

# MALTA

# Tsunami Warning Chain and SOPs

Department of Geosciences, University of Malta  
Civil Protection Department, Malta

IOC-UNESCO EU DG-ECHO CoastWAVE Project Workshop  
Ispra, 5 – 6 October 2022



# State of tsunami warning in Malta

- Civil Protection Department of Malta (CPD) are the responsible emergency management and response entity.
- There is no national Tsunami Warning Centre that operates 24 hour and no national-scale tsunami protocol.
- Seismic Monitoring Group, Department of Geosciences, University of Malta : academic/research group operating Malta Seismic Network and tsunami monitoring software (SeisComP/TOAST by Gempa)
- CPD are subscribed to the regional Tsunami Service Provider in Rome (CAT-INGV)
- UM act in an advisory role to CPD
- Discussions still ongoing on the best way forward to set up national warning system and SOP's

# The Last Mile Project, Malta

-led by JRC, Ispra, supported by DG-ECHO

- First national exercise in developing the capabilities of the local authorities and organisations to identify and respond to a tsunami emergency
- First opportunity to draw up a tsunami warning protocol and SOP
- Evacuation exercise 5<sup>th</sup> November 2021, in Marsaxlokk village
- Alerting devices by JRC installed and tested with success (digital panels with sirens, long-range siren, IDSL's, accelerometers)
- Evacuation plans based on scenario tsunami modelling by UM
- Communication channels between TSP, CPD, UM tested.
- CPD fully on board – opportunity to develop, test and evaluate new SOPs which will be developed into national SOPs.
- Comprehensive communication and participation network of other stakeholders and emergency responders established.

