

**LIRNEasia
Sarvodaya**

Last Mile-Hazard Warning System

Guidelines for HIH Procedures, System Activation, and Testing

Deliverable [08]

Draft

Version 1.1

July 6, 2006

This draft is for discussion purposes only.

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1 Overview of the LM-HWS

The LM-HWS is a system for creating and issuing alert messages through the Disaster Management Institute Hazard Information Hub (HIH) to villages belonging to the Sarvodaya's Sri Lanka network.

It is important to note that alerts issued by the LM-HWS are not "public" alerts. Instead, the HIH issues alerts to members of a closed user group. The members of the closed user group are designated "first responders" that have been given training by Sarvodaya Shanti Sena (Peace Brigade) and have been trained and certified in conjunction with the Last Mile Hazard Information Dissemination Project.

Local first responders are members of the local community and it is they, or their authorized designates, who are responsible for determining if a local, community-wide (village) warning is to be issued.

This flow of communications means that the LM-HWS is a two-stage relay network that disseminates information to alert local first responders. These guidelines attend to the First Stage of the LM-HWS only. Training and response plans for local villages are intended to deal with the Second Stage of the system.

Figure 1 on the next page provides a schematic illustration of the LM-HWS as a two stage relay network.

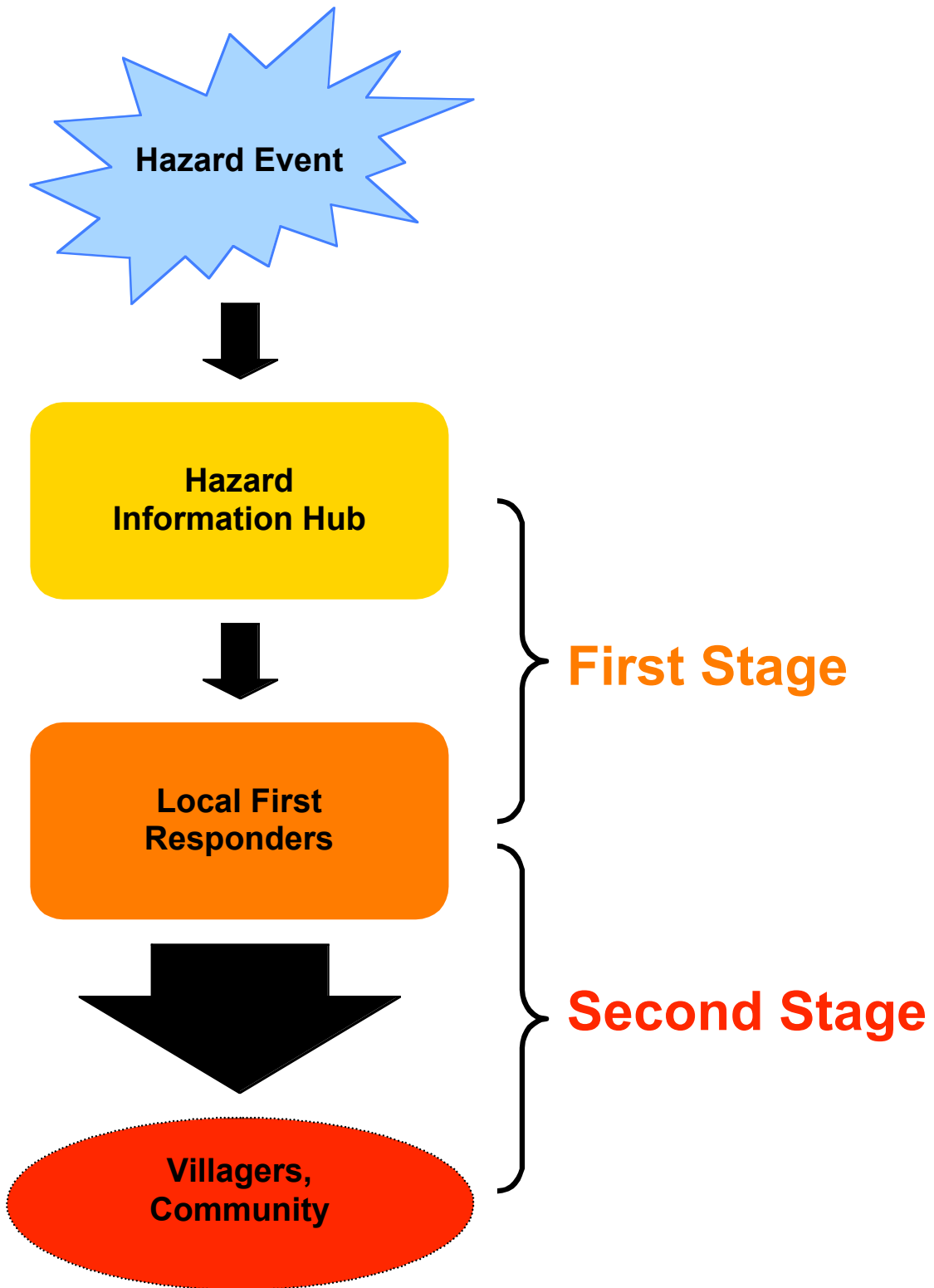


Figure 1: The LM-HWS depicted as a two-stage relay network

2 The LM-HWS and its Responsibilities for Issuing Alerts

2.1 *The HIH and the government*

In the event the government of Sri Lanka issues a public warning, the Hazard Information Hub (HIH) will relay this message directly through its network. Local first responders will act on the message as they see fit, but these actions should be based on local response plans and any instructions provided by the government in the initial message or in subsequent public communications (e.g., official messages broadcast by the media).

If the government does not issue CAP-compliant messages, the HIH will need to convert these messages into the CAP format quickly and accurately. If government messages are issued in a standard protocol other than CAP it might be possible to automate the conversion process.

However, in no case should staff at the HIH modify or otherwise revise the contents government message, except to ensure that it is capable of being relayed over the LM-HWS network. In certain cases, the HIH Executive (see below) may direct an Authorized User at the HIH to issue supplementary messages in conjunction with official government warnings.

It is recommended that the optional CAP element <description> be used to relay government warnings in their entirety—if possible, copied and pasted into a CAP message—rather than asking HIH personnel to interpret or to transcribe the message and risk introducing errors in the transcription process.

2.2 *The HIH and local first responders*

The HIH will not issue messages that provide specific instructions to local first responders, except those that might be relayed directly from the government.

Instead, all HIH-originated messages should contain enough information to enable a local first responder to decide if s/he should activate their local response plan based on their training and judgment.

