade school as a shelter point
3. Flood Vulnerability and Risk Assessment
4. Compilation of a GIS Database for the area
5. Validation of the Database with the community
6. Training Divisional Secretarial staff and community youth on GIS database maintenance
7. Enhance Flood Early Warning Mechanism
8. Community capacity Building
9. Measures for Household and Micro enterprise Preparedness
10. Shelter upgrading
11. FP formulation for stakeholders
12. Simulation Drill to internalize response procedure

Figure 8: The sequential steps of project implementation

Stakeholder Consultation

Stakeholder consultation was the first step. Consultation with the Kalutara District Secretary was facilitated by the Assistant Director of the Kalutara DDMCU. The project was welcomed by the District Secretary and the DDMCU and the NDRSC officer attached to the district was directed to provide all assistance required in the implementation.

Figure 9: Meeting with District Secretary Kalutara

The Divisional Secretary also welcomed the project enthusiastically and provided time to discuss the project with divisional stakeholders including the GS of Paragoda West, community representation, the Police, Divisional Education Officer, Chief Engineer of Kekule Dam, NGO representatives and others.

Figure 10 Meeting the Divisional Secretary with stakeholders

Thereafter, the project team went into consultation with the community led by the GN. The initial consultations saw good participation.

Figure 11: Community Consultations

Figure 12 Consultation with school Principal

Identified Needs for Emergency Response

As Paragoda West gets cut off and isolated due to road inundation even for minor floods, there is no possibility of outside response and relief. The most desirable remedy appeared to be improving early warning on sluice gate opening of the Kukule Dam to strengthen flood early warning and to institute a self-reliant evacuation center for the affected to seek refuge.

The needs identified for emergency response by the community were as follows:

- Need for proper early warning
- An upgraded IDP camp facility at the school with in-house ability to provide food, water and sanitation.
- A storehouse for dry food and non-food relief items (NFRIs)
- A kitchen space and utensils
- Need for a generator as electricity is not available due to disconnection at that level of inundation depth
- Need for a boat at the camp site for emergencies and search & rescue
- Capacity building for first aid, camp management, HH preparedness and Business Continuity
- Need for a navigation system for navy boats once the lamp posts go under water
- River-flow level gauge near the village

A list of NFRIs requested by the community is given in Annex 1.

Clearance from Government Entities

The project implementation needed to follow the established administrative protocols in the country and obtain approval for implementation of the project. The DMC took over the facilitation of necessary approvals as required. However, the process was slow and delayed project implementation process.

Currently the Disaster Management Center (DMC) and the National Disaster Relief Services Center (NDRSC) under the Ministry of Public Administration, Disaster Management and Livestock Development are key players in disaster risk management and emergency response endeavors. The 24 x 7 Emergency Operations Center (EOC) coordinates all emergency management activities

Under Ministry of Internal and Home Affairs and Provincial Councils and Local Government, the country is divided into 09 Provinces and 25 administrative Districts, which are in turn divided into Divisional Secretary's Divisions (DS Divisions), which are then divided into Grama Niladhari Divisions (GS Divisions) at village level.

The District Secretary performs the incident command at district level assisted by the District Disaster Management Coordination Unit (DDMCU). Divisional Secretary (DS) and Grama Niladhari Officer (GN) take responsibility at grass root level action (See Figure 13). There was however no village committee functioning at Paragoda West.

