1. **INTRODUCTION**

Dr Jan Sopaheluwanak, Chair of the ICG/IOTWS, welcomed the members of the Steering Group. He noted that the IOTWS is about to enter a new phase, with the current transition phase scheduled to end at the ICG/IOTWS-VIII meeting in May 2011. Dr Sopaheluwanak summarised the activities and achievements of the ICG during the intersessional period, including work towards the global harmonisation of the regional tsunami warning systems. In spite of all the progress, he identified eight main challenges faced by the ICG:

1) Completion of the detection systems, including assessment of the role of tsunami meter buoys for countries like Indonesia
2) Development of Standard Operating Procedures (SOP) for tsunami warning
3) Downstream community preparedness still needs attention, as demonstrated by the Mentawai earthquake and tsunami in October 2010.
4) Consolidation of the new working group structure and harmonisation with the other ICGs. Dr Sopaheluwanak took the opportunity to thank all former working group chairs for their contributions to the development of the IOTWS.
New Terms of Reference for the Steering Group with the changes in the Working Group structure following the ICG/IOTWS-VII meeting, including new Working Group Chairs

A Medium Term Strategy is required for the IOTWS

The RIMES issue needs to be addressed and the ICG needs to establish if the requirements for RTWPs are being met

New ICG Officers to be elected at the ICG-VIII meeting

1.1 Agenda

The Steering Group reviewed the meeting agenda. An additional agenda item was requested for discussion of ‘Progress and Issues’ with specific mention of the 25 October 2010 Mentawai earthquake and tsunami. The modified agenda was adopted and is included as Annex 1.

2. SECRETARIAT REPORT

Mr Tony Elliott (ICG/IOTWS Secretariat) provided a report on the activities of the ICG/IOTWS Secretariat since the last Steering Group meeting in December 2009. He noted that 2010 had been a very busy year for the Secretariat. Two SOP workshops were organised and conducted in Myanmar and Malaysia (Regional) as part of the ongoing UNESCAP Multi Donor Voluntary Trust Fund project, and a manual on the development of SOPs is being prepared with the assistance of a consultant. Two Preparedness and Awareness workshops were held in Pakistan and Iran as part of the Awareness of Makran Tsunami Hazards project, also funded by the UNESCAP Multi Donor Voluntary Trust Fund. A field workshop was also held in Iran in October 2010.

The Secretariat was involved in a number of projects for the IO Consortium in 2010. In Mozambique there was a kick-off meeting followed by a workshop on tsunami risk assessment and a workshop on inundation modelling. SeiscomP3 was installed and training was provided to the operators. In Comoros there was an inundation modelling workshop, a tide gauge was installed and an SOP workshop was conducted. In Tanzania there was a Regional SOP workshop for 9 East African countries, funded partly by the IO Consortium and partly from IOC Regular Programme budget. Inundation modelling training was also conducted as part of the IO Consortium project.

Mr Elliott represents the IOC in the inter-agency Task Force for the UNESCAP Multi Donor Voluntary Trust Fund, attended two TOWS-WG meetings, and represented IOC on the evaluation team for the GITEWS project in Indonesia. The Secretariat also provided support for a number of participants to the IO Modelling Symposium held in Fremantle, Australia, in October 2010. The Secretariat has provided advice and support to the establishment of a 2 year project in Oman to build a national tsunami warning system. As part of this project, Dr Fauzi from Indonesia has been recruited by IOC to hold a post in Oman for two years. Looking ahead, there is a busy program for the Secretariat with the transition to the RTWP service in 2011, along with the work plans of the other Working Groups.

Mr Elliott informed the Steering Group of the present staffing arrangements. There are currently 1.5 staff at the ICG Secretariat in Perth, and later this year both posts will be advertised as two fixed term, full time posts. There is currently good administration support available in the IOC Paris headquarters, but this is secured only until the end of 2011. In the IOC Paris office, the Head of Tsunami Unit, Dr Peter Koltermann, has now retired and Mr Bernardo Aliaga is currently Head of Tsunami Unit ad interim. Mr Uli Wolf has returned to
the Tsunami Unit and Mr Masahiro Yamamoto will be leaving in May 2011. The Tsunami Unit is still predominantly funded from extrabudgetary sources.

Mr Rick Bailey requested the Secretariat to involve the Working Groups more in the SOP projects. Mr Elliott noted that the ICGs would be asked to review the SOP manual currently in preparation.

The Chair requested the Secretariat to make an inventory of the documents and publications produced so far by the ICG/IOTWS. Although most documents are already available on the IOC website, it is difficult to search for them. The Chair also recommended that the ICG publish a ‘reflection’ document outlining the history of the IOTWS and the way forward. It should contain detailed human interest stories as well as the technical background, and share knowledge and experiences from the past 5 years. Target the ICG/IOTWS-IX in 2012 for release.