It is the responsibility of the HIH to ensure that all messages sent through the LM-HWS are authorized and conform to an agreed upon CAP Profile Document. These guidelines also establish a CAP Profile Document for the LM-HWS.

Any proposed changes made to the CAP Profile Document that might affect the warning message, or its display on any communications device, must be discussed with training personnel and others involved in the First Stage relay network (including service providers and technology partners).

In the longer term it is anticipated that local first responders will maintain a state of observational readiness and provide information updates to the HIH. These updates will

include local reports of hazard impacts or other environmental indicators will serve to provide an upstream flow to support situational awareness at the HIH.

It is also anticipated that a network of automated sensors placed in local communities and other strategic locations will provide some of these upstream flows. In all cases, it is expected that both downstream and upstream messages will be CAP compliant.

Further details on the upstream component will be developed in due course and attached as an addendum to these guidelines.

2.3 Local first responders and their communities

It is the responsibility of local first responders to maintain a state of readiness in order to be able to receive messages from the HIH. This state of readiness includes a number of responsibilities. Local first responders must

- Ensure that their local communications equipment is in good operating condition and that battery-operated equipment is adequately charged.
- Ensure that their local communications equipment is “on” and ready to receive messages from the HIH on a 24x7 basis.
- Ensure that at least one authorized person is responsible for monitoring the local communications channel(s) for incoming messages at all times.

It is also the responsibility of local first responders to decide on appropriate action when a message is received. Appropriate action will depend on the information content of the message and the local community response plan. For example, an urgent tsunami warning for the west coast of Sri Lanka might prompt some local villages to activate their evacuation plans while in neighbouring villages they activate plans in preparation to receive evacuees.

Again, the HIH will not issue specific instructions to each community but will instead strive to include enough information in its messages to enable local first responders to instigate appropriate action with respect to local response plans.

3 Staffing and Training at the HIH

The following chart provides an overview of the organizational structure of the HIH.

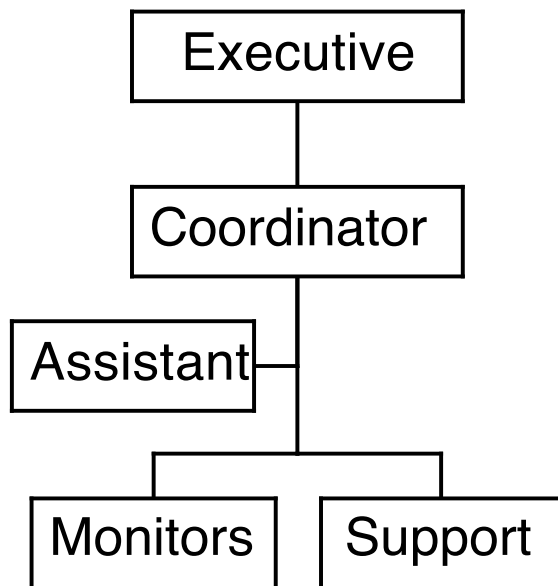


Figure 2: Organizational structure of the HIH

The HIH Executive is responsible for taking decisions to issue or not issue warning messages from the HIH. Members of the executive are senior managers or directors from key stakeholder groups.

The HIH Coordinator is responsible for day-to-day operations of the HIH, as well as for taking a lead role when a decision has been taken to issue warning messages. The Coordinator will be qualified as an “Authorized User” and has the authority to issue warning messages when first approved by the Executive.

The Assistant supports the Coordinator in his/her responsibilities and may or may not be qualified as an Authorized User of the system.

The Monitors are those staff members responsible for tracking and recording details from the various information feeds provided at the HIH. The HIH will be staffed on a continuous basis by at least one Monitor. Monitors will normally also be qualified “Authorized Users,” meaning that they have the authority to compose and issue warning messages when a request to issue a warning is first approved by the Executive.

Support staff include those responsible for upkeep of technology and other equipment at the HIH, as well as those who might be called in to the HIH to provide additional assistance during emergency events (e.g., telephone support) or on an as-needed basis (e.g., during exercises). Support staff may or may not be qualified as “Authorized Users.”

3.1 Initiating a warning message

The following flowchart describes the simplified procedure for initiating warning messages from the HIH.