Government Administrative Hierarchy for Disaster Risk Management

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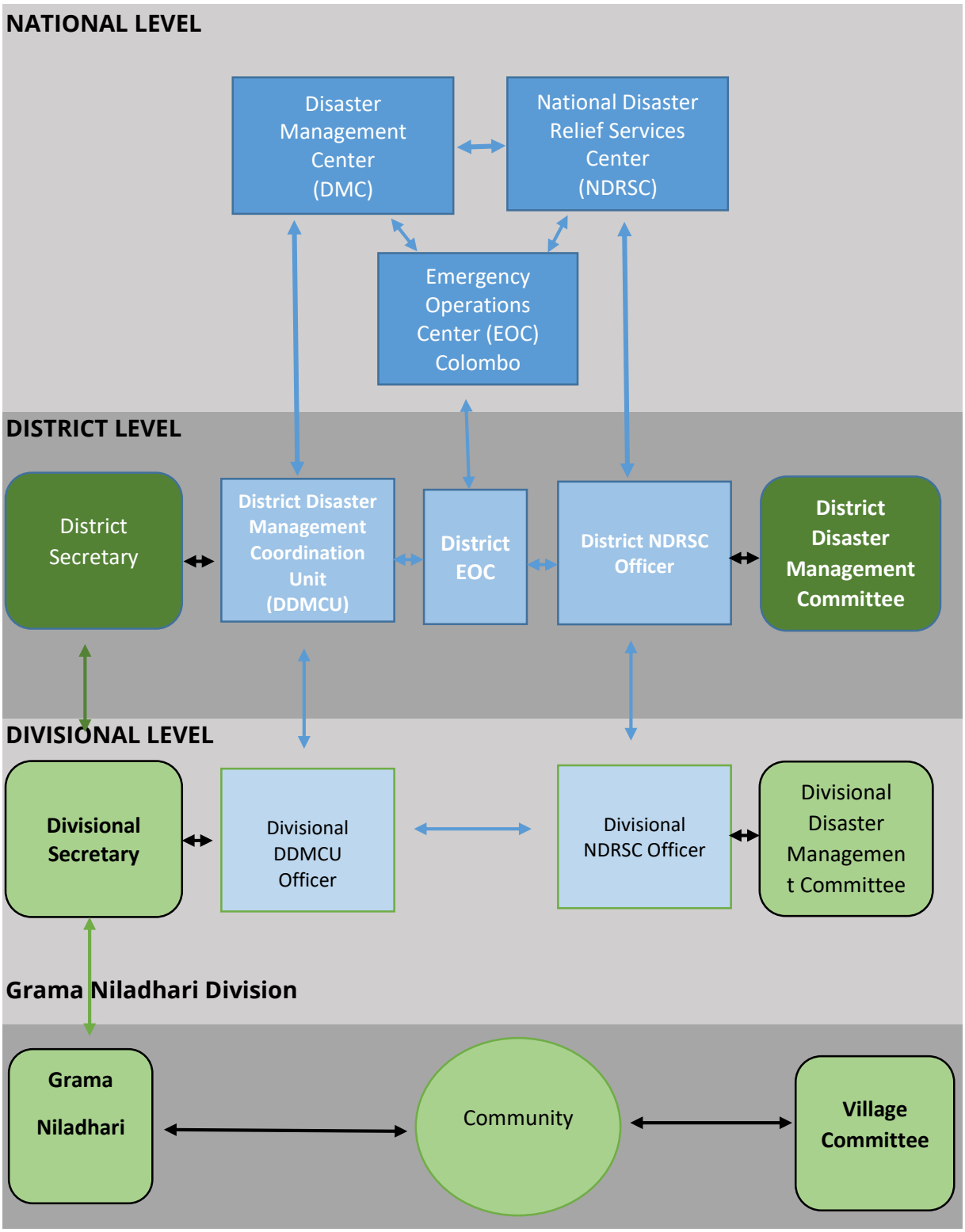


Figure 13 : Vertical & Horizontal Integration of Emergency Management

Government Administrative Hierarchy for Education

Schools are under the purview of the Department of Education under the Ministry of Education. Each Province has a Provincial Director under whom Zonal Directors supervise Divisional Education Officers. Any intervention in a school must have clearance from this hierarchical system within the Department of Education.

The Waning Of Interest in The Community

from the Ministry of Education was sought by the DMC. This took an unexpected length of time and the school upgrading was delayed. With no visibility of work on the ground, community interest waned. The perception at that point of time, appeared to be, that this project was another talk show that came to the village like may others that came but failed to deliver. Regaining interest became a challenge.

Flood Vulnerability and Risk Assessment

As a basic requirement for emergency preparedness, the project trained a team of community youth for information gathering using a questionnaire (See Annex 2) for a comprehensive GIS database for the village. This required a survey inclusive of each and every house to collect data. The collation will serve both response and recovery interventions in the future. The data was compiled into a GIS database.

Figure 14: Training youth for household survey

The GIS database was then validated with the community.

Figure 15: Validation of Database

To enable sustainability of its use, a GIS training was conducted for the youth and Divisional level stakeholders on using and maintaining the database.

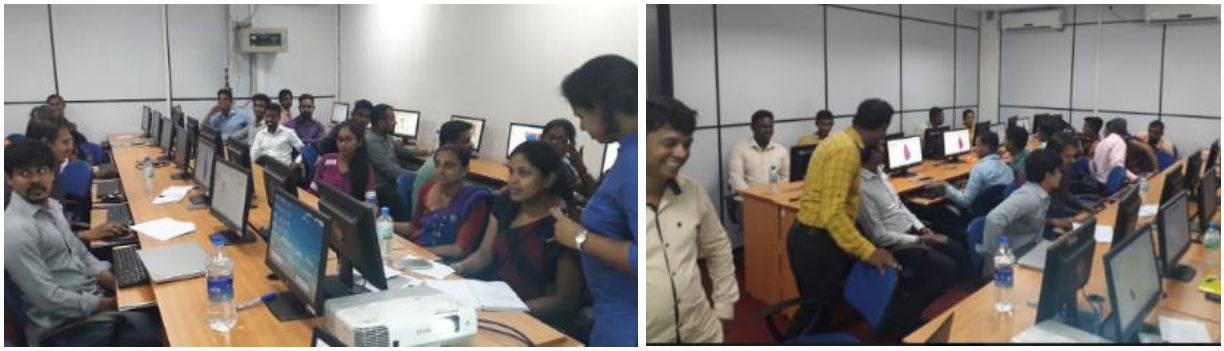


Figure 16: GIS Training of stakeholders

Early Warning Upgrade

The Divisional Secretary negotiated and obtained consensus to receive river level gauge data during intense rain from the upstream Kukule dam reservoir and downstream Millakanda river flow gauge station. This will **reinforce flood warnings** from the Emergency Operation Centre Colombo to the District Disaster Management Coordination Unit and the District Secretary.

A VPN communication has been set up between the Divisional Secretary, the District Disaster Management Coordination Unit, the Grama Seva Niladhari and selected community leaders to provide timely flood early warning.

