



Guidelines for Indian Ocean Tsunami Ready (IOTR) Programme

**Indicators, Checklist, National Recognition and Pilot
Implementation Plan**

IOC-UNESCO Indian Ocean Tsunami Information Centre (IOTIC)

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Contents

1. Background	3
2. Tsunami Ready Programme	4
2.1. Introduction	4
2.2. Benefits of Indian Ocean Tsunami Ready Programme	5
2.3. Methodology	5
3. Indian Ocean Tsunami Ready Indicators	6
3.1. Description of Indicators	7
4. Tsunami Ready Recognition	14
4.1. Benefits of Tsunami Ready Recognition	14
4.2. Methodology	15
4.3. Roles and responsibilities of the stakeholders	16
4.4. Tsunami Ready International Recognition	16
4.5. Plan for pilot implementation	17
Annexure	
A. Glossary of Terms	18
B. Check list for Tsunami Ready Indicators at the Community	23

1. Background

Following the 26 December 2004 tsunami, which killed over 230,000 people, displaced more than 1 million people and left a trail of destruction around the coasts of the Indian Ocean, the coastal nations of the Indian Ocean decided to design and implement an early warning system for the region and requested the Intergovernmental Oceanographic Commission (IOC) of UNESCO to form an Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS). This was formally established by Resolution XXIII-12 at the IOC Assembly in Paris, in June 2005 and the secretariat was established to provide administrative support and to coordinate the activities of the ICG/IOTWMS.

After several years of international collaboration and development, facilitated and coordinated by IOC-UNESCO, the IOTWMS became operational on 31st March 2013 with Tsunami Service Providers (TSPs) established by Australia, India and Indonesia providing independent tsunami advisory services to the Member States of the region. The TSPs now provide alerts to all Indian Ocean member states, reaching millions of people who had no access to such warnings way back in 2004.

The International Conference to commemorate the 10th anniversary of the Indian Ocean Tsunami held in Jakarta, Indonesia, 24-25 November 2015 highlighted the outstanding gaps and the challenges for the next ten years of the IOTWMS.

The conference recognized that the future challenge is in building and strengthening the downstream part of the system. Building the coastal communities' knowledge of the tsunami risk will strengthen their understanding and capacity for saving lives, protect their assets and community infrastructure, conserve the coastal environment, and ultimately, enhance the sustainability of the entire IOTWMS. Therefore, strengthening the coastal communities' knowledge and capacity on tsunami preparedness, within the tsunami early warning framework, will create a sustainable mechanism for coastal community resilience to tsunami as well as other coastal hazards. Capacity development for public awareness and preparedness for self-protection should be a continuing programme at the national level.

The 9th session of Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), recognized the adoption of Tsunami Ready programme by the ICG/CARIBE-EWS and that these guidelines are available for other ICGs. The 10th Session of TOWS-WG recommended that all ICGs consider piloting the CARIBE EWS Tsunami Ready guidelines and report back to TOWS-WG XI with a view to develop harmonized consistent global guidelines.

Based on the TOWS-WG recommendation, the Indian Ocean Tsunami Information Centre (IOTIC) conducted a literature review on the Tsunami Ready programme and its implementation in the United States and Caribbean and developed a concept for adaptation in the Indian Ocean. IOTIC introduced the Indian Ocean Tsunami Ready concept at several meetings including the intersessional meeting of Working Group 1 on Tsunami Risk, Community Awareness and Preparedness in Bandung (November 2016), the ICG/IOTWMS Steering Group meeting in Perth (January 2017), the intersessional meeting of Northwest Indian Ocean Working Group in Teheran (February 2017) and the 11th session of the ICG/IOTWMS in Putrajaya (April 2017)

At its 11th session, ICG/IOTWMS decided to pilot CARIBE-EWS Tsunami Ready guidelines and report back to the TOWS-WG-XI. Further, the ICG established a new inter-sessional Task Team on “Capacity Assessment of Tsunami Preparedness (TT-CATP)”, to oversee capacity assessment of tsunami preparedness of IOTWMS Member States, develop guidelines for a Tsunami Ready programme in the Indian Ocean, guide pilot implementation and contribute to development of harmonized consistent global guidelines, a decision that was welcomed by the 29th Session of the IOC Assembly held in Paris, France (June 2017).

As a follow up, the IOTC and the ICG/IOTWMS secretariat organized the inter-sessional meeting of the TT-CATP and a Workshop on Indian Ocean Tsunami Ready in Jakarta (September 2017) which led to the finalization of Guidelines for the Indian Ocean Tsunami Ready (IOTR) programme that included Indicators, Checklists and a Plan for pilot implementation and national recognition. These guidelines were approved by the 12th meeting of the ICG/IOTWMS Steering Group held in Jakarta (September 2017) to be adopted for pilot implementation in select communities with a view to providing feedback to the TOWS-WG.

2. Tsunami Ready Programme

2.1 Introduction

It has been observed that when people at risk receive accurate warnings in a timely manner they can take life-saving actions, reduce losses and speed up response. Through the continuous effort of scientists and emergency management officers there has been substantial improvement in tsunami warnings and timelines by deploying better sensors, accurate models and concurrent multiple modes of dissemination. However, the success of a warning is measured by what actions people take once the respective authorities issue a public warning. Surviving a tsunami depends on the ability of an individual in the hazard zone to recognize warning signals, make correct decisions, and act quickly.

In the case of local tsunami where the waves will arrive within minutes of tsunami generation, communities at risk need to recognize natural warning signs (e.g. a long or strong earthquake, an unusual receding or rise in sea level) and immediately evacuate. In contrast, in the case of distant tsunami where the waves will arrive several hours after tsunami generation, communities at risk will have sufficient time to respond. Communities within the hazard zone should understand the level of risk, receive official warnings and follow the instructions given by authorities to self-protect. In order to achieve this, public awareness and preparedness planning and implementation programmes are necessary. One such programme to be piloted in the Indian Ocean rim countries is the IOTR programme.

The Indian Ocean Tsunami Ready Programme is a community performance-based programme that facilitates tsunami preparedness as an active collaboration of the public (community), community leaders, and national and local emergency management agencies. The main objective of this programme is to improve coastal community preparedness for tsunami emergencies, to minimize the loss of life and property and to ensure structural and systematic approach in building community preparedness. This can be achieved by bringing the ownership of preparedness to the community. This programme is on voluntary basis and entails a bottom-up process where the community takes the initiative to build their own capacity. Through this approach, it is expected that the programme

will ensure ownership that leads to sustainability in the community. This programme provides a structured and systematic approach to community tsunami preparedness through fulfilling a set of best-practice indicators.