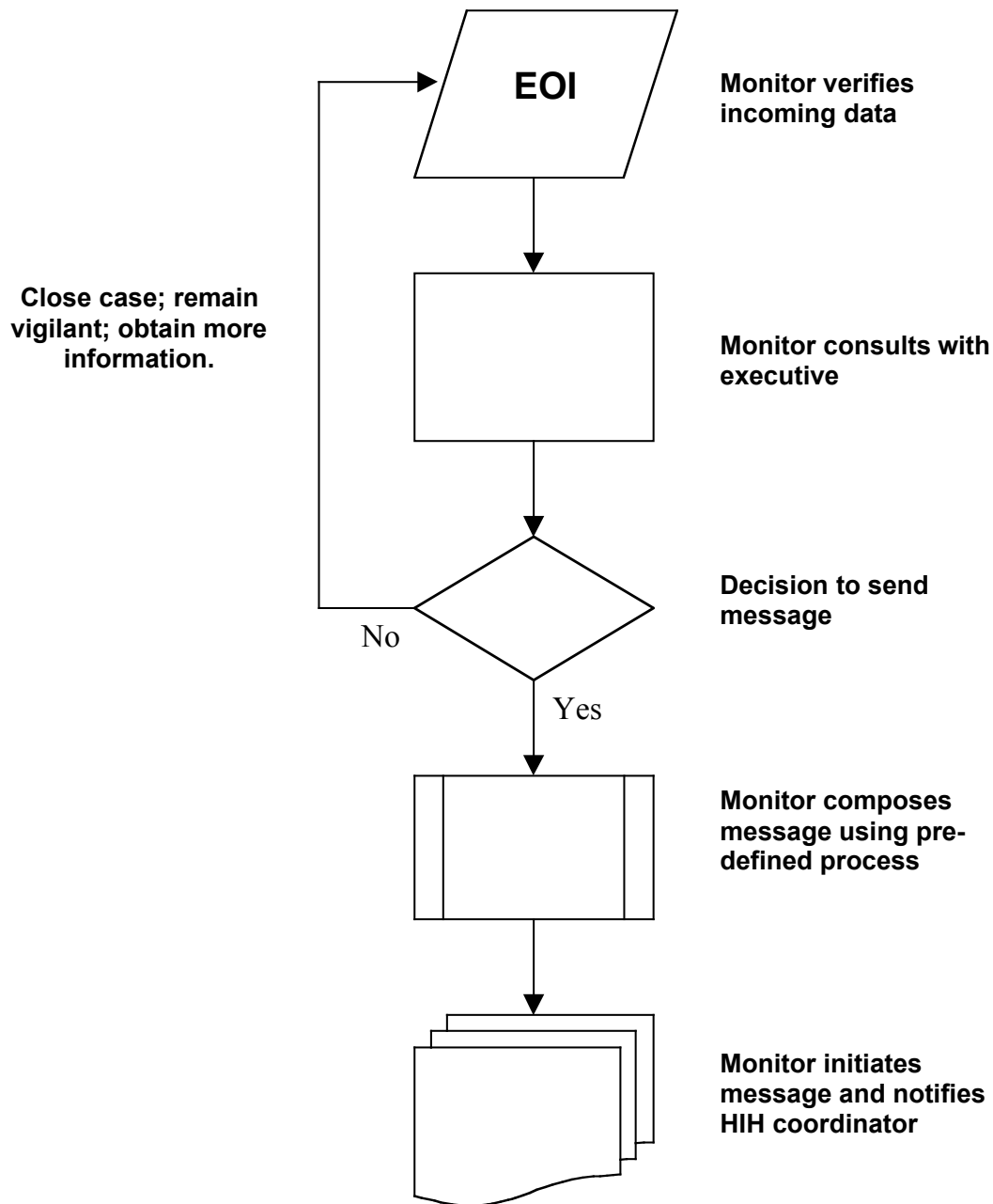


Figure 3: Simplified procedure for issuing warning messages from the HIH

3.1.1 Step 1: Event of interest (EOI)

When a staff member receives information that is potential cause for concern, it is first verified by the staff member and the source, time, and other pertinent details are recorded in the HIH database as an “event of interest” (EOI). See Annex B for guidelines to documenting an EOI.

The HIH database automatically assigns an incident identifier to the entry even if it is eventually decided not to issue an alert message. In this way, all events of interest are assigned unique identifiers for recordkeeping purposes.

In the event an alert is actually issued by the LM-HWS, the incident identifier can be used to collate multiple messages that refer to different aspects of the same incident. For example, if a large earthquake is reported off the coast of Indonesia and the HIH staff member decides it is an event of interest (EOI), then the details are entered into the HIH database and the event is assigned a unique identifier compatible with the CAP <incidents> element.

No other CAP elements are specified until a decision to issue an alert has been made.

If an alert is issued based on the EOI, then the assigned unique identifier serves as a common referent for all subsequent messages based on that event, including messages of varying priorities targeted for different communities, as well as initial alerts and any follow up messages.

The EOI is terminated on a decision by the HIH Executive to “close” the case. When this occurs the unique identifier assigned to the EOI is retired. Subsequent EOI are assigned new unique identifiers compatible with the CAP <incidents> element.

3.1.2 Step 2: Consultation with HIH executive

Having recorded the event of interest (EOI) in the HIH database, the staff member then contacts a member of the HIH executive by telephone.

It is imperative that a current and complete list of telephone numbers of the members of the Executive is maintained and available the HIH for this purpose. The current list of contacts is provided as Annex A to these guidelines. Annex A should undergo regular review and updates to ensure the contact list remains current.

The staff member will provide details of the EOI to the members of the Executive and conduct any follow up inquiry as directed by the Executive.

The members of the Executive will take a decision as to whether to initiate a warning message and any related details pertaining to that message, such as geographic specificity, priority level, special instructions, and so forth.

3.1.3 Step 3: Decision to send message

Having reached a decision, the members of the Executive will provide details to the staff member who will then enter those into the HIH database under the incident identifier established for that EOI:

- Time that a decision was requested of the Executive.
- Executive member(s) with whom the EOI was discussed
- Time that the Executive issued a decision.
- Details of the decision and/or further instructions from the Executive.

3.1.4 Step 4: Message composition

Having entered the details of the Executive's decision into the HIH database, the staff member will then take immediate action based on the details of the decision.

The following points indicate possible scenarios:

- Decision not to issue a warning and close the case (EOI is terminated).
- Decision not to issue a warning but to remain vigilant (EOI remains open).
- Decision not to issue a warning but to obtain more information and report back to the Executive (EOI remains open).

- Decision to issue a low priority warning and to remain vigilant.
- Decision to issue a medium priority warning, to obtain more information and report back to the Executive.
- Decision to issue a high priority warning and to provide continuous updates to the Executive and/or the HIH Coordinator.

If the staff member has been directed to issue a warning then it is important that they follow the pre-defined process for composing messages in conjunction with any steps defined by the CAP interface application. If the staff member does not have the authority to issue a warning message, then they must contact an "Authorized User" immediately to complete this step.

In cases of extreme urgency, the HIH Coordinator may grant to another staff member temporary authority to issue a warning on their behalf. For example, if there are no Authorized Users on-site at the HIH during a critical moment, a staff member may obtain verbal authorization from the Coordinator to issue a warning (provided that the Executive has been consulted and has approved the warning).

See the following sections on "Training" "Activation" for further details regarding Authorized Users and message composition.

The resulting CAP message will be assigned (either automatically or manually) the same unique incident identifier as the EOI file that spawned the decision to issue a warning.

In the case that there is a discrepancy or any uncertainty on the part with regard to message composition (e.g., details of content) then the Authorized User must contact the HIH Coordinator or HIH Executive immediately for advice before issuing the message.

3.1.5 Step 5: Issuing a Message

Having composed the warning message using the CAP interface application, the Authorized User will issue that message immediately by following the appropriate procedures to ensure it is presented to all designated channels (i.e., telephone, VSAT, ADSR, etc.).

The Authorized User will then immediately contact the HIH Coordinator by telephone to report that a message(s) has been issued.

Any known problems or delays must be reported to the HIH Coordinator immediately.

When a message is issued over the LM-HWS the Authorized User is required to complete a post-activation report. See the following section “Post-Activation” for guidelines concerning this requirement.

3.2 Training

It is recommended that an authorization procedure be developed for HIH staff members to qualify them as “Authorized Users” with the authority (and related responsibilities) to compose and issue warning messages over the LM-HWS.

All new LM-HWS personnel should be required to attend a training session provided by the HIH/Sarvodaya. In addition all authorized users should be required to attend regular refresher training to maintain their status. Regular training sessions could be scheduled prior to the cyclone season in November. In addition, authorized users should be required to complete monthly practice sessions composing and initiating messages using the system. To promote compliance, the HIH computers could be designed to log these monthly sessions.