Community-centered early warning for mobile announcements will ensure that the warnings reach each household.

Capacity Building

The community members were provided with Capacity building on First Aid. Divisional level stakeholders were provided with training on camp management. The community had an *ad-hoc* team who had coped with the 2017 flood response. They were formed into sub committees and were briefed about their camp management tasks and roles and responsibilities. The list of committees and their Terms of Reference are given in Annex 3.

Figure 17: Capacity Building First Aid

Figure 18: Camp Management Training

Household and micro enterprise preparedness

Basic survival knowledge and communication strategies were available with the households due to flood experiences several times since 2003. However, protection of assets was an issue during an extreme event for both households and the few micro enterprises (house-based shops for domestic items). Desirable actions advocated for household preparedness and micro enterprises are given in Annex 4.

Dialogue with the Divisional Secretary has paved the way to provide a **loan scheme for households and micro enterprises to build an upper story** for protection of assets from flood water.

A community proposal to experiment with a **floating store house** has been translated into action.

The store is constructed on a wooden platform fixed on empty plastic barrels. The barrels were donated by a private sector enterprise.

Water proof materials wrapped around a skeletal store frame provides protection from rain. A lightweight roof sits on top.

The platform floats up above the recorded flood level, guided by four concrete pillars. Rings attached to the platform will guide the sliding on the pillars.

The next flood will be the testing ground for improvement of the current design and replication to households.

Figure 19: Floating Store room under construction

Awareness of the Natural Disaster Insurance Scheme implemented through the National Insurance Trust Fund (NITF), since 01/04/2016 was lacking. The insurance Covers lives and properties, specifically all households and small business establishments (any business of which annual turnover does not exceed LKR 10 M) covered up to 2.5 million rupees each in respect of damages(per event) caused to their property and contents due to Cyclones, Storm, Tempest, Flood, Land slide, Hurricane, Earthquake, Tsunami and any other similar natural perils, excluding Drought. Death compensation amounts to Rs.100,000.00[25]. There was no knowledge of the insurance scheme for registered farmers affected by natural hazards covering 20 crops[26]. Awareness was created on these risk

25 http://www.nitf.lk/ENGLISH/National%20Natural%20Disaster.html retrieved 14 August 2019.

26 Agriculture Insurance Board http://aib.gov.lk/index.html

transfer mechanisms and the usefulness of the compiled GIS database positioned with the Divisional Secretariat was emphasized.

The DMC has requested the Department of Irrigation to position a **River Flow Level Gauge** near the village for villagers to monitor any rise in river level.

Shelter Upgrade

A kitchen and a store room was positioned using converted containers. A private enterprise provided the container conversion at no-profit.

All necessary **NFRIs** have been put in place.

The National Disaster Relief Services Center is upgrading the **water and sanitation facilities** and funds have already been allocated and released to the Divisional Secretary.

Figure 20: Positioning converted containers for store and kitchen

The Divisional Secretary has consented to position a **motorboat at the school** for emergencies consequent to early warning.

A mechanism for **pro-active storage of dry rations** is in place for stocking of food items prior to an emergency. The NDRSC provides Rs. 300 per displaced person per day. The Divisional Secretary has agreed to negotiate with Cooperative Stores in the area, to provide this service with the flexibility to return unused food items.

With these activities in place, the shelter point is independent of the need to depend on outside supplies for the camp.

Navigation System for Navy Boats

The DDMCU and the DS positions Navy boats at strategic points for response and search and rescue. The inundation level at Paragoda West with lamp posts submerged challenges boat navigation. The project in consultation with the DS has arranged flagpoles with luminous flags to be hoisted on lamp posts with the help of the Kalutara Ceylon Electricity Board Office (CEB). Although these flags have been delivered to the Grama Niladhari Office, the fixing is pending as CEB is yet to assist.

SOPs

Standard Operation Procedures (SOPs) have been drawn up for the District Secretary, DDMCU, Divisional Secretary and the Grama Niladhari. These are provided in Annex 5. These SOPs depict the currently agreed to operations discussed during project implementation and present the procedures from District Secretary downwards for Early Warning and evacuation.
They may need to be triangulated with SOPs bring currently developed by the DMC.

Mock Drill

A pre-informed simulation drill culminated project activity.

Mobile announcement on the previous evening informed the community of the pending activity.

A house to house visits was carried out to provide guidance on how to respond to the evacuation announcement and what to bring with them. A token with the house number was provided to determine the evacuation time needed by each household.

Next day, with an evacuation announcement at a pre-determined time, Evacuation and Camp management procedures were rolled out.

Figure 21: Community evacuating to the safe shelter

Camp management sub-committees were made visible so that the inmates become familiar with the organized approach to camp management.

Figure 22 : Registration of the inmates


Figure 23 : Food committee at work

The registration procedure was tested out. Registration used the household demographic information compiled into the GIS Database. However, the Registration Template being tested by the NDRSC currently may have to be used in future after its finalization.

Positioned NFRIs were used. A meal was prepared to be shared with drill participants.

Conclusion and Lessons Learnt

The project looked at a community where usually advocated resilience building is inconceivable. Most lost their belongings in 2017 flood. Some of the houses got damaged. Roads get inundated first, cutting off access. The village responders saved lives but the displaced had no adequate shelter.