2.2 Benefits of Indian Ocean Tsunami Ready (IOTR) Programme

Building capacity of the community through the IOTR Programme will strengthen tsunami preparedness of coastal communities through a structural and systematic approach. Benefits include improved assessments of hazards, risk, inundation, and evacuation; improved early warning systems/warning chain, emergency operations plan, and emergency operations centre; and increased public awareness and understanding of tsunami threats. Tsunami and multi-hazard preparedness will be enhanced via exercises and improved community pre-planning. Notably, the IOTR pilot aligns with the Sendai Framework 2015-2030 targets and priorities for action, specifically minimizing loss of life and property.

2.3 Methodology

The Tsunami Ready Programme starts with advocacy of tsunami hazards affecting communities and the introduction of structured and systematic approach to build capacity in community preparedness based on indicators. The interested community, would then build their level of preparedness to meet each indicator. Activities and actions vary depending on national setting and communities. Capacity building at the community level could be done through collaborative effort of different stakeholders at national and local level. Hence, it is recommended to have close interaction with the corporate sector, non-governmental organisations and media in addition to government bodies in the implementation of the programme.

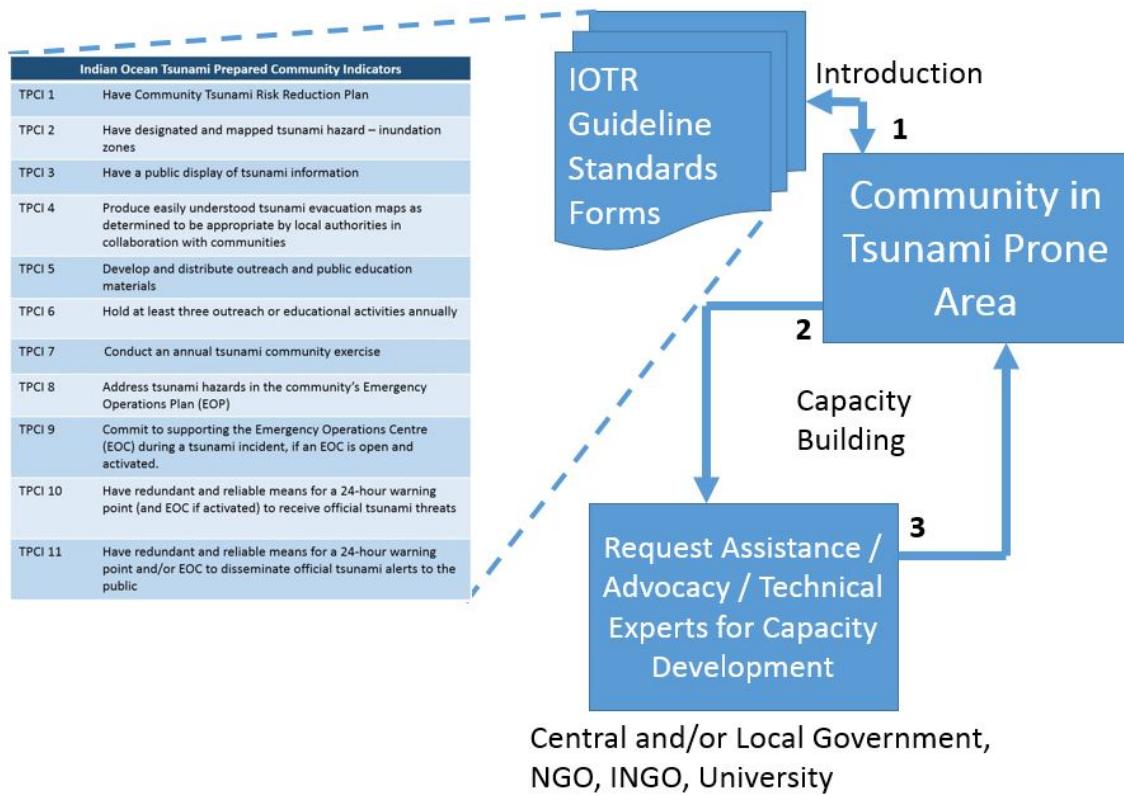


Figure 1: Steps in Indian Ocean Tsunami Ready Programme

3. Indian Ocean Community Tsunami Ready Indicators

The following Indian Ocean **Community Tsunami Ready Indicators (CTRI)** are adapted from the CARIBE-EWS Tsunami Ready indicators and the U.S. TsunamiReady indicators.

COMMUNITY TSUNAMI READY INDICATORS (CTRI)		COMPLETED
CTRI 1	Have Community Tsunami Risk Reduction Plan	
CTRI 2	Have designated and mapped tsunami hazard zones	
CTRI 3	Have a public display of tsunami information	
CTRI 4	Produce easily understood tsunami evacuation maps as determined to be appropriate by local authorities in collaboration with communities	
CTRI 5	Develop and distribute outreach and public education materials	
CTRI 6	Hold at least three outreach or educational activities <u>annually</u>	
CTRI 7	Conduct an annual tsunami community exercise	

CTRI 8	Address tsunami hazards in the community's Emergency Operations Plan (EOP)	
CTRI 9	Commit to support the Emergency Operations Centre (EOC) during a tsunami incident, if an EOC is open and activated.	
CTRI 10	Have redundant and reliable means for a 24-hour warning point (and EOC if activated) <u>to receive</u> official tsunami threats/information	
CTRI 11	Have redundant and reliable means for a 24-hour warning point and/or EOC <u>to disseminate</u> official tsunami alerts to the public	

Description of Indicators

COMMUNITY TSUNAMI READY INDICATORS (CTRI)	
CTRI 1	<p>Have Community Tsunami Risk Reduction Plan</p> <p>The community to have information and knowledge of tsunami hazards affecting their area; understanding of their vulnerability (population, infrastructure, etc.) that can be affected by the hazard; knowledge and capacity to access internal and external resources (information, funding, expertise, etc.) to mitigate the risk. All of this information should be documented and accessible to the stakeholder and regularly reviewed to be updated.</p> <p>The community tsunami risk reduction plan, could be part of a multi-hazard risk reduction plan of the community. This plan should also be linked to the higher level tsunami risk reduction plan (national, province, district, or village).</p> <p>Example: The framework for tsunami risk reduction plan in general incorporates hazard identification, preparedness, effective warning system, mitigation, public outreach etc. It should be prepared in coordination with scientific and disaster management agencies. Once developed the tsunami risk assessment and mitigation plan it should be placed in the public domain to be easily accessible to community.</p>
CTRI 2	<p>Have designated and mapped tsunami hazard zones</p> <p>The community to have designated tsunami hazard zones in the area. The primary source for mapping potential tsunami hazard zones is inundation modelling, which illustrates expected areas to be flooded by a tsunami. If models are unavailable, other acceptable sources include guidance from tsunami experts from technical agencies, universities or consultants. These modelling and mapping efforts should follow national and/or international standards.</p> <p>Tsunami Hazard Zone maps are used by emergency managers for planning purposes and are different from, but related to, evacuation maps described in CTRI-4.</p>