Each initial and refresher training session should include:

- An LM-HWS presentation that explains the importance of the system and how it is intended to operate.
- A detailed description of activation criteria and procedures for the LM-HWS.
- An overview of likely risks and hazards in the communities, histories of disasters, and examples of activation scenarios.
- Training in working with information technology at the HIH.
- Training in interpretation of the data feeds at the HIH.

- Demonstration of LM-HWS activation.
- Hands-on practice in recordkeeping and message composition using both a practice sheet and with the actual software.
- Testing and certification.

Upon completion of the training session, candidates should be asked to sign an “HIH Authorized User” form, which serves as a contract to bind the staff member to the HIH Guidelines. This contract should address a number of matters related to the operational and security dimensions of the HIH:

- Authorized users should agree to be responsible for the security of any passwords or access codes or keys issued to them.
- Authorized users should agree to complete monthly practice sessions on using the system (these could be logged on the HIH computer system).
- Authorized users should agree to attend regular refresher training courses and other professional development as directed by the HIH Coordinator.
- Authorized users should agree to follow established HIH procedures and guidelines for monitoring data feeds and “on call” responsibilities.
- Authorized users should agree to follow established HIH procedures and guidelines for composing warning messages.
- Authorized users should agree to follow established HIH procedures for initiating warning messages.
- Authorized users should agree to disclose all actions taken, communications given and all other forms of information pertinent to the use of the system should they activate it for any reason.

4 Monitoring

The HIH maintains data feeds from a number sources. Duty personnel are responsible for ensuring that these sources are active and to immediately report any problems to the HIH Coordinator.

The HIH will be staffed on a 24/7 basis, with the Coordinator and at least one member of the Executive remaining “on call” at all times.

An active set of data feeds will be maintained at the HIH to identify potential events of interest across a range of hazards. The LM-HWS is intended as an “all-hazards” system and the following list provides a range of events that should be included among the data feeds:

- Hazard
- Tsunami
- Cyclone
- Volcano (ashfall)
- Flooding
- Landslide
- Dam break
- Coastal/marine events
- Fire
- Industrial/radiological
- Civil disturbances

In addition to its data feeds, the HIH is to maintain a current list of contact information of secondary sources that might be helpful to confirm or otherwise obtain further details on any Events of Interest. The HIH Coordinator is responsible for the upkeep of this list and it should be reviewed regularly.

The current list of secondary source contacts is found in Annex C.

The HIH should also maintain one or more incoming telephone lines (“hotlines”) to receive reports from outside agencies or organizations (including local communities that might have observed a hazard event). This number should not be public but instead be made available to those agencies and community groups that are likely to be able to provide advance notice of a hazard event (e.g., Pacific Tsunami Warning Centre, local first responders).

The current hotline telephone number is listed in Annex D.

4.1 Duty Procedures

The HIH should develop a checklist and procedures for duty personnel who are responsible for monitoring the data feeds. This list should include the following items:

- Ensure all communications equipment (incoming/outgoing) is in good working order.
- Establish a procedure for conducting a regular “sweep” of all primary data sources” (perhaps 2-3 times per hour).
- Identify any recordkeeping requirements (equipment out of order, report on data feeds, etc.)
- Establish a procedure for temporary replacement/substitution of duty personnel (e.g., sick days).
- Establish a procedure for off-site monitoring of data feeds (if applicable).
- Establish a procedure for hand-off of duties during shift change.

4.2 Off-duty personnel

Off-duty personnel may be called in to provide support at the HIH in the event a warning message has been issued and a hazard impact is expected. This decision will be at the discretion of the HIH Coordinator.

5 Activation

5.1 Message Priority

When reporting an event of interest (EOI) an authorized user may request the HIH Executive to issue an **Urgent Priority** warning message when one or more of the following threat conditions are present:

- The life or safety of groups, communities or villages is at immediate risk.
- The danger to the community is impending and widespread.
- The potential impact to the community is catastrophic.
Local first responders needs to be informed of critical, life saving information and be advised to activate their local response plans.

The following table contains recommended CAP values for <urgency>, <severity>, and <certainty> elements in an urgent priority message.

| CAP <info> element | Value (recommended) | Interpretation |
|--------------------|---------------------------|---|
| Urgency | “Immediate” or “Expected” | Immediate responsive action should be taken |
| Severity | “Extreme” or “severe” | Hazard presents an extraordinary threat to life or property |
| Certainty | “Observed” or “likely” | The hazard event has occurred or is ongoing (or, > 50%). |

Table 1: CAP values for an urgent priority message

Alternately, an authorized user may request the HIH Executive to issue a **High Priority** warning message when one or more of the following threat conditions are present:

- The life or safety of communities or villages is possibly at risk.
- Neighbouring communities or villages have been issued an urgent priority warning.
- Residents of the community may see/hear/smell (detect) signs of the hazard and may perceive a danger or health risk.
- Local first responders need to be informed of the hazard situation to provide information to community members.
- Local first responders must be advised to standby to activate their local response plans.

The following table contains recommended CAP values for <urgency>, <severity>, and <certainty> elements in a high priority message.

| CAP <info> element | Value (recommended) | Interpretation |
|--------------------|-------------------------------------|---|
| Urgency | “Expected” or “Future” or “Unknown” | Responsive action might need to be taken in near future. |
| Severity | “Severe” or “Moderate” or “Unknown” | Hazard presents a significant threat to life or property. |
| Certainty | “Observed” or “Likely” | The hazard event has occurred or is ongoing (or, > 50%). |

Table 2: CAP values for a high priority message

An authorized user may request the HIH Executive to issue a **Low Priority** warning message when one or more of the following conditions are present:

- The life or safety of a community might be at risk due to a developing hazard.
- A neighbouring community has been issued a high priority warning.
- Residents of the community may see/hear/smell (detect) signs of a hazard or nearby response effort and may be curious.
- Local first responders need to be informed of the hazard situation to provide information to community members.
- Local first responders must be advised to standby for further information.

The following table contains recommended CAP values for <urgency>, <severity>, and <certainty> elements in a low priority message.

| CAP <info> element | Value (recommended) | Interpretation |
|--------------------|-------------------------|--|
| Urgency | “Future” or “Unknown” | Responsive action might need to be taken in near future. |
| Severity | “Moderate” or “Minor” | Hazard presents a minimal threat to life or property. |
| Certainty | “Possible” or “Unknown” | The hazard event is possible but not likely (p < 50%). |

Table 3: CAP values for a low priority message

5.2 Message composition

To minimize error and to maintain consistency, authorized users are to compose warning messages using the standard format and procedure established at the HIH.