The deposited debris and silt from the flood water, destroyed their crops of tea and paddy. The only possible livelihood recovery is adequate risk transfer, about which most were unaware of.

Project implementation had put in place, what the community believed were potential remedies. There were several lessons that emerged.

1. Several previous outside interventions had failed to deliver the promises made and the community had a mistrust of similar endeavors.

2. Community had a large segment of persons who were daily wage earners. Some others engaged in tea small holdings were fully engaged in plucking till late afternoon. There was a reluctance to spend their time for consultations, especially due the residual mistrust. Overcoming this was a challenge.

3. Identifying a core of community leadership willing to take ownership of the intervention was critical for project success.

4. Any upgrading of a school premise as a shelter point, need authorization from educational authorities, which turned out to be a time-consuming task. This delayed visible input from the project at the school, leading to a waning of community participation. It is therefore necessary to factor this in future project formulation of this nature.

5. The project found willingness to assist from two private sector organizations very positive. This revealed that seeking support under Corporate Social Responsibility of large enterprises is a productive way to strengthen similar projects for community well-being. The project gained from the public-private partnership (PPP) it forged during implementation.

ANNEX 1: NFRIs Requested

Wheel Chair
Crutches
First Aid Box + items
Sanitary items for women and children /Soap
Sleeping mats / Bedsheets / towels / Mosquito nets /
Mosquito coils
Boxes of Matches, Candles
Lifesaving kits
Rain coats

Saucepans / big / medium / small
Commercial gas burners
Gas cylinders
Sieves large
Water boiler big
Tea sieves
Aluminum tea pot
Spoons / big / medium / small
Plastic plates and cups
Knives / big / medium / small
Coconut scrapers
500 L plastic barrels
Plastic basins / big / medium / small
Jugs / big / medium / small
Mortar and Pestle Large

Tent cloth
Battery operated Radio
Battery operated Torches big / medium / small
Hurricane lanterns
Steel cupboards

Water pump
Generator

ANNEX 2: Questionnaire for Household Survey

Map ID: .....

1. General information:

1.1 District.....
1.2 DS Division.....
1.3 GN Division: .....
1.4 Village: .....
1.5 Address of the House.....
1.6 Assessment/ House Hold No.....

2. Head of the Household information

2.1 Name with Initial.....
2.2 NIC No..... / Senior citizens ID No.....
2.3 Contact detail

2.3. 1 Mobile.....
2.3. 2 Land.....
2.3. 3 Email.....

3) Building Information

3.1 Category of the house

1 - Single House	
2 - Attached House / Annex	
3 - Kada Niwasa	
4 - Flat	

3.2 Type of usage

1 - Home	
2 - Preschool	
3 - shop	
4 – other (specify)	

3.3 Building ownership

1	Owner
2	Rented
3	Leased

3.4 Number of Stories

1	One / single story	
2	2 floors	
3	3 floors	
4	4 floors	
5	5 or more floors	

3.5 Foundation Height (feet):

Less than 1		1.5 to 3	
1 to 1.5		More than3	

3.6 Building materials

3.6.1 Roof	
1 - Tiles	
2 - Asbestos	
3 - Tin sheets/ Zin sheets	
4 - Concrete (slab)	
5 - Cadjan/Palmyrah/Straw	
10 – Other (specify)	
3.6.2 Floor	
1 - Cement	
2 - Terrazzo	
3 - Tile	
4 - Granite	
5 - Wood	
6 - Mud/Cow dung	
7 – Other (specify)	

3.6.3 Walls	
1 - Plastered	
2 - Plastering inner wall only	
3 - Plastering outer wall only	
4 - Cement blocks	
5 - brick	
6 - Pressed soil blocks	
7 - Tin/zin sheets	
8 - Mud	
9 - Timber planks	
10 - Cadjan/Palmyrah/Straw	
11 – Other (specify)	

3.7 Floor area (sq feet)

1	less than 500
2	500 - 1000
3	more than 1000

3.8 State of the House

Permanent	
Semi-permanent	
Improvised	

3.9 Water source:

Source	Drinking	Domestic
1 - Main water supply (NWSDB)		
2 - Community water supply		
3 - Pumped water supply (private)		
4 - Dug Well (private or neighboring)		
5 - Tube well (private)		
6 - Public well/tube well		
7 - Rain Water Harvesting system		
8 - Agri well		
9 - River/Oya/canal/stream/tank		
10 - Filtered water (from outside source)		
11 - Other (specify)		

3.10 Lighting source

1 - Main grid (CEB / LECO)	
2 - Solar	
3 - Kerosene	
4 – Other (specify)	

3.11 Toilet facilities

1 - Attached toilet with basic facilities	
2 - Attached toilet with modern facilities	
3 - Separate toilet	
4 - Septic tank, gullies & manholes	
5 – Other (specify)	

4) Family Information

4.1	4.2	4.3	4.4	4.5	4.6	4.8	4.7
Name*	Relation to HH**	Age	Gender 1 = male 2= Female	Education level***	Occupation****	Disability 1 = Yes 0 = No	Special illness 0 = No 1 = Kidney related 2 = Heart related 3 = Cancer 4 = Any other
1.							
2.							
3.							
4.							