	<p>Note:</p> <ol style="list-style-type: none"> 1. Communities with no modelling, a ‘baseline tsunami zone’ can be used and, where observed, is approved to meet this requirement. Storm surge modelling can also be used for use for this purpose. 2. The community could request external experts (Disaster Management Office, University, Academician, Researcher, and Consultant) to assist in obtaining the tsunami hazard based on inundation modelling. <p>Example:</p> <p>The tsunami hazard zones depict the areas which are prone to tsunami. Develop GIS-based tsunami hazard zone maps and place them in public accessible areas and at mass gathering regions</p>
CTRI 3	<p>Have a public display of tsunami information</p> <p>There should be public display of ‘tsunami information and how to respond’ in the community. The public display should identify/provide the following information:</p> <ol style="list-style-type: none"> 1. Tsunami danger area and/or hazard zones (entering and leaving signs); 2. Evacuation routes; 3. Assembly area; 4. How to respond; 5. Tsunami response education (e.g., go to higher ground). <p>Signage should be implemented according to national and local policies and as deemed appropriate by authorities with possible assistance from partners. Signage should comply with National and/or International standards specifications so that all coastal communities have identical signage. Signage should benefit domestic residents and international visitors.</p> <p>Note:</p> <p>Multi-hazard signs and displays that include the tsunami hazard are adequate for this item and the adoption of tsunami signage standard will provide a basis for a consistent set of signage and symbols nationwide.</p> <p>Example:</p> <p>The most visible way to educate the public about tsunami hazard in the coastal zone is to display sign boards. The tsunami signage will contribute to public awareness of the risk posed by tsunami and better understanding of what should be done by community in response to the event. It is critical that residents and tourists know where the tsunami hazard zones, evacuation routes and safe zones are located along the coast.</p>

CTRI 4	<p>Produce easily understood tsunami evacuation maps as determined to be appropriate by local authorities in collaboration with communities</p> <p>The community to have tsunami evacuation maps which should depict tsunami evacuation routes and assembly areas (see CTRI 2). Maps should be based on tsunami hazard zone mapping, or approved equivalent, and in accordance with the community's Emergency Operations Plan (EOP). Maps should be available in appropriate print and/or digital media. The maps should follow National and/or International standards.</p> <p>Note: Communities should be involved in preparation of evacuation maps to incorporate local knowledge (accessibility/difficulties to reach or to take certain path). The hazard and/or inundation modelling can be taken as basis for preparing evacuation maps which can be obtained from tsunami warning centre or any other scientific organization.</p> <p>For communities that do not have inundation mapping, a 'baseline tsunami hazard zone' can be prepared and approved to meet this guideline.</p> <p>Example: An evacuation map, zone, route sign shows/instructs/ provide direction towards the location which is safer such as higher ground or tsunami shelter</p>	

CTRI 5	<p>Develop and distribute outreach and public education materials</p> <p>The community to have public awareness and education materials information on tsunami hazard in the area. The Materials to include, where appropriate, tsunami evacuation maps, evacuation routes, safety tips, and information about when and how to respond to warnings (including natural warnings for regions with a local tsunami threat). Materials should be customised to meet local information needs and be based on location-specific tsunami threats. All schools within the community requesting recognition should receive a copy of the materials. Distribution should use <u>three or more</u> wide-reaching diverse methods, including, but not limited to:</p> <ul style="list-style-type: none"> - Brochures and flyers distributed at public venues and/or bulk mailed to local residents and businesses - Newspaper inserts - Public utility/service industry bill safety notices - Local faith-based and civic organisation bulletins/mailings - Local radio and television - Billboard, roadside, highway, or educational signs - Historical markers and interpretative signs - Websites/Social media - Bulk email <p>Possible physical locations for distribution of materials include:</p> <ul style="list-style-type: none"> - Schools - Visitor centres and local tourist businesses (e.g., restaurants, bars) - Hotels, motels, and campgrounds - Public libraries - Community centres - Recreation centres, especially for - Marine Recreation centres - Kiosks or information centres (e.g., malls, stores, etc.) - Child care centres - Banks - Utility companies - Health centres - Ports of entry
CTRI 6	<p>Hold at least “three” outreach or educational activities <u>annually</u></p> <p>The community to conduct public outreach and educational activities annually. The aim is to educate community residents, businesses, and visitors, with an emphasis on those in the tsunami hazard zone, on tsunami hazards, evacuation routes, how warning information will be received (including natural warnings for regions with a local tsunami threat), safety, and how to respond. These activities can be multi-hazard as long as they include tsunamis in the content. The number of activities required for a given community to be determined by the</p>

	<p>responsible National Tsunami Ready Board but will generally include three activities, where at least one is a community-wide event.</p> <p>Acceptable activities include, but are not limited to:</p> <ul style="list-style-type: none"> - Leveraging of national, state, and regional campaigns through use of social media. - Multi-hazard events or presentations. - Booths at community events and county fairs. - Community tsunami safety workshops, town hall, or similar public meetings. - Presentations or workshops for faith-based organisations, community or civic groups. - Local public safety campaigns, such as 'Tsunami Preparedness' week/month. - Media workshops - Local business workshops to help them develop response and business continuity plans. - Information for business owners for employee training, outreach, or education that targets high-occupancy businesses in tsunami hazard zones (e.g., hotels, restaurants, fisheries, industrial sites). - Door-to-door safety campaigns targeted to residents and businesses living or working in the community's tsunami hazard zone.
CTRI 7	<p>Conduct an annual tsunami community exercise</p> <p>The community to conduct an annual tsunami exercise. The exercise can focus solely on the tsunami hazard or can be a multi-hazard exercise that also addresses the tsunami hazard. The exercises could be tabletop, functional, or full-scale. The exercise should include a communications test. An effort should be made for the schools within the mapped evacuation zone to participate by conducting an evacuation drill. These exercises can be conducted as part of a multi-hazard drill (for example, combined with a fire, hurricane or volcano exercise).</p> <p>Example:</p> <p>The tsunami hazard would require a simultaneous national, regional and local emergency services response, as well as, power and telecommunications agencies, and even non-government organizations. During tsunami community exercise the gaps can be identified in tsunami warning, preparedness and response.</p> <p>For example IOWave exercise is a biennial tsunami community exercise which is conducted by ICG/IOTWMS and participated by most of the member states taking it to community level in few regions. The similar exercise can be conducted at community level annually to evaluate the level of preparedness and identify gaps in warning chain, if any.</p>
CTRI 8	<p>Address tsunami hazards in the community's Emergency Operations Plan (EOP)</p> <p>The community to have tsunami hazard emergency operation plan in place. This can be part of a multi-hazard emergency operation plan as long as it covers a specific plan for tsunami. If a community-level plan does not exist, other acceptable plans include a countywide EOP or a state or local (province, district, or village) comprehensive emergency management plan.</p>