All messages issued over the LM-HWS will be compliant with Common Alerting Protocol (CAP version 1.1), as specified in the OASIS Open Source Standards document.¹

CAP standard specifies that alert messages are composed of an <alert> segment with may contain one or more <info> segments, each of which may contain one or more <area> segments.

Warnings issued by the LM-HWS will be multilingual (Tamil, Sinhalese, and English) and may contain multiple area segments.

The following diagram shows a recommended structure for CAP-compliant multilingual messages to be issued by the LM-HWS. Each <alert> will include three <info> segments providing identical information in Tamil (ta), Sinhalese (si) and English (en). Each of the three info segments will contain identical <resource> and <area> segments, translated if necessary.

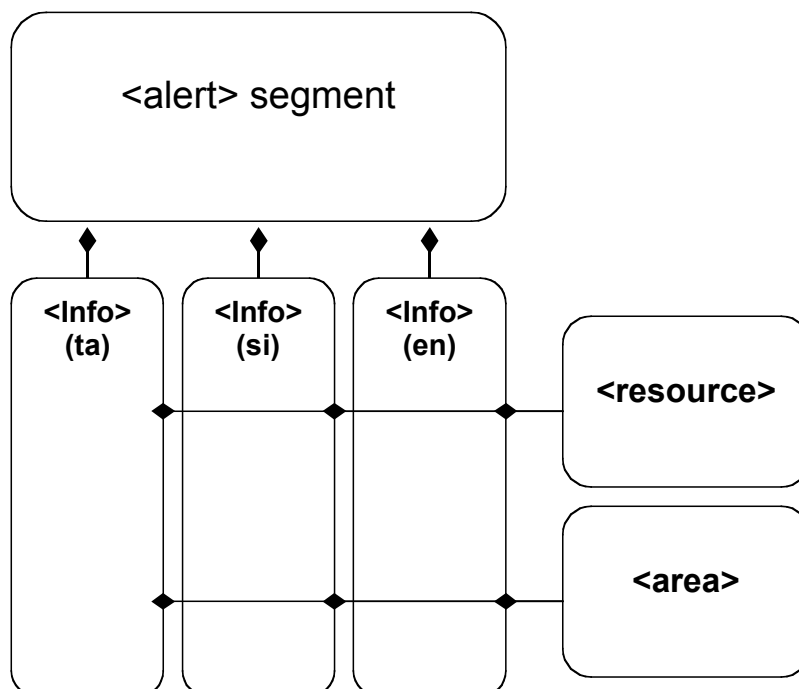


Figure 4: CAP message structure for LM-HWS

¹ <http://www.oasis-open.org/committees/download.php/14759/emergency-CAPv1.1.pdf>

To ensure CAP compliance, all messages should be composed using the CAP interface tool, with the required elements specified in the following tables.

| <Alert> sub-element | Description | Implementation remarks |
|---------------------|---|---|
| <incidents> | Unique identifier of the EOI | This is assigned prior to decision to issue warning and is a common referent for all messages issued with respect to the same EOI. |
| <identifier> | A unique identifier of the message. | Each message has a unique identifier, but different messages can refer to the same <incidents> reference. Automatically assigned by the CAP software |
| <sender> | Identifies the originator of this message. | Should specify HIH as organization and the Authorized User that issued the message. Assigned automatically based on the log-in ID of the Authorized User. |
| <sent> | Date and time the message was transmitted. | Automatically assigned by the CAP software at the moment the message is transmitted. |
| <status> | Code that denotes appropriate handling of the message. | See the section on “Message Status” for further details. |
| <msgType> | Code that denotes the nature of the message | See the section on “Message Type” for further details. |
| <scope> | Code that denotes the intended distribution of the message. | See the section on “Message Scope” for further details. |

Table 4: CAP <alert> sub-elements

| <Info> sub-element | Description | Implementation remarks |
|--------------------|---|--|
| <language> | Code that denotes the language of the info sub-element of the message | Two digit ISO 639-2 codes are used to specify language of the message: ta/si/en |
| <category> | Code that denotes the category of the event referred to by the message. | See the section on “Message Category” for further details. |
| <event> | Text that denotes the type of event. | See the section on “Message Event” for further details. |
| <urgency> | Code that denotes the time to impact of the event. | See the section “Message Priority” for further details. |
| <severity> | Codes that denotes the scale of impact of the event. | See the section “Message Priority” for further details. |
| <certainty> | Code that denotes the probability of the event. | See the section “Message Priority” for further details. |
| <description> | Text to describe the subject of the event. | To be used primarily for relaying complete text of government warnings within a CAP message. Event element should be “Government warning.” |

Table 5: CAP <info> sub-elements

| <Resource> sub-element | Description | Implementation remarks |
|------------------------|--|--|
| <resourceDesc> | Text that describes the type and content of a resource attached to the message such as an audio or image file. | See the section “Message Attachments” for further details. |

Table 6: CAP <resource> sub-element

| <Area> sub-element | Description | Implementation remarks |
|--------------------|---|---|
| <areaDesc> | Text that describes the affected area of the alert message. | See the section “Area Description” for further details. |

Table 7: CAP <area> sub-element

5.2.1 Message Status

CAP has a required sub-element <status> to specify the appropriate handling of an alert message. The CAP standard specifies several values for this sub-element, and the following table describes the recommended implementation for the LM-HWS.

| Value | Implementation remarks |
|------------|--|
| “Actual” | To be used when the message refers to a real event and when all recipients are to take action. |
| “Exercise” | To be used when the message is transmitted as part of a scheduled or unscheduled exercise. An exercise identifier could be added to the optional <note> sub-element in the CAP message. |
| “System” | Not to be used for LM-HWS. |
| “Test” | To be used when testing internal technical parameters of the system. Recipients are to disregard the message. Messages that specify “test” in the <status> element should <u>not</u> be relayed to local first responders. Software filters should be designed to recognize these messages as such and to prevent them from being relayed to local first responders. |
| “Draft” | Refers to templates that can be stored on a HIH database to expedite message composition. Software filters at the HIH should be designed to prevent the transmission of messages that specify “Draft” in the <status> element. |

Table 8: CAP message <status> values

5.2.2 Message Type

CAP has a required sub-element <msgType> to specify the nature of an alert message. The CAP standard specifies several values for this sub-element, and the following table describes the recommended implementation for the LM-HWS.

| Value | Implementation remarks |
|----------|---|
| “Alert” | To be used for initial information only. |
| “Update” | To be used to indicate new information. The message content of an update supersedes that of earlier messages. |
| “Cancel” | To be used to cancel earlier messages. |
| “Ack” | Not to be used for LM-HWS. |
| “Error” | Not to be used for LM-HWS. |

Table 9: CAP message <type> values

Updates and cancellations can specify earlier messages identified in <references> if this optional sub-element is implemented in the system.