*Write first in HH Head info

	Relation to HH*"
1	Wife/husband
2	Son/daughter
	Father/mother
4	other

**"Education level	
1	No schooling
2	Primary (grade 1-5)
3	Secondary
4	G.C.E. (O/L)
5	G.C.E. (A/L}
6	Technical/vocational training
7	Degree and above

****Livelihood	
1	Farming Rice (ha) Tea (Ha) Rubber (Ha) other
	Fishery
3	Laborer
4	Government job
5	Private sector job
6	Self-employment specify
7	Unemployed

4.9.1 Mobile phone usage

Member of Family (use member Id)	Mobile 01	Mobile 02

4.9.2 Do you/your family have a smart phone? ..... 1 = Yes, 2 = No

5) Income distribution

5.1 Annual Income of the family (Rs.)

Less than 200,000 (USD 3.2 per day)	
200000 - 350,000	
350,000 - 500,000	
More than 500,000	

5.2 Do your family have any other income sources? (which is not mentioned in 4.6) .....

If yes, state.....

5.3.1 Do you receive any public assistants?

5.3.2 If yes what are they .....

1. Samurdhi	
2. Elderly pension	
3. Other (specify)	

1	Yes
0	No

5.4 Family assets

1. Motor Bike	
2. Three weal	
3. Car/van	
4. Land master	
5. Farm machinery	
6. Livestock	
7. Other (specify)	

5.5 Do you/ your family have internet facility/ access?

1	Yes
0	No

6) Disaster information

6.1 Do you face any hazard situation/s?

1	Yes
0	No

6.1.1 If yes, fill below table **relating with hazards**

Hazard	House 1 = yes 0 = No	Agri land (**acers**)		SME 1 = yes 0 = No	Drinking water 1 = yes 0 = No
		Paddy land	Highland (HG, chena, other)		
Flood					
Drought					
High wind					
Wild animals					
Any other (specify)					

If the answer for 6.1 is "No"; your questionnaire is over. If :Yes" continue.

6.2 Flood hazard information

Property	(Number of flood events over the last 5 years)	Average Inundation height (feet)	Latest event month/ year
House			
Paddy Land			
Other property (specify)			

6.3 Did you evacuate with flood hazard?

1	Yes
0	No

6.3.1 If yes, where you went?

	Distance to your house
Relation's house	
School	
Religious place	
Camp	
Other (specify)	

6.4 Are you aware about flood period?

1	Yes
0	No

6.4.1 If yes, do you prepare for it?

1	Yes
0	No

6.4.2 If you prepare for flood events, what actions you got?

1. Kept goods on high raise place (inside the house)	
2. Kept goods upstairs	
3. Water proofed doors (temporary)	
4. Moved goods to outside place	
5. Other (specify)	

6.5 Did you receive any early warning for flooding?

1	Yes
0	No

6.5.1 If yes, From whom how? .....

1. Irrigation Dept	
2. DMC	
3. GN Officer	
4. Media	
5. Relations/friends	
5. Other (specify)	

6.6 Your satisfaction level with current early warning system (regarding flood).

High	
Moderate	
Low	

For GN /EDO Officer

7. Your overall vulnerability rank for this house (consider socio economic situation of the family)

Vulnerability rank	
1. Very high	
2. High	
3. Moderate	
4. Low	
5. Very low	

Any other remarks
.....
.....
.....

Date: .....
Signature of GN/ EDO Officer

ANNEX 3: Disaster Management Committee and Sub Committee TORs

W. Shyaman Soysa
K.N. Sarath Amaratunga
K.V. Dayaratne
H.M. Ajith Priyankara
K.V. Shantha
Seneviratne Bandara
K.V. Nilantha Srimal
U. Wipulasiri
M.M. Rukmal
P. Chandradasa Perera
L.P. Dayaratne

Ms. R.G. Chandrawathi
Ms. Irangani Subasinghe
Ms. Shrimathi Pushpakanthi
Ms. P.D. Champika
Ms. B. Anoma Perera
Ms. H. Chamila
Ms. P. Chathuri Priyangika

TORs for Camp Management Sub Committees
Administrative Committee

1. This is the most important committee for command, control and coordinate events in the camp and to channel communication to outside.
2. Arrange a desk in the first hall of the school.
3. Position a Rigifoam sheet near your desk. Have a Heading in large letters "Administration"
4. Keep all relevant telephone numbers pinned on it.
5. Be present at the desk to attend the issues raised by other committees and to channel any communication needs to outside.
6. Be ready to provide information requested by Divisional Secretary or DDMCU.
7. Be ready to request assistance from outside in any unexpected emergency.