	<p>To meet this requirement, plans should:</p> <ul style="list-style-type: none"> - Identify tsunami as a hazard and provide a risk assessment - Present tsunami-hazard profile, including source locations, extent of inundation, run-up or height that a wave reaches above sea level, previous tsunami occurrences, and likelihood of future tsunamis - Describe community vulnerability, including areas exposed to inundation and an impact summary of the resident population and specific sub-populations of people expected to be affected (e.g., individuals with access and functional needs, visitors, seasonal workers), businesses, infrastructure, and critical facilities - Detail 24-hour warning point procedures relating to tsunamis - Specify emergency operations centre activation criteria, staffing roles and responsibilities - Specify tsunami criteria and procedures for the activation of the public warning system in its area of responsibility e.g., criteria and procedures for siren activation, cable television override, and/or local activation in accordance with Emergency Alert System (EAS) plans, warning fan-out procedures, and communication to persons with disabilities. - Provide contact information for all jurisdictional agencies and response partners, - Include tsunami evacuation plans with identified hazard zones, roles of community entities/agencies, and protocols for evacuation, including persons with disabilities. - Include procedures for updating information and determining when to advise it is safe for (1) emergency response personnel to enter the evacuated zones, and (2) when it is safe for the public to return to homes and businesses in the evacuated zone(s), e.g., 'All Clear' status has been given - Include procedures for providing security for the evacuated zone(s) - Include procedures for reporting tsunami impacts in the community - Include schools and critical facilities in the emergency operations plan and encourage schools and critical facilities to include tsunamis in their emergency response plans. - Conduct or participate in trainings, i.e training for volunteers, training for village community. Training should be imparted at various levels to ensure coordinated and quick response at all levels - Women participation in volunteer team
CTRI 9	<p>Commit to supporting the Emergency Operations Centre (EOC) during a tsunami incident, if an EOC is open and activated.</p> <p>The community should have means to ensure that the EOC can execute tsunami warning functions (public notifications) based on predetermined guidelines (procedures) related tsunami warning information and/or tsunami incidents.</p> <ul style="list-style-type: none"> - Has 24-hour operations or plan to activate an EOC for tsunami incidents in accordance with the EOP - Has warning reception and dissemination capability - Has the ability and authority to activate the public warning system in its area of responsibility - Maintains the ability to communicate within and across jurisdictions (e.g., other EOC's, incident command posts etc.)

	<ul style="list-style-type: none"> - Maintains established communication links with National Tsunami Warning Centres and/or Disaster Management Office to relay real-time weather and flood reports to support the warning decision making process
CTRI 10	<p>Have redundant and reliable means for a 24-hour warning point (and EOC if activated) to receive official tsunami threats</p> <p>The community should be able to receive 24-hour tsunami threats from National Tsunami Warning Centers (NTWC) and/or Disaster Management Office and/or other official source in the country and/or other officially recognized agencies such as local emergency management agencies. Alerts must be able to reach the 24-hour warning point by <u>at least three</u> of the following:</p> <ul style="list-style-type: none"> - Public Alert Radio Systems, such as Radio Digital Signals (RDS), - National/Territorial warning call out tree system (documented in writing with backup indicated) - Instant messaging programs available via the Internet used by operational personnel to share critical warning decision expertise and other significant information - Amateur Radio transceiver: Potential communications directly to National Tsunami Warning Center or Tsunami Warning Focal Point or Disaster Management Office or Other official source - Alerts provided through a third-party provider: Typically received via phone, email and/or a texting service to a smartphone, tablet, or computer - Local Radio: Emergency Alert System, LP1/LP2 - Active Internet monitoring capability, including social media such as Facebook and Twitter - Direct email from National Tsunami Warning Centre and/or the Disaster Management Office - Direct fax from National Tsunami Warning Centre and/or the Disaster Management Office - Text message or direct pager message National Tsunami Warning Centre and/or the Disaster Management Office - Country Coast Guard (CG) broadcasts: warning point monitoring of CG marine channels - Other communications channel (e.g., active participation in a state-run warning network, two-way, local emergency responder radio network, etc.), please explain.
CTRI 11	<p>Have redundant and reliable means for a 24-hour warning point and/or EOC to disseminate official tsunami alerts to the public</p> <p>The community should be able to disseminate warning to all of its members. Alerts must be able to be disseminated from the 24-hour Warning Point and/or EOC through <u>at least three</u> of the following methods:</p> <ul style="list-style-type: none"> - Country Emergency Alert System (EAS) message initiation and broadcast - Cable television audio/video overrides - Local flood warning systems ideally with no single point of failure - Plan for siren/megaphone notification on emergency vehicles

	<ul style="list-style-type: none"> - Outdoor warning sirens - Other local alert broadcast system - Local pager/texting system - Amateur radio operator network (ham radio) - Telephone mass notification system - Call out tree - Coordinated jurisdiction-wide radio network - For counties, parishes, islands, boroughs, etc., a countywide communications network that ensures the flow of information between all cities and towns within its borders, including acting as the surrogate warning point and/or EOC for communities without those capabilities - Social media usage (Twitter, Facebook, etc.) - Lifeguards on beaches and on patrol - Other, please explain
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All response requirements should recognize that during a local tsunami event, initial response would be performed primarily by at-risk individuals. Individuals in local tsunamis, including emergency personnel, should take personal responsibility to evacuate immediately after recognizing the natural warnings, or environmental cues of a possible or imminent tsunami (e.g., ground shaking from an earthquake, unusual rapid rise or fall in sea level). In a local tsunami scenario, official communications and warnings may be difficult due to infrastructure and telecommunication damage caused by the preceding earthquake, and the limited, short time between tsunami generation and the arrival of the first wave.