**ACTION:** Secretariat to prepare an inventory of documents and publications produced by the ICG/IOTWS

**RECOMMENDATION TO ICG:** Prepare a document reflecting the history of the IOTWS from the users’ perspective. Target ICG/IOTWS-IX for release.

**2a) Progress and Issues: Mentawai as a highlighted issue**

The Steering Group discussed the progress and issues facing the IOTWS in the light of the Mentawai earthquake and tsunami on 25 October 2010. This event showed that although the technical warning system is operating at a national level, there are still problems getting warning messages to people at risk, especially when they are close to the earthquake epicentre.

The Mentawai event was a ‘worst case scenario’ in that there was no information infrastructure (limited electricity for television and radio), the tsunami happened at night, it was a slow earthquake which was not felt strongly by those near the epicentre, and the ‘All Clear’ information from BMKG was not clearly understood. BMKG had issued an advisory/watch for tsunami but there was no specific information for the Mentawai region close to the epicentre.

The Chair noted that the ICG needs to clarify the extent of its responsibilities regarding tsunami warning, and communicate this more effectively to the media and public. Media coverage of the event showed there is still a lack of understanding of the limitations of the IOTWS, especially for local tsunami events. It is important for the IOTWS to communicate not only the strengths of the system but also highlight the limitations and the fact that in areas prone to local tsunamis, natural signs must be relied upon due to the short lead time for formal warnings before tsunami inundation.

The Chair of WG3, Ms Irina Rafliana, gave a short presentation on the timeline of events following the Mentawai event. Several things contributed to the lack of evacuation and subsequent deaths on the islands: the earthquake occurred at night; many villages did not have electricity and thus poor access to radios, telephones and television for warnings; information gathered by BMKG was mostly from the mainland and thus it was slow to recognise that a tsunami had been generated which impacted the islands offshore Sumatra.
The ICG needs to address several issues arising from the Mentawai event: improve and evaluate tsunami risk assessment by NTWCs, produce generic communication strategy guidelines, and expose the strengths and limitations of the regional tsunami warning system.

3. WG REPORTS, PERFORMANCE INDICATORS AND IMPLEMENTATION PLAN UPDATES

3.1 Working Group 3:
The Chair of WG3, Ms Irina Rafliana, presented this report. Using the Mentawai event as an example, she highlighted several areas needing attention from the Working Group, including the need for more training at the community level, better understanding of the role of the national and regional tsunami warning systems, and better communication with the media.

She highlighted the lack of mainstreaming of tsunami disaster risk reduction with other agencies involved in broader disaster risk reduction (ie not tsunami-related). This issue can be partly addressed by participation of the ICG/IOTWS in the Global Platform for Disaster Risk Reduction which will be held in Geneva in May 2011 (see section 5).

The Steering Group discussed the role of the Jakarta Tsunami Information Centre and expressed a wish to see it take on a more regional role, providing information for other areas in the Indian Ocean. Mr Elliott informed the group that this was a matter for discussion at the next ICG. It was noted that the other ICGs have tsunami information centres, or are planning to do so. Mr Elliott reminded the group that the resources to make JTIC a regional centre were not currently identified and suggested that the ICG investigate sources of funding for this and other proposals.

It was agreed that the issue of funding ICG/IOTWS activities would be discussed under the Programme and Budget agenda item at ICG/IOTWS-VIII and that Member States would be encouraged to consider contributing to the IOC Special Account that had already been set up for this purpose.

3.2 Working Group 1:
The Chair of Working Group 1, Prof. Sam Hettiarachchi, presented this report. The goals for 2011 include preparation of a document comprising Risk Assessment Case Studies from different regions of the Indian Ocean.

The Working Group has not met since the last ICG meeting and does not yet have any firm plans for its next meeting. The Chair has sent a number of emails in the past year to WG members but has not received many responses. The WG plans to elect a Vice Chair at its next meeting.

The Chair will also present a proposal at the next ICG meeting for the working group to:

(i) Upgrade Tsunami Risk Assessment Guidelines
(ii) Prepare a guideline on Coastal Hazard Mitigation focusing on physical interventions
(iii) Prepare a collection of state of the art Case Studies on Risk Assessment and Management (see Section 2.1) from the Indian Ocean as well other ocean basins.
3.3 Working Group 2:
The Vice Chair of Working Group 2, Mr Chris Ryan, presented this report on behalf of the Chair, Dr Satheesh Shenoi, who sent his apologies. The WG held an intersessional meeting in Hyderabad in February 2011, along with a meeting of the RTWP Task Team and a workshop for NTWCs.