Registration & Data Committee

1. Arrange a desk in the first hall of the school.
2. Ensure that any new person entering the camp has to pass by your desk.
3. Position a Rigifoam sheet near your desk. Have a Heading in large letters "Registration"
4. On it, pin a list of phone numbers of all committee members
5. On it, layout a map of buildings to be occupied
6. Become familiar with the Household (HH) Information List provided (extract from GIS Database)
   If you use the Registration Template compiled by NDRSC, cross check with the HH information to compile sex and age disaggregated data.
7. Each house has been provided with a token carrying the HH number or address
8. When someone comes to be in the camp, ask for the token.
9. Note the time of arrival under remark column.
10. Tick household members for that house from the list in your information list.
11. Mark the building he / she will occupy. Direct each household members to the "Logistics Team" for allocating space. Take them across all the committee tables to make them aware where to seek help.
12. If any member is missing / unaccounted for, inform the Sear & Rescue Committee.
13. Write special requirements for any person in the remark's column
14. Provide a tally of total inmates disaggregated by sex, age, disability, pregnancy, lactating mothers.
15. Send special need list to the relevant committee (Food, NFRI, etc.)
16. Be present at the desk to provide any information requested by the Divisional Secretary or the DDMCU. Any communication with outside agency must be channeled through the Administration Committee.
17. Keep a daily log

Search & Rescue Committee

1. Brief members of the team on the process to follow if the Registration team (or another source) informs a need for search and rescue. Inform the "Administrative committee" of intended action. Any call to outside of camp must be channeled through the Administration committee.
2. Have the aerial map of the village from GIS database and mark the lamp post flag number on it as relevant and display behind the desk.
3. Proceed for SAR with either the boat positioned in the school or inform Navy Boat through GN.
4. Keep a daily log

Food Committee

1. Take an inventory of food items and cooking utensils stored.
2. Collect number of inmates and their special requirements from the "Registration Committee"
3. Form daily rosters for cooking from inmates.
4. Ration dry food stocks and keep a record of items given out.
5. Monitor adequacy of stocks and inform "Administrative Committee" of any requirements.
6. Keep a daily log

Health & Sanitation

1. Collect the special requirement list of the disabled and ill from the "Registration Committee"
2. Monitor health and sanitary requirements of inmates daily.
3. Be ready to attend to requests / complaints made by inmates.
4. Organize daily rosters to keep toilets clean and attend waste disposal.
5. Ensure cleanliness of the camp site with volunteers from inmates.
6. Keep a daily log

NFRI

1. Take an inventory of non-food items and cooking utensils stored.
2. Keep a record of items issued to each hall occupied by inmates.
3. Record any shortfalls and report to the “Administrative Committee”
4. Be ready to attend to requests / complaints made by inmates
5. Monitor non-food item use to ensure convenience of inmates
6. Keep a daily log

First Aid

1. Take an inventory of first aid items available.
2. Record any shortfalls and report to the “Administrative Committee”
3. Be ready to attend to requests by inmates
4. Keep a daily log

Logistics

1. Communication to outside the camp must be channeled through the “Administrative Committee”.
2. Attend to location of inmates provided by the “Registration Committee”
3. Be ready to facilitate any request from the “Administrative Committee” for water, food items. Non-Food items. First Aid items, Sanitation items, Fuel for generator and lamps,
4. Be ready to transport inmates in health emergencies.
5. (5 & 6) may require access to outside with boat. Have capable volunteers to help

Security

1. Monitor events by patrolling occupied area regularly
2. Be ready to attend to requests / complaints made by inmates
3. In the event of conflicts, discuss with “Administrative Committee” and resolve.

ANNEX 4: Guidelines for Household Preparedness & Micro Enterprises

Households

1. Pay attention to flood alerts / evacuation messages from the GN or community leaders. Get to know how such messages would be disseminated.
2. If your house is flood-prone and if household members are scattered during flood warning, have pre-planned mechanisms to reach safety in time. (Plan how to communicate and where to go)
3. Flood proof household items with polythene wraps and anchor them. If possible, store and anchor at an elevation.
4. Pack your important documents, valuables, medicine, prescriptions etc. into an emergency kit to carry when you evacuate. Flood-proof your documents with polythene or laminating beforehand.
5. Know when and where to evacuate. DO NOT wait until your house gets flooded. In your area, roads of access will be inundated by that time. Avoid walking in flood water.
6. Electricity would be cut off to your area by the Electricity Board. If you evacuate, switch off house supply.
7. Turn off your gas cylinder.
8. Know who can help if needed. Have their telephone numbers at hand.
9. Have a battery-operated radio and torch in case of unexpected power shortage such as due to lightning.
10. Your house details are now in the GIS database and seek damage, where necessary, from National Insurance Trust through your GN and DS.