4. National Tsunami Ready Recognition

It is advisable for member states to give a national recognition as an appreciation of the efforts of the community in enhancing their level of preparedness through the IOTR Programme upon evaluation and verification. The national recognition is not a certification of readiness of the community. It is to appreciate and acknowledge the community that has built their capacity and implemented measures in accordance to the agreed indicators of the IOTR programme, and that they will continue to maintain and ensure the sustainability of this preparedness level.

4.1 Benefit of Tsunami Ready Recognition

The recognition programme is to motivate the community to initiate, build and maintain their preparedness capacity. The recognition is given for a period of time (e.g. 3-4 years) and can be renewed upon re-verification, evaluation and monitoring. This method is expected to ensure the sustainability of community performance in relation to the IOTR indicators. National tsunami ready recognition will acknowledge the community as an example of best practice. Once a community is formally recognized as a meeting the IOTR indicators, they will have the authorization to use Tsunami Ready signs and logos and will be able to receive press exposure through news release as well as recognition ceremony.

4.2 Methodology

Once all the indicators are fulfilled by the community, they can formally request to be recognized as a tsunami ready community. A national board is required to give the recognition in accordance with the process outlined in figure 2.

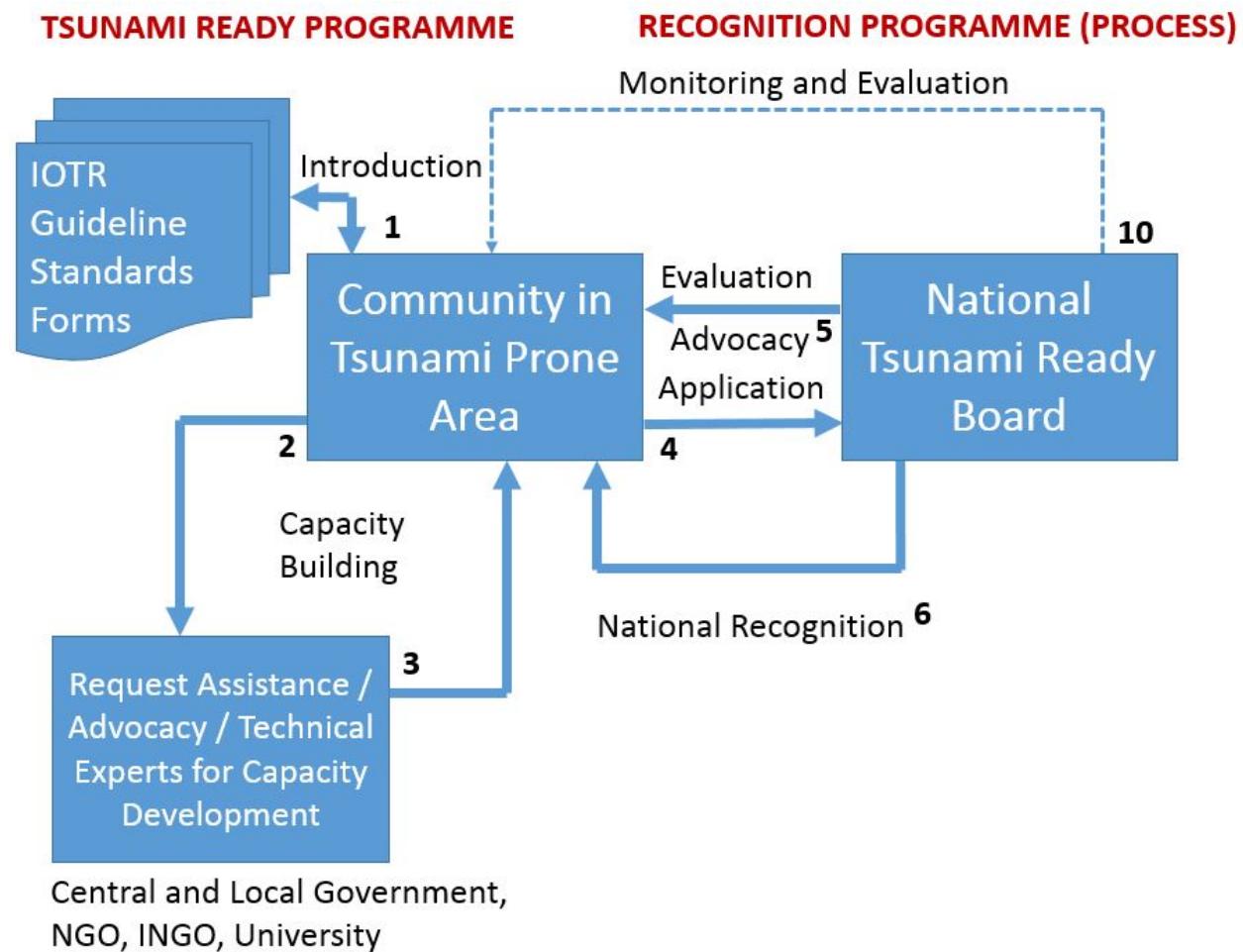


Figure 2: Recognition process

It is advisable for the member states to have a tsunami ready national board for assessing and supporting community capacity building based on existing in-country mechanisms . The National Tsunami Ready Board could be comprised of, but not limited to the following stakeholders:

- Disaster Management Organization
- Tsunami Warning Centre
- Tsunami National Contact of the ICG/IOTWMS
- National Organization or NGO on CBDRM
- National Committee of UNESCO and/or IOC-UNESCO

4.3 Roles and responsibilities of stakeholders:

At local level:

- Disaster Management Office: Advocate, supervise, implement and manage the Tsunami Ready Programme within the area. This is done in cooperation with other stakeholders (NGO, CSO, Universities, Local Meteorology Service, etc.)
- Meteorological Service (if any): Advocate, support, and facilitate tsunami ready programme (expert advice, training, exercising, education)
- Tsunami Ready Community: Work with their local Disaster Management Office and stakeholders (NGO, INGO, Universities) throughout the Tsunami Ready Capacity development and recognition process.