The sub-element <references> provides a place for an extended message identifier (in the form *sender, identifier, sent*) to specify earlier messages that might be issued with respect to an EOI.

For example, if a tsunami event were to trigger a low priority message for one region and a high priority message for another region, the <references> sub-element can refer to the extended identifier to ensure the specificity of updates and cancellations.

5.2.3 Message Scope

CAP has a required sub-element <scope> to denote the distribution of an alert message. The CAP standard specifies several values for this sub-element but because the LM-HWS is a closed network only the “Restricted” value should be implemented.

| Value | Implementation remarks |
|--------------|--|
| “Public” | Not to be used. |
| “Restricted” | To be used to specify a closed user group of recipients. Designated local first responders represent this closed user group. |
| “Private” | Not to be used. |

Table 10: CAP message <scope> values

In future, if the LM-HWS becomes integrated with larger systems, the optional <restriction> sub-element can provide addressability to distinguish between different user groups within the network.

5.2.4 Message Category

CAP has a required sub-element <category> to denote the category of the subject event of an alert message. The CAP standard specifies several values for this sub-element, and the following table describes the recommended implementation for the LM-HWS.

| Value | Implementation remarks |
|-------------|---|
| “Geo” | To be used for geophysical hazard events, such as earthquakes, tsunamis, landslides. |
| “Met” | To be used for weather hazard events, such as cyclones, flash floods, lightning. |
| “Safety” | To be used for general emergency and public safety. |
| “Security” | To be used for civil disturbances. |
| “Rescue” | Not to be used. |
| “Fire” | To be used for fire hazard events. |
| “Health” | To be used for medical or health hazard events (e.g., disease outbreak, water contamination). |
| “Env” | To be used for pollution or other environmental hazard events (e.g., air quality). |
| “Transport” | Not to be used. |
| “Infra” | To be used for infrastructure hazard events (e.g., dam failure). |
| “CBRNE” | Not to be used. |
| “Other” | To be used for other events. |

Table 11: CAP message <category> values

The CAP standard specifies that multiple instances may occur within a single <info> block, which means that several values may be used to classify an event.

It is not clear at this point in time as to how important this sub-element will be for the LM-HWS or for information management at the HIH. However, it is strongly recommended that a value for the sub-element be included in all messages sent from the HIH because it is required in the CAP standard.

5.2.5 Message Event

CAP has a required sub-element <event> to denote the subject event of an alert message. The CAP standard does not specify values for this sub-element but the following list provides basic terminology for naming events and suggested <category> for each, including a special event for government warnings.

| Event | Category |
|-----------------------------|----------|
| Boil water warning | Health |
| Child abduction | Other |
| Civil danger | Security |
| Coastal flood | Met |
| Contagious disease outbreak | Health |
| Dam break | Infra |
| Cyclone | Met |
| Earthquake | Geo |
| Flash flood | Met |
| Flood | Met |
| Food contamination warning | Health |
| Government warning | Other |
| Hazardous materials warning | Env |
| High wind | Met |
| Landslide | Geo |
| Missing person | Other |
| Power outage | Infra |
| Problem animal | Other |
| Special weather statement | Met |
| Severe thunderstorm | Met |
| Tornado | Met |
| Tropical storm | Met |
| Tsunami | Geo |
| Volcano | Geo |
| Wildfire | Fire |

Table 12: CAP message <event> values

This list is not intended to be exhaustive. For the sake of consistency and clarity, the HIH should ensure a reasonable degree of standardization for naming of events.

The event “Government warning” should be used when relaying messages from the government of Sri Lanka, with the full text of the warning included in the <description> element of the CAP message.

5.2.6 Message Attachments (Resource)

CAP has a required sub-element <resourceDesc> to refer to additional file(s) with supplemental information related to the <info> element, such as an audio or image file. Multiple occurrences are permitted in CAP (version 1.1).

Messages composed at the HIH will include audio files recorded in Tamil, Sinhalese and English. Audio files will be used principally for the satellite radio component of the network but could be used for telephone or other devices if necessary.

Either of two methods for creating the audio files can be employed:

- A staff member at the HIH composes three audio versions of the message (Tamil, Sinhalese, English) and then reads them into a voice-recording device and saving them as one or more digital files.
- An application automatically converts the CAP message into three audio versions (English, Sinhalese, Tamil) using text-to-voice software, saving them as one or more digital files.

Audio messages will include certain elements set out in the CAP message, effectively matching the text version of any warning message issued by the HIH. Certain CAP sub-elements may not be relevant for audio versions.

How the CAP elements will be scripted may vary depending on which method is used to record the audio files. The following is one example of a script for an urgent priority tsunami warning that is integrated with some of the CAP required elements.

It is important to note that some of these elements may not translate easily using text-to-voice software and may need some additional treatment for the audio version (e.g., date and time in the <sent> element).

Message header:

Your attention please! This is an activation of the Sarvodaya Hazard Warning System. The following emergency <msgType>alert</msgType> may affect your village. This is an <status>actual</status>event. Listen carefully and prepare to take appropriate action based on your village's response plan.

Message content:

At <sent>0800hrs local time on July 1, 2006</sent> the <sender>Sarvodaya Disaster Management Centre </sender> has been informed of a large magnitude earthquake off the coast of Indonesia. This event is <certainty>likely</certainty> to produce a <event>tsunami</event> and presents an <urgency>immediate</urgency> and <severity>extreme</severity> risk for the <areaDesc>village of Gurathwa and the Galle District</areaDesc>.

To repeat: an <urgency>immediate</urgency> <event>tsunami</event> <msgType>alert</msgType> has been issued for the <areaDesc>village of Gurathwa and the Galle District</areaDesc>.

Message trailer:

This message was issued by the Sarvodaya Hazard Warning System. If your area is affected, it is important that you take appropriate action based on your local response plan. Listen to local radio or television for further updates.

Figure 5: Sample script based on CAP elements

Further discussion will need to take place before message scripting, formatting of the audio files, and transport options for the <resource> element can be finalized.

A key concern is whether the resource file is to be included in the CAP message itself <derefUri> or whether it will reside on a server for subsequent retrieval <uri>. See CAP standard, section 3.2.3 <uri> and <derefUri> sub-elements.

5.2.7 Area Description

To the fullest extent possible, messages issued by the HIH should clearly specify the area of impact and CAP has a required sub-element <areaDesc> for this purpose.