Micro Enterprises

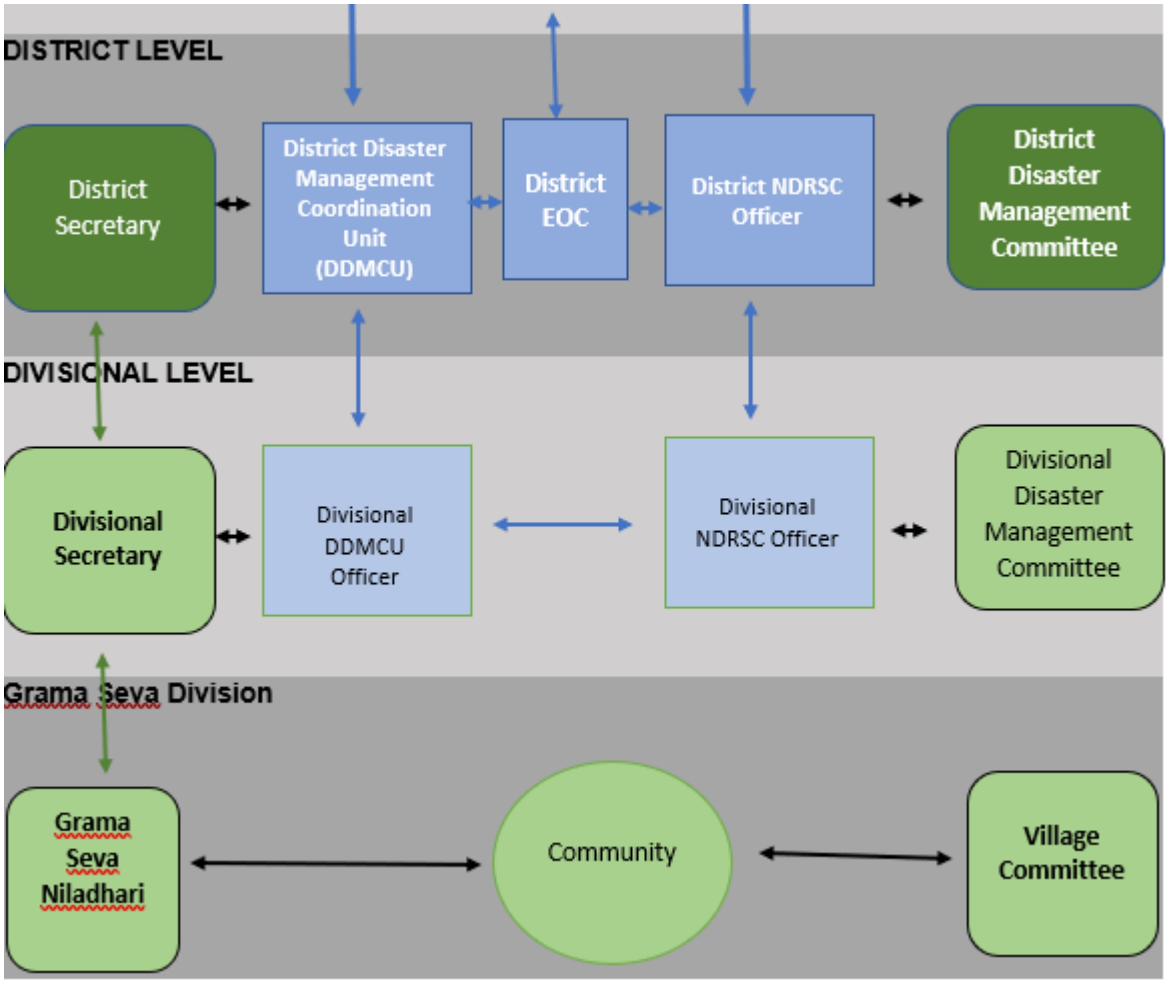
For Paragoda West, these are about 7 shops located in residential houses.
Follow guidelines for households. Further to that, attempt the following.

1. Strategically reduce stocks during flood season.
2. Have empty plastic barrels which can be sealed to protect possible items inside them. Anchor.
3. Explore the possibility of flood proofing other stocks. Anchor.
4. Your shop is now in the GIS database and seek damage from National Insurance Trust through your GN and DS.

ANNEX 5: SOPs

These SOPs are for DDMCU, District Secretary, Divisional Secretary and Grama Niladhari whose vertical and horizontal integration for emergency response are given in the Figure below. The National to district integration is operated by the EOC, Colombo.

TORs for village level sub committees involved in camp management are given in Annex 7.



Acronyms Used in SOP

DDMCU = District Disaster Management Coordination Unit
GA = District Secretary
DS = Divisional Secretary
GN = Grama Niladhari
Fld = Flood;
Warn = Warning
Numerals 1,2,3, etc. indicate sequential steps to take.

Flood Warning SOP Duty Staff DDMCU EOC, Kalutara

Stage: Receives Flood Warning from the Emergency Operations Centre DMC

Received by DEWN/ E-mail/ Fax/ Intra Government Network/ Mobile/ Radio/ Telephones/ VPN

Action No.	**Action**
General Instructions	Complete the Logbook (Log/EOC)
DDMCU-Fld-Warn-1	Record the message given by telephone accurately Obtain the Flood Warning in writing (fax/e-mail) Date/time stamp the fax/e-mail
DDMCU-Fld-Warn-2	Call the EOC DMC to confirm receipt of the Flood Warning
DDMCU-Fld-Warn-3	Inform the District Disaster Management Assistant Director of the Flood Warning In his absence inform the Assistant Coordinator by person/mobile/telephone/VPN
DDMCU-Fld-Warn-4	• Assist the Assistant Director to cross check flood levels with the Kukule Dam Engineer and Millakanda River Flow Gauge Station. • Assist the Assistant Director to forward District Secretary's authorization to Evacuate communities from identified inundation areas to: – EOC DMC – relevant Divisional Secretaries – relevant Grama Niladharis – relevant Police Stations – Hospitals, Schools and other institutions identified in the district response plan. – Local Government, Chairpersons of Local Authorities in relevant areas – Military establishments in the area by fax/e-mail
DDMCU-Fld-Warn-5	Transfer media and public inquiries to the Coordinator or to an Officer nominated for this purpose
General Instructions	Be on alert for further updates from the EOC DMC. DDMCU will be on 24/7 emergency alert. At the end of your work shift, brief the Incoming Officer of the situation using entries in the Logbook (Log/EOC).