At National level:

- National Disaster Management Office: Advocate, supervise, and Support activities on Tsunami Ready programme through National Tsunami Programme; Facilitate the National Tsunami Ready Board; Manage resources for the Tsunami Ready Programme; Direct and oversee service improvements to the Tsunami Ready Programme;
- The National Disaster Management Office should provide necessary support and assistance to State/Province Disaster Management Offices through National Tsunami Ready Board such as inter-state arrangements of bordering states/provinces for sharing of resources. It should also macro-manage national tsunami emergency policy to incorporate Tsunami Ready programme; Ensure adequate resources such as Tsunami Ready recognition signs, stickers, brochures etc and oversee national Tsunami Ready database.
- Tsunami Warning Centre: Advocate, support, and facilitate tsunami ready programme (expert advice, training, exercising, education) by formulating tsunami risk reduction plan, using scientific procedures for risk assessment, preparing GIS based tsunami hazard zone maps, evacuation maps etc., using their inundation modelling, if it exists at warning centre or else in collaboration with other scientific organisations.
- National Tsunami Ready Board: Review, advocate, approve tsunami recognition request. Regularly monitor and evaluate approved tsunami ready community. Recommend tsunami ready community for regional recognition. Responsible for general oversight of the national Tsunami Ready Programme. Maintain consistency of the Tsunami Ready guidelines. Review proposed tsunami ready application. Monitor and evaluate existing Tsunami Ready community. Review existing and proposed changes to the Tsunami Ready Guidelines and publish updates as needed. Verification of information (site visit, video teleconference, webinar etc.)

4.4 Tsunami Ready International Recognition

Currently the IOTR programme is planned to be implemented on pilot basis in selected communities based on their existing preparedness initiatives that map with IOTR indicators. Initially the recognition will be at national level only during this pilot implementation of the programme. The National Tsunami Ready Board will designate the respective community as Tsunami Ready when the indicators are met. However, to implement the same at international level and bring the community

international recognition, ICG/IOTWMS will co-ordinate with TOWS-WG and IOC to the guidelines for international recognition.

4.5 Plan for pilot implementation

The following steps have been agreed for pilot implementation of IOTR in selected communities

- IOC Circular Letter (September 2017) in preparation for IOTC-BMKG IO-CAP training on Tsunami Emergency Maps Plans and Procedures TEMPP-1
- Identify Communities for pilot implementation
- On-ground verification of IOTR indicators in selected community by the Disaster Management Organisation (DMOs) (October 2017)
- IO-CAP training TEMPP-1 (November 2017)
- Feedback to the TOWS-WG (February 2018) for recommendations on harmonized guidelines
- Test IOTR indicators in pilot communities in IOWave18 (September 2018)
- IO-CAP training TEMPP 2 (2018)

The following criteria may be used for identifying pilot communities for IOTR:

- Existing in-country community preparedness initiatives that map with IOTR indicators
- Existing National/Provincial/Other support activities for community preparedness
- Commitment from the DMO and selected community to undertake piloting of IOTR
- Readiness of the DMO for on-ground verification of IOTR indicators in selected community and provide feedback during TEMPP Workshop (November 2017)
- Readiness of the DMO and the selected community to test IOTR Indicators during IOWave18 (September 2018) and provide feedback during the post-IOWave18 workshop
- Existing recognition programmes, if any (Hotels, Schools, etc)

These guidelines will be revised from time to time based on the experience gained from piloting, recommendations of ICG/IOTWMS and the guidance from TOWS-WG for broader adoption in the Indian Ocean.

Annex A: Glossary of terms

TERM	DEFINITION
24 Hour Warning Point (WP)	A communication facility at a national or local level, operating 24 hours a day, which has the capability to receive alerts and warnings, plus has the authority and ability to activate the public warning systems in its area of responsibility.
Boards (National)	The National Tsunami Recognition Programme Board should comprise of: <ul style="list-style-type: none"> • Disaster Management Organisation (Lead the National Tsunami Ready Programme) • National Tsunami Warning Centre • Tsunami National Contact • National Organization or NGO on CBDRM • Community Representatives (Non-Voting Member) This Board shall be convened when nomination is presented on a phased approach, comprised of individual communities over a specific period.
Recognized Community	A national/territorial/local government/village entity that has the authority and ability to adopt the recognition guidelines within its jurisdiction.
The term 'local government' means	A county, parish, borough, municipality, city, town, township, local public authority, indigenous groups, intrastate district, council of governments, regional or interstate government entity, or agency or instrumentality of a local government.
The term 'facility' for a community includes but is not limited to	Universities, colleges, military installations, national/local parks, power plants/utilities, major transportation centers (i.e., airports, harbors, ports, railroad stations and other large transit complexes), theme parks/entertainment complexes, corporate business complexes, factories and large event venues (i.e., stadiums, arenas, race tracks, convention centers and other venues that temporarily host large gatherings of people).
Communications/Dispatch Centre	Agency or interagency dispatch centers, emergency call centers, emergency control or command dispatch centres, or other facility and staff who handle emergency calls from the public and communication with emergency management/response personnel. This centre may act as a 24-hour warning point.

TERM	DEFINITION
Critical Facilities	<p>A critical facility provides services and functions essential to a community, especially during and after a tsunami. Examples of critical facilities requiring special consideration include:</p> <ul style="list-style-type: none"> • Police stations, fire stations, critical vehicle and equipment storage facilities, and emergency operations centers needed for tsunami response activities before, during, and after a tsunami • Medical facilities, including hospitals, nursing homes, blood banks, and health care facilities (including those storing vital medical records) likely to have occupants who may not be sufficiently mobile to avoid injury or death during a tsunami • Schools and day care centers, especially if designated as shelters or evacuation centers • Power generating stations and other public and private utility facilities vital to maintaining or restoring normal services to tsunami-hit areas • Drinking water and wastewater treatment plants • Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials
Emergency Operations Center (EOC)	<p>The physical location at which the coordination of information and resources to support incident management (on-scene operations) activities normally takes place. An EOC may be a temporary facility, a permanently established facility or located at a higher level of organisation within a jurisdiction. EOCs may be organised by major functional disciplines (e.g., fire, law enforcement, medical services), by jurisdiction (e.g., national, territorial, local), or by some combination thereof.</p>
Distant Tsunami (also referred to as a tele-tsunami)	<p>A tsunami originating from a faraway source, generally more than 1,000 km/621 miles or 3 or more hours tsunami travel time from its source to the area affected. What may be a distant tsunami in one location can be a local tsunami for another location. A distant tsunami may also be referred to as a ‘far-field’ tsunami hazard. The most common distant threats are from dangerous and unpredictable currents resulting in possible significant harbor and shoreline damage.</p>
Emergency Operations Plan (EOP)	<p>A document maintained by various jurisdictional levels setting procedures for responding to a wide variety of potential hazards. It should include the following:</p> <ol style="list-style-type: none"> a. Describe how people and property will be protected