For the purpose of the first phase of the LM-HWS this sub-element will be defined according to the selected districts and villages participating in the pilot study.

Geographical specificity is particularly important when multiple areas may have differing levels of priority. Therefore multiple messages should be issued by the HIH when it is determined that the event could have a range of severity values. For example, villages in the direct path of a hazard event may receive urgent priority messages, while neighbouring communities are issued high or low priority messages.

The table on the following page specifies Districts and Villages to be used in specifying the <areaDesc> sub-element for the first phase of the LM-HWS.

Messages may be directed to an entire district (e.g., “Ampara District”) or to a specific village within a district (e.g., “Ampara, Panama North”).

Further geocoding of CAP messages is possible with the <polygon> <circle> and <geocode> sub-elements. The HIH will need to determine if this method is to be implemented in the LM-HWS.

| District | Village |
|-------------|-----------------------|
| Ampara | [District] |
| Ampara | Abeyasinghe Pura |
| Ampara | Panama North |
| Batticalo | [District] |
| Batticalo | Nidavur |
| Batticalo | Palmunnai |
| Batticalo | Periyakallar |
| Batticalo | Saturkondagnya |
| Colombo | [District] |
| Colombo | Moratuwella |
| Colombo | Modara |
| Galle | [District] |
| Galle | Brahamanawattha |
| Galle | Indivinna |
| Galle | Urawatha |
| Galle | Valhengoda |
| Galle | Venamulla |
| Hambantota | [District] |
| Hambantota | Krinda/Modarapallassa |
| Hambantota | Modaragama |
| Hambantota | Samodhagama |
| Hambantota | Samudragama |
| Kalmunai | [District] |
| Kalmunai | Kalmunai II |
| Kalmunai | Oluville |
| Kalmunai | Ulla 1 |
| Kalutara | [District] |
| Kalutara | Diyalagoda |
| Kalutara | Maggona |
| Kalutara | Thalpitiya |
| Jaffna | [District] |
| Jaffna | Munnai |
| Jaffna | Thondamanar |
| Matara | [District] |
| Matara | Kottegoda |
| Matara | Meddhawatha |
| Matara | Mirissa South |
| Matara | Thallala South |
| Matara | Wathegama North |
| Trincomalee | [District] |
| Trincomalee | Thirukadalar |

Table 13: CAP message <areaDesc> values

5.3 *Message Transmission*

Having composed the message, the HIH staff member then issues a warning by transmitting that message over the LM-HWS. Software located at the HIH converts the CAP elements into suitable transport formats and relays them to the appropriate gateways.

In the event of a known failure in transmission, the HIH staff member is to attempt to reach the affected areas by alternate means. A list of alternate telephone numbers should be maintained at the HIH for this purpose.

In some cases, the HIH staff member may need to contact the first responder in a neighbouring village and request that the message be relayed between villages by hand or other means.

5.4 *Repeat Activations*

During an incident the danger level to local villages may change over time. If the danger level begins to increase in any of the following circumstances, additional messages should be issued only after the HIH executive has provided authorization to do so:

- A potential secondary impact to the first event creates new hazards to the affected area or to neighbouring villages.
- If new information comes to light that suggests the situation is more certain, severe, or urgent than initially indicated in a previous message.
- If the affected area must be expanded.

5.5 *All-clear Messages*

It is not recommended that the LM-HWS send “all-clear” messages over the system to the local first responders. Instead, local first responders in consultation with Sarvodaya should develop a local procedure for event termination.

6 Post-Activation

Having successfully issued the message, the authorized user will then immediately contact the HIH Coordinator to confirm the activation and to request further instructions.

The HIH Coordinator will in turn contact the HIH Executive and provide them with a situation report. The HIH Coordinator will also determine if support staff will be needed to handle follow-up activities.

The Authorized User is required to complete an Activation Report following activation of the LM-HWS. The report is signed by the HIH Coordinator and submitted to the HIH Executive. Details of the report should include the following:

- Name of authorized user, position within the HIH
- Name of person in the HIH Executive that authorized the activation.
- Time and date of the activation.
- Details of the activation, including all elements specified in the CAP messages issued (copies of the CAP messages should be attached to the report).
- Details of subsequent activations.

7 Prohibited Practices

There are situations when it is not appropriate to activate the LM-HWS. The HIH Executive will ultimately decide on when to issue a warning message but a number of principles will generally be followed.

The LM-HWS should not be used for:

- Transmission of messages to the general public.
- The transmission of “all clear” messages.
- General information on disaster related services and response plans. This is to be provided in response plans held and maintained by local first responders.
- Any circumstance when life or safety is not threatened.

A process for guarding against system misuse or abuse should be put in place at the HIH. All cases of accidental activation or misuse must be reported immediately to the HIH Coordinator and to the HIH Executive.

Effective training is the most important safeguard against misuse and abuse in the first instance. However, when dealing with a case of misuse by an authorized user, the HIH Coordinator should consider several options depending on the severity of the case:

- Re-training without probation.
- Re-training with probation.
- Suspension of authorized user status.
- Revocation of authorized user status.

8 Testing

The LM-HWS must be tested on a regular basis. The following table presents various testing modes and the CAP <status> values to be used in message composition.

| Live Test | | Silent Test | |
|---|--|--|---|
| Closed simulation with local first responder. | Village-wide simulation with community members involved. | Internal HIH test (no messages transmitted to local first responders). | System interoperability test (no messages transmitted to local first responders). |
| CAP <status> “Exercise” | CAP <status> “Exercise” | CAP <status> “Test” | CAP <status> “Test” |

Live Tests may be scheduled or unscheduled. It is recommended that all village-wide live tests be scheduled.

8.1 Testing Schedule

The HIH will need to determine a schedule of Live and Silent tests for the system.

8.2 Reporting Procedure

The HIH Coordinator will submit a “head-end” report immediately following any test of the system. This report should include details of the test message, reliability of various elements of the system, problems encountered during the test, other observations.

Local first responders, supported by Sarvodaya, should submit a “reception” report immediately following any Live Test of the system. This report should include details of the test message (time received, message details, etc.), reliability of the reception device, problems encountered during the test, and other observations.

Support partners (e.g., Dialog, Worldspace) should be encouraged to submit an “interoperability” report following any Silent Test that involves their network. This report should identify any problems encountered during the test or other relevant observations.

It is recommended that the HIH Coordinator compile results of the head-end, reception, and system interoperability reports into a summary report and recommendations for submission to the HIH Executive within one week of any Live or Silent Test.