Flood Warning SOP **District Disaster Management Coordinator, Kalutara,** or in his absence the Assistant Coordinator

Stage: Receives Flood Warning from the Emergency Operations Centre DMC

Received by DEWN/ E-mail/ Fax/ Intra Government Network/ Mobile/ Radio/ Telephones/ VPN

Action No.	**Action**
General Instructions	Complete the Logbook (Log/EOC). File all documents received and compiled.
DDMC-Fld-Warn-1	Inform the District Secretary of the receipt of Flood Warning by person/mobile/radio/telephone
DDMC-Fld-Warn-2	Coordinate with the District Secretary to convene the District Disaster Management Committee • cross check flood levels with the Kukule Dam Engineer and Millakanda River Flow Gauge Station and inform committee.
DDMC-Fld-Warn-3	If the 24/7 EOC is not already functioning at the DDMCU it should be activated.
DDMC-Fld-Warn-4	Inform the Duty Officer DDMCU EOC of the authorization of the District Secretary to Evacuate communities from identified inundation areas by mobile/radio/telephone/VPN Authorize the Duty Staff DDMCU EOC to forward the District Secretary's authorization to Evacuate communities from identified inundation areas to the EOC DMC by fax/e-mail
DDMC-Fld-Warn-5	Inform the relevant Divisional Secretaries the authorization of the District Secretary to evacuate communities from identified inundation areas by mobile/radio/telephone Authorize the Duty Staff DDMCU EOC to forward the District Secretary's authorization to evacuate communities from identified inundation areas to relevant Divisional Secretaries by fax/e-mail Call the relevant Divisional Secretaries to confirm receipt of the authorization to evacuate communities from identified inundation areas by mobile/radio/telephone

Flood Warning SOP Stage: **District Secretary, Kalutara**

Receives Flood Warning from the DDMCU

Received E-mail/ Fax/ Intra Government Network/ Mobile/ VPN

Action No.	**Action**
GA-Fld-Warn-1	• Convene the District Disaster Management Committee
GA-Fld-Warn-2	• Implement the District Disaster Preparedness and Response Plan (as required)
GA-Fld-Warn-3	• Be in contact with the following Officers to obtain weather/flood updates: – Regional Meteorological Officer – Regional Director Irrigation or the Divisional Engineer Irrigation • Be in contact with the Divisional Secretaries of the identified inundation areas
GA-Fld-Warn-4	• Authorize the Divisional Secretaries to evacuate communities from identified inundation areas
GA-Fld-Warn-5	• Ensure that the District DM Coordinator informs the EOC DMC of the evacuation process
GA-Fld-Warn-6	• Inform the political authority of the area
GA-Fld-Warn-7	• Establish an Incident Command Post
General	The District Disaster Management Coordinator will assist and coordinate with the District Secretary in the process

Flood Warning / Evacuation SOP Divisional Secretary, Bulathsinhala

Stage: Receives authorization to evacuate communities from identified inundation areas from the District Secretary

Received by E-mail/ Fax/ Intra Government Network/ VPN

Action No.	Action
DS-Fld-Warn-1	• Disseminate Flood warning to Paragoda West GN, Community leaders And local Government nodal point by VPN
DS-Fld-Warn-2	• Communicate with Kukule River Dam Engineer and Millakanda river flow gauge station for river flow information to strengthen flood warning to Paragoda West and further strengthen the flood warning
	• Obtain the Authorization to evacuate communities from identified inundation areas in writing (fax/e-mail / VPN) Date/time stamp the fax/e-mail
DS-Fld-Warn-3	• Confirm receipt of the Authorization to evacuate communities from identified inundation areas to the District Secretary by mobile/telephone / VPN
DS-Fld-Warn-4	• Authorize Paragoda West GN and community leaders to implement evacuation and camp management
DS-Fld-Warn-5	• Inform the relevant Police Stations
DS-Fld-Warn-6	• Inform military establishments in the area
DS-Fld-Warn-7	• Position Boat at Paragoda West School
DS-Fld-Warn-8	• Facilitate food procurement for Paragoda West camp
DS-Fld-Warn-9	• Position Navy boats for Paragoda response and search and rescue
DS-Fld-Warn-10	• Activate the Divisional Disaster Preparedness and Response Plan

Flood Warning / Evacuation SOP Grama Niladhari, Paragoda West

Stage: Receives authorization to evacuate communities from identified inundation areas from the Divisional Secretary

Received by VPN

Action No.	Action
GN-Fld-Warn-1	• Confirm receipt of Early Warning with DS
GN-Fld-Warn-2	• Disseminate flood warning to the community
GN-Fld-Warn-3	• Confirm receipt of evacuation authorization with DS
GN-Fld-Warn-4	• Disseminate Evacuation to the community
GN-Fld-Warn-5	• Inform the GN/Village level Disaster Management Committees and activate the comprehensive preparedness plan
GN-Fld-Warn-6	• Coordinate the community evacuation
GN-Fld-Warn-7	• Administer camp management at the village school
GN-Fld-Warn-8	• Within 3 days carry out a Rapid Needs Assessment and submit to DS
GN-Fld-Warn-9	• Provide loss and damage information to DS

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