TERM	DEFINITION
	<p>b. Detail who is responsible for carrying out specific actions</p> <p>c. Identify the personnel, equipment, facilities, supplies, and other resources available</p> <p>d. Outline how all actions will be coordinated</p>
Emergency Management/Response Personnel	Includes national, territorial and local governments, nongovernmental organisations (NGOs), private sector organisations, critical infrastructure owners and operators, and all other organisations and individuals who assume an emergency management role.
Incident	An occurrence, natural or manmade, that requires a response to protect life or property. For example, incidents can include major disasters, emergencies, terrorist attacks, terrorist threats, civil unrest, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, tsunamis, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.
Inundation	The horizontal distance inland that a tsunami penetrates, generally measured perpendicularly to the shoreline.
Local Tsunami	A tsunami generated from a nearby source with less than 1-hour tsunami travel time from its source to the area affected. What may be a local tsunami in one location can be a regional or distant tsunami for another location. A local tsunami may also be referred to as a ‘near-field’ tsunami hazard. A local tsunami includes tsunamigenic influences due to tectonics in the source zone such as uplift, subsidence, landslides, and strong shaking. It is the focus of major destruction.
Regional Tsunami	A tsunami generated from a regional source, generally between 100 km/62 miles and 1,000 km/621 miles away or between 1 and 3 hours tsunami travel time from its source to the area impacted. What may be a regional tsunami in one location can be a local tsunami for another location. Regional tsunamis also occasionally have very limited and localised effects outside the region. In comparison with a local tsunami, it gives a little more time for authorities to respond than in the case of local earthquakes.
Tsunami	A tsunami is a series of waves that can cause dangerous fluctuations of water along shorelines, and are generated by earthquakes, volcanic eruptions, or landslides that cause a large scale and rapid

TERM	DEFINITION
	displacement of the water. Tsunamis can last minutes, hours, or even days. Tsunami is a Japanese word meaning harbor wave. Tsunamis are often incorrectly called tidal waves; they are not related to the daily ocean tides.
Tsunami Evacuation Map	A graphical representation of coastal areas that outlines the hazard zones and designates limits beyond which people must be evacuated to avoid harm from tsunami waves. Evacuation routes and assembly areas are generally designated to ensure efficient movement of people out of the evacuation area and to areas of safety. Tsunami evacuation maps should be based on tsunami inundation model outputs or the best available science.
Tsunami Evacuation Zone	Evacuation zones are much larger in surface area than hazard/inundation zones. There is a margin of error in estimation of the hazard/inundation zone. Some areas may not be flooded by tsunami activity but those areas may be isolated by floodwaters. This essentially cuts these areas off from other areas. As such, people in those areas are requested to evacuate to prevent them from requiring rescue by first responders
Tsunami Hazard Zone / Tsunami Inundation Zone)	The area expected to be flooded or inundated by water in coastal areas. Hazard is synonymous with inundation in this sense, even though there are instances where simple inundation (flooding) may not necessarily be hazardous.
Tsunami Information Centres	Centres which provide education, outreach, technical and capacity building assistance to Member States and public in preventing, preparing, and mitigating measures for tsunamis. Among other activities, the centers manage post event performance surveys, serve as a resource for the development, publication, and distribution of tsunami education and preparedness materials and information on tsunami occurrences, and may support risk assessment and mitigation activities.
Tsunami Service Provider (TSP)	Centre that monitors seismic and sea level activity and issue timely tsunami threat information within an ICG framework to National Tsunami Warning Centres/Tsunami Warning Focal Points and other TSPs operating within an ocean basin. The NTWCs/TWFPs may use these products to develop and issue tsunami warning for their countries. TSPs may also issue public messages for an ocean basin and

TERM	DEFINITION
	act as National Tsunami Warning Centres providing tsunami warnings for their own countries.
Tsunami Source	Point or area of tsunami origin, usually the site of an earthquake, volcanic eruption, or landslide causing a large scale and rapid displacement of water resulting in a tsunami. A comet or meteorite affecting the ocean may also be considered a tsunami source.
Tsunami Warning Centre	Facilities that have responsibility to detect, forecast, and issue tsunami alerts.

Annex B. Check list for Tsunami Ready Indicators at the Community

ICG/IOTWMS – IOTC

**Indian Ocean Tsunami Ready Programme
and National Recognition of Tsunami
Prepared Community**



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission



Indian Ocean
Tsunami Information
Centre

National Logo

Community Contact Information

County/Parish/City/Town		Country		Population Total/Evacuation Zone	
Primary Point of Contact		Secondary Point of Contact			
Name		Name			
Office		Office			
Title		Title			
Mailing Address		Mailing Address			
City		City			
State, ZIP		State, ZIP			
Phone		Phone			
email		email			

Community Tsunami Preparedness Indicators (PI)

CTRI 1	<input type="checkbox"/> Community Tsunami Risk Reduction plan.	<input type="checkbox"/> Verified
CTRI 2	<input type="checkbox"/> Designate and map tsunami hazard zones.	<input type="checkbox"/> Verified
CTRI 3	<input type="checkbox"/> Public display of tsunami information and response that identifies: tsunami danger area and/or hazard zone, evacuation routes, and assembly area; and provides tsunami response education (go to high ground).	<input type="checkbox"/> Verified

<input type="checkbox"/> Tsunami hazard zone signs	<input type="checkbox"/> Entering/leaving tsunami hazard zone signs	<input type="checkbox"/> Evacuation routes signs
<input type="checkbox"/> Assembly areas signs	<input type="checkbox"/> Tsunami response education signs	
<input type="checkbox"/> How to response		

Verification Team Notes

Please do not write in shaded areas.