At the meeting, two Vice Chairs were elected: Mr Chris Ryan (Australia) and Mr Wahyu Pandoe (Indonesia). The WG also proposes to elect a third Vice Chair with responsibility for seismology. The meeting produced an extensive list of actions and recommendations to be presented to the ICG. Among the actions are goals to harmonise the RTWP User Guides, web pages and tsunami bulletins. A communications test will be held on 16th March 2011 and another on 15th June 2011, which will test the effectiveness of the communications channels between RTWPs and NTWCs.

The IOWave11 Exercise is proposed to be held on 12th October 2011, at which point it is proposed to make the RTWP Service operational. This proposal will be presented to the ICG/IOTWS-VIII meeting for approval. If approved, the ICG will request the Interim Advisory Service to continue in shadow mode until an evaluation report on operational performance is submitted to the next ICG/IOTWS meeting in 2012.

Issues include the lack of availability of real-time sea level data from some regions including India, and the involvement of the RIMES consortium. RIMES has declared its intention to fit into the proposed RTWP structure but is yet to share any Service Level 1 products with the other RTWPs.

Mr Wahyu Pandoe presented plans by Indonesia to develop ‘fixed’ cable tsunameter buoys to counteract the vandalism issues experienced with moored tsunameter buoys. Initial plans are to deploy several near the outer islands off Sumatra and later on in Eastern Indonesia. The warnings generated will not protect the islands as there will not be sufficient time, but they will assist in protecting the mainland (Sumatra). If successful, they can become part of the IOTWS sea level monitoring system.

4. GLOBAL HARMONISATION OF TWS
Mr Rick Bailey, Vice Chair of ICG/IOTWS, presented this report. An Inter-ICG Task Team meeting was held in Seattle, USA in December 2010. Three Task Teams had been formed to discuss the over-arching issues common to all ICGs. The ICG/IOTWS has been active and has taken the lead in several of the task teams and subsequent discussions. All three Task Teams are chaired by members of the ICG/IOTWS. Task Team 1 focuses on sea level issues and is technical in nature. Task Team 2 focuses on Disaster Warning and Preparedness and Task Team 3 is focused on tsunami warning/watch information.

Mr Bailey will represent the ICG/IOTWS chair at the upcoming TOWS-IV meeting in Paris, which will also be attended by Mr Elliott in his role as technical secretary to Task Team 3.

5. GLOBAL PLATFORM FOR DISASTER RISK REDUCTION, GENEVA, 8-13 MAY
The Inter-ICG Task Team on Disaster Management and Preparedness has been invited to make a presentation at the UNISDR Global Platform in Geneva in May 2011. A 10 minute presentation will be given by UNESCO-IOC and a market stall will also have relevant
tsunami documentation available. Organisation of IOC’s participation in the event will be further discussed at the TOWS meeting at the end of March 2011.

6. THE REGIONAL INTEGRATED MULTI HAZARD EARLY WARNING SYSTEM FOR AFRICA AND ASIA (RIMES)

Mr Elliott provided an update based on the meeting he had with Mr Subbiah, Director of the RIMES Programme Unit, in January 2011. As January 2011, 11 countries had signed the RIMES agreement, including India, which is also the chair of the executive council of RIMES. Several other countries are expected to sign soon. There are 5 divisions in RIMES, of which tsunami monitoring is one.

The Steering Group noted there were several outstanding actions between RIMES and the ICG/IOTWS. Most are to do with ensuring the integration of RIMES into the IOTWS:

1. There is a need to harmonise the TWFP list so that RIMES has an up-to-date list consistent with that of the RTWPs
2. RIMES should start sharing Service Level 1 bulletins with the other RTWPs. RIMES reports that they are sharing bulletins with India, Malaysia and Thailand, but India and Australia both report that they are not yet receiving the bulletins.
3. It was agreed in 2010 that an ICG officer would attend the council meetings of RIMES but as yet the ICG has not received any invitations. The Steering Group hopes an ICG officer can attend the upcoming executive council meeting for RIMES.

It was agreed to invite RIMES to the ICG/IOTWS-VIII meeting as an observer with the potential technical capability to provide RTWP services, and ask it to present an update on the RTWP service it will provide to its members. The letter to RIMES will request that its presentation to the ICG includes details of the RTWP performance criteria met by RIMES and show the benchmarks reached.

To be formally recognised as an RTWP service provider, RIMES will need to have a cooperative relationship with a Member State in which the Member State formally identifies RIMES as its agent in providing RTWP services.

7. IOTWS MEDIUM TERM STRATEGY

Mr Rick Bailey, Vice Chair of ICG/IOTWS, presented this report. He noted that there had been no progress on this item since the last Steering Group meeting in December 2009.