Annex A: Contact Information

HIH Executive

HIH Coordinator

Assistant to the Coordinator

HIH Monitors

HIH Support staff

Technical partners and service providers

Annex B: Guidelines for documenting an EOI

1. Incident Identifier: *must be compatible with CAP standard for <incident> element*
2. Staff member ID:
3. Date observed: *dd/mm/yy*
4. Time observed: *hh:mm (24hr, local time)*
5. Event description: *(see “Event” list if necessary)*
6. Location of event: *(country, region, ocean, etc.)*
7. Information source: *website, telephone call, etc.; include all details of the source*
8. Estimated time of arrival (urgency): *Hours? Minutes?*
9. Estimated severity: *Extreme? Severe? Moderate? Minor? Unknown?*
10. Has the Sri Lanka government issued a warning for this event? *Yes/No/Unknown*

 If so, do you have a copy of the complete text of this warning?
11. Have any other governments issued a warning for this event? *Yes/No/Unknown*

 If so, which governments?
12. Have you verified the information with a secondary source? *Yes/No*

 If yes, then indicate the source:
13. Time that the Executive was contacted: *hh:mm (24hr, local)*
14. What are the instructions of the Executive?
 - Close the case
 - Remain vigilant
 - Obtain more information
 - Issue an alert
 Details of the Executive’s instructions:
15. Time that a decision was taken: *hh:mm (24hr, local time)*

Annex C: Secondary sources for confirming Events of Interest

This list must be kept up to date and should be reviewed regularly by the HIH Coordinator.

Last update:

| Event type | Primary contact (name, organization, telephone) | Alternate contact (name, organization, telephone) |
|-------------------------|---|---|
| Tsunami | | |
| Cyclone | | |
| Volcano (ashfall) | | |
| Flooding | | |
| Landslide | | |
| Dam break | | |
| Coastal marine events | | |
| Fire | | |
| Industrial/radiological | | |
| Civil disturbances | | |

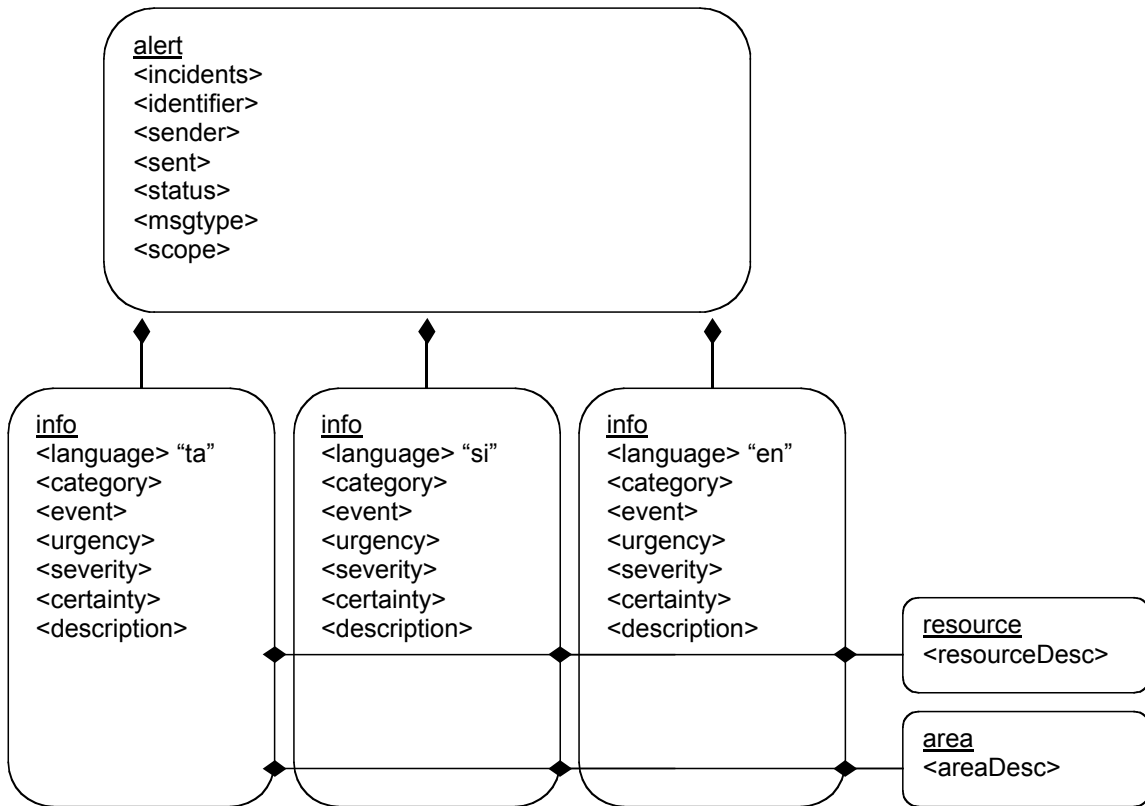
Annex D: Telephone “hotline” number for contacting the HIH

The following number is to be made available to local first responders and other organizations at the discretion of the HIH Coordinator.

The intent of the “hotline” is to provide a telephone link to the HIH for providing advance notice of a hazard event or for other emergency purposes.

HIH hotline: +94 (x)xxx xxx xxx

Annex E: CAP message structure for LM-HWS



Annex F: CAP alert message example

The following is a speculative example of an urgent priority tsunami warning issued using the LM-HWS CAP profile in the form of an XML message.

```
<?xml version = "1.0" encoding = "UTF-8"?>
<alert xmlns = "urn:oasis:names:tc:emergency:cap:1.1">
  <incidents>120321072006</incidents>
  <identifier>HIH0001</identifier>
  <sender>nwaidyanatha@hih.sarvodaya.org</sender>
  <sent>2006-07-21T13:40:01+05:30</sent>
  <status>Actual</status>
  <msgType>Alert</msgType>
  <scope>Restricted</scope>
  <info>
    <language>en</language>
    <category>Geo</category>
    <event>Tsunami</event>
    <urgency>Immediate</urgency>
    <severity>Extreme</severity>
    <certainty>Observed</certainty>
    <description>A large magnitude earthquake off the east coast of
Indonesia occurred at 12:00hrs local time generating a tsunami wave
that is expected to reach the coast of Sri Lanka by 13:30hrs local
time. The tsunami wave presents an immediate and extreme hazard to all
coastal regions of Sri Lanka</description>
    <resource>
      <resourceDesc>audio file (mpg)</resourceDesc>
      <uri>http://www.hih.sarvodaya.org/getalertaudio_en</uri>
    </resource>
    <area>
      <areaDesc>All coastal regions of Sri Lanka</areaDesc>
    </area>
  </info>
</alert>
```