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Community Tsunami Preparedness Indicators (PI)		
CTRI 4	Produce easily understood tsunami evacuation maps as determined to be appropriate by local authorities.	<input type="checkbox"/> Verified
<input type="checkbox"/> Print <input type="checkbox"/> Digital media <input type="checkbox"/> Other		
CTRI 5	Develop and distribute outreach and public education materials. Distribution should use <u>three or more</u> wide-reaching diverse methods.	<input type="checkbox"/> Verified
<input type="checkbox"/> Brochures/fliers distributed at public venues	<input type="checkbox"/> Websites/Social media	
<input type="checkbox"/> Local faith-based and civic organization bulletins/mailings	<input type="checkbox"/> Billboard, roadside, highway, or educational signs	
<input type="checkbox"/> Local radio and television	<input type="checkbox"/> Public utility/service industry bill safety notices	
<input type="checkbox"/> Bulk email	<input type="checkbox"/> Historical markers and interpretive signs	
<input type="checkbox"/> Newspaper Inserts	<input type="checkbox"/> Other _____	
Area of Distributions		
<input type="checkbox"/> Schools	<input type="checkbox"/> Community Centres	
<input type="checkbox"/> Visitor Centre and Local Tourist Business e.q. restaurant, bars	<input type="checkbox"/> Child Care Centres	
<input type="checkbox"/> Hotels, motels. And campgrounds	<input type="checkbox"/> Banks	
<input type="checkbox"/> Marine Recreation Centres	<input type="checkbox"/> Health Centres	
<input type="checkbox"/> Recreation Centres	<input type="checkbox"/> Port of Entrys	
<input type="checkbox"/> Information Centres	<input type="checkbox"/> Utilities Companies	
<input type="checkbox"/> Public Libraries	<input type="checkbox"/> Others	
CTRI 6	Annually hold at least three tsunami outreach or education activities.	<input type="checkbox"/> Verified
<input type="checkbox"/> Leverage of national, state, or regional campaigns through use of social media		
<input type="checkbox"/> Multi-hazard events or presentations		
<input type="checkbox"/> Booth at community events and/or county fairs		
<input type="checkbox"/> Community tsunami safety workshops, town hall, or similar public/private meetings		

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<input type="checkbox"/> Media workshops <input type="checkbox"/> Door to door safety campaigns targeted to people leaving or working in the tsunami hazard zone <input type="checkbox"/> Other			
CTRI 7	Conduct an annual tsunami community exercise. <input style="float: right;" type="checkbox"/> Verified		
<input type="checkbox"/> Tabletop exercise <input type="checkbox"/> Functional exercise Full- <input type="checkbox"/> scale exercise			
Verification Team/Renewal Notes			
Response Guidelines			
CTRI 8	Address tsunami hazards in the community's emergency operations plan (EOP). <input style="float: right;" type="checkbox"/> Verified		
<input type="checkbox"/> Identify tsunami as a hazard and provides risk assessment			
<input type="checkbox"/> Present tsunami-hazard profile, including source locations, extend of inundation, run-up, previous or future tsunamis			
<input type="checkbox"/> Describe community vulnerability			
<input type="checkbox"/> Details 24-hour warning point procedures			
<input type="checkbox"/> Specify emergency operations center (EOC) activation criteria			
<input type="checkbox"/> Specify tsunami criteria and procedures for the activation of the public warning system			
<input type="checkbox"/> Provide contact information for all jurisdictional agencies and response partners			
<input type="checkbox"/> Include evacuation plans for tsunamis, roles of community entities/agencies, maps and protocols			
<input type="checkbox"/> Include procedures for updating information and determine when evacuated zones are safe			
<input type="checkbox"/> Include procedures for providing security for the evacuated zone(s)			

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<input type="checkbox"/> Include procedures for reporting tsunami impacts in the community	
<input type="checkbox"/> Include schools and critical facilities in the emergency operations plan	
CTRI 9 Commit to supporting the emergency operations center (EOC) during tsunami incidents if an EOC is opened and activated.	<input type="checkbox"/> Verified
<input type="checkbox"/> Has 24-hour operations or plan to activate an EOC for tsunami incidents	
<input type="checkbox"/> Has warning reception and dissemination capability	
<input type="checkbox"/> Has ability and authority to activate the public warning system in its area of responsibility	
<input type="checkbox"/> Maintains the ability to communicate within and across jurisdictions	
Verification Team/Renewal Notes	

CTRI 10 Have redundant and reliable means for a 24-hour warning point (and EOC if activated) <u>to receive</u> official tsunami threats: at least three.	<input type="checkbox"/> Verified
<input type="checkbox"/> Public Alert Radio Systems (RDS, NWR, etc)	<input type="checkbox"/> Local radio: Emergency Alert System, LP1/LP2
<input type="checkbox"/> National/Territorial warning call out tree system	<input type="checkbox"/> Active Internet monitoring capability
<input type="checkbox"/> Instant messaging programs available via Internet	<input type="checkbox"/> Direct email from National Tsunami Warning Center or Tsunami Warning Focal Point or Disaster management Office or Other official source
<input type="checkbox"/> Amateur Radio transceiver: Potential communications directly to National Tsunami Warning Center or Tsunami Warning Focal Point or Disaster Management Office or Other official source	<input type="checkbox"/> Direct fax from National Tsunami Warning Center or Tsunami Warning Focal Point or Disaster management Office or Other official source

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<input type="checkbox"/> Alerts provided through a third-party provider: Typically received via phone, email and/or a texting service to a smartphone, tablet, or computer	<input type="checkbox"/> Text message or direct pager from from National Tsunami Warning Center or Tsunami Warning Focal Point or Disaster management Office or Other official source
<input type="checkbox"/> Amateur radio transceiver	<input type="checkbox"/> Coast Guard (CG) broadcasts
<input type="checkbox"/> Third-party alert provider	<input type="checkbox"/> Other

CTRI 11	Have redundant and reliable means for 24-hour warning point and/or EOC to <u>disseminate</u> official tsunami alerts to the public: at least three.	<input type="checkbox"/> Verified
	<input type="checkbox"/> EAS message initiation and broadcast	<input type="checkbox"/> Amateur radio operator network (ham radio)
	<input type="checkbox"/> Cable TV audio/video overrides	<input type="checkbox"/> Telephone mass notification system
	<input type="checkbox"/> Local flood warning system	<input type="checkbox"/> Call out tree
	<input type="checkbox"/> Plan for siren/megaphones on emergency vehicles	<input type="checkbox"/> Coordinated jurisdiction-wide radio network
	<input type="checkbox"/> Outdoor warning siren(s)	<input type="checkbox"/> Countywide communications network
	<input type="checkbox"/> Local alert broadcast system	<input type="checkbox"/> Social media (Twitter, Facebook)
	<input type="checkbox"/> Local pager/texting system	<input type="checkbox"/> Lifeguards on beaches and on patrol
	<input type="checkbox"/> Other	

Verification Team/Renewal
Notes

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Signature of Community Representatives			
Office Name			
Application Submitted by (name of applicant)		Title	
Signature		Date	
Authority Receiving Application (print name)		Date Received	
Verification Team Signatures			
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	