As a general outline, the strategy is to work in the three areas outlined through the working groups to fill in the gaps in the system. The PTWS has a document which is generic and could form a basis for the IOTWS version. It is important to include sustainability issues and discuss them at the next ICG meeting.

Mr Elliott reminded the meeting that there are three main documents that the IOTWS needs to develop: the Medium Term Strategy; the User Guide (formerly known as the Communications Plan); and the Implementation Plan.

ACTION: Mr Rick Bailey to prepare draft Medium Term Strategy and circulate to SG members by 31 March 2011.
8. **IOTWS IMPLEMENTATION PLAN**

Mr Elliott presented the report on this item. The Implementation Plan was last updated before the ICG/IOTWS-VII meeting in 2010 and it now needs updating to include the new Working Group structure and the RTWP Implementation Plan. The bulk of the work lies with Working Group 2.

**ACTION:** WG Chairs and Vice Chairs to provide relevant input for the Implementation Plan update by 31 March, and Secretariat to finalise the draft and upload to meeting website by 13 April.

9. **ICG/IOTWS-VIII, MELBOURNE**

The Steering Group reviewed the draft agenda and timetable for the ICG/IOTWS-VIII meeting to be held in Melbourne, Australia from 3-6 March and suggested several changes.

There are significant issues to discuss in the Policy Matters section: one on the medium term strategy and one on RTWP/IAS transition. There also needs to be some policy direction on expanding the scope of JTIC.

The Steering Group discussed the need for the ICG to better engage with the media, especially with the imminent start of the RTWP service. The ICG needs a strategy to announce to the media and perhaps involve them more formally in the next IOWave exercise. Although it is a national responsibility to educate the media and public about the limitations of the system (eg for local tsunamis), it is necessary to make sure all Member States and media outlets have the same perception.

Reports from the RTWPs, including a comparison table, will be provided before the ICG/IOTWS-VIII meeting and posted on the meeting website.

**RECOMMENDATION TO ICG:** ICG to develop a plan for promoting Outreach, Capacity Building and Media Interaction, coordinated by the Steering Group.

10. **CLOSE OF MEETING**

In closing the meeting, the Chair highlighted the need for the ICG to obtain more visibility in all directions but particularly amongst the stakeholders and our strategic partners, including UN organizations. The increased visibility can highlight the significance of the period coming up to the ICG/IOTWS-VIII meeting in terms of sustainability. The ICG must become more visible in worldwide platforms. The issues at the next meeting will be sustainability but also visibility, how we can strengthen our presence in the media etc. That was the general spirit of our meeting, to lay down a more firm foundation for the ICG.

The meeting closed at 5pm.

11. **SUMMARY OF ACTIONS AND RECOMMENDATIONS**

11.1 **Actions**

- Secretariat to prepare an inventory of documents and publications produced by the ICG/IOTWS
- Mr Rick Bailey to prepare draft Medium Term Strategy and circulate to Steering Group members by 31 March 2011.
• WG Chairs and Vice Chairs to provide relevant input for the Implementation Plan update by 31 March, and Secretariat to finalise the draft and upload to meeting website by 13 April.

11.2 Recommendations to ICG/IOTWS-VIII
• Prepare a document reflecting the history of the IOTWS from the users’ perspective. Target ICG/IOTWS-IX for release.
• ICG to develop a plan for promoting Outreach, Capacity Building and Media Interaction, coordinated by the Steering Group.
UNESCO IOC  
Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System  
Steering Group Meeting  
Bureau of Meteorology, Perth, Western Australia  

AGENDA  
PROVISIONAL AGENDA  

**Tuesday 7th March**

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- Approval of Agenda | Jan Sopaheluwakan |
| 2. | Secretariat Report  
- Activities since ICG-VII, Banda Aceh | Tony Elliott |
| 2a | Mentawai: Progress and Issues | Irina Rafliana/Wahyu Pandoe |
| 3. | WG Reports and Implementation Plan Updates  
- WG1  
- WG3 | Sam Hettiarachchi/Irina Rafliana |
| | Tea Break | |
| 3. | WG Reports and Implementation Plan Updates (continued)  
- WG2 and RTT  
- IOTWS Communications Test  
- IOWave11 Exercise  
- IAS to RTWP Transition | Chris Ryan/Wahyu Pandoe |
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| 4. | Global Harmonisation of TWS  
- Report on Inter-ICG Task Team meeting, Seattle, December 2010  
- Compendium of Sea level Related Hazards Terminology  
- TOWS-IV meeting, Paris, 21-22 March | Rick Bailey |
| | Tea Break | |
| 5. | Global Platform for Disaster Risk Reduction, Geneva, 8-13 May  
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