TSUNAMI EMERGENCY PROTOCOL FOR MARSAXLOKK, MALTA

Version 1.0

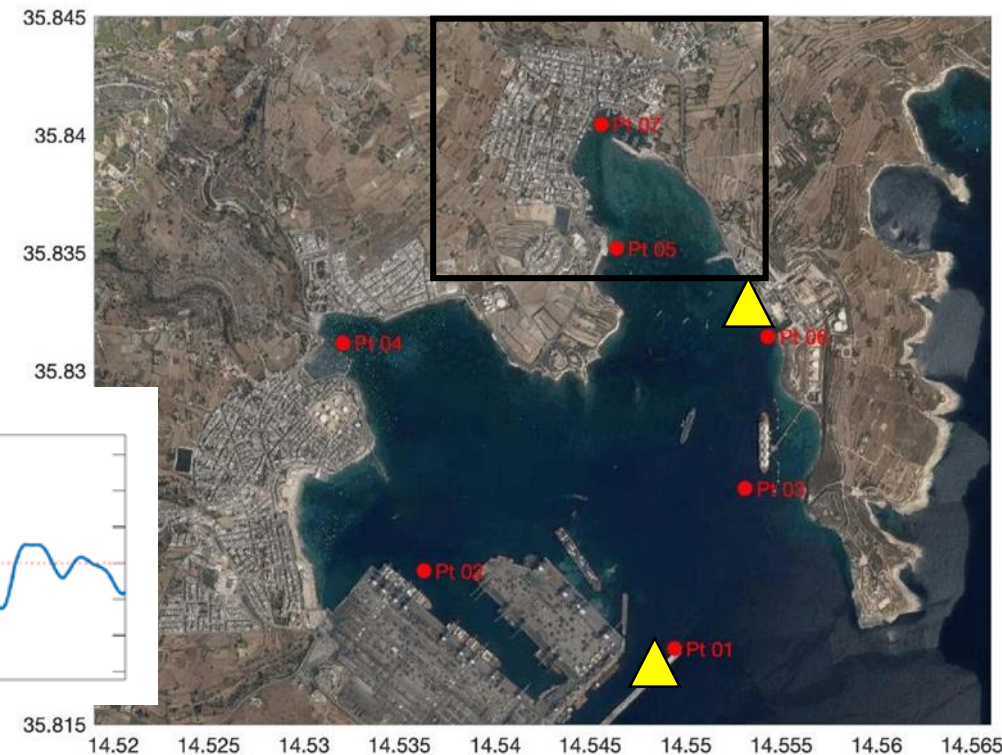
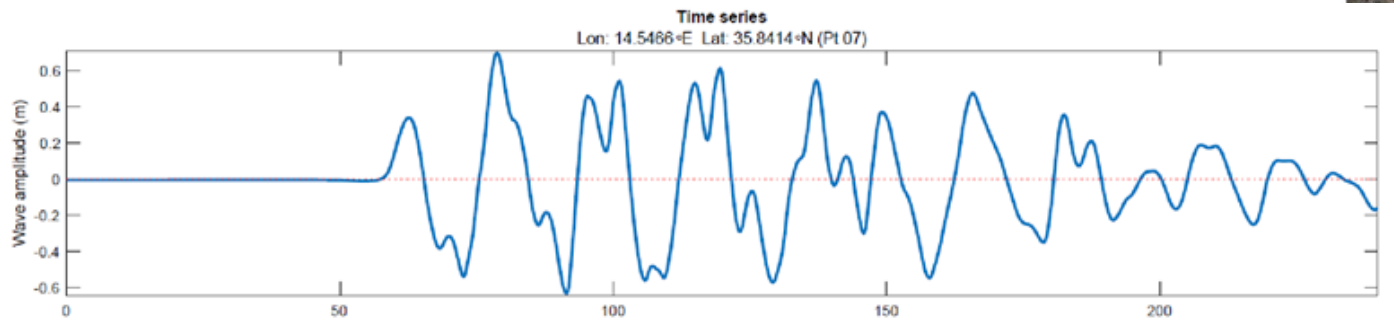
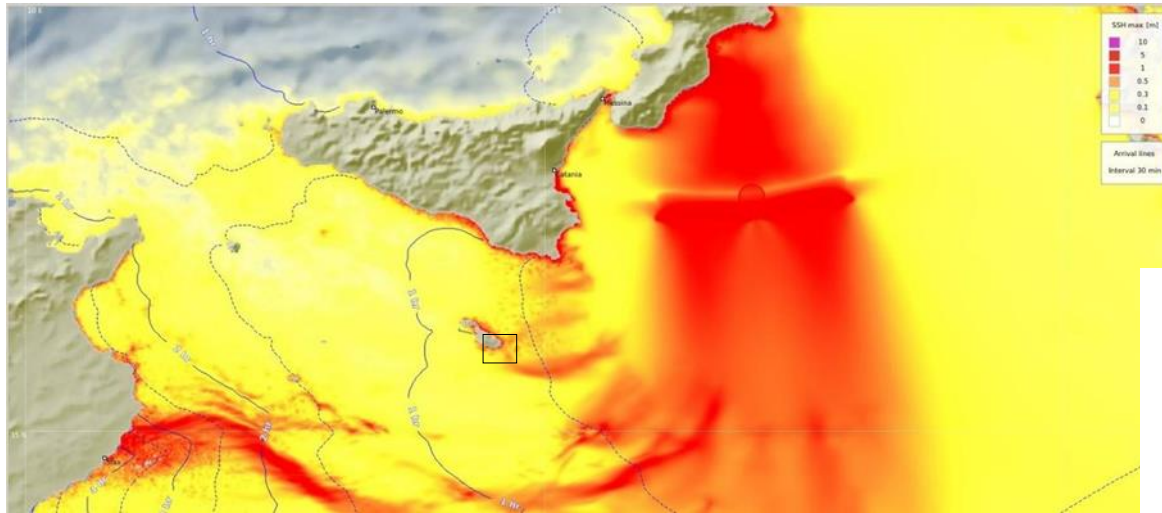


**Civil Protection Department**

Date: October 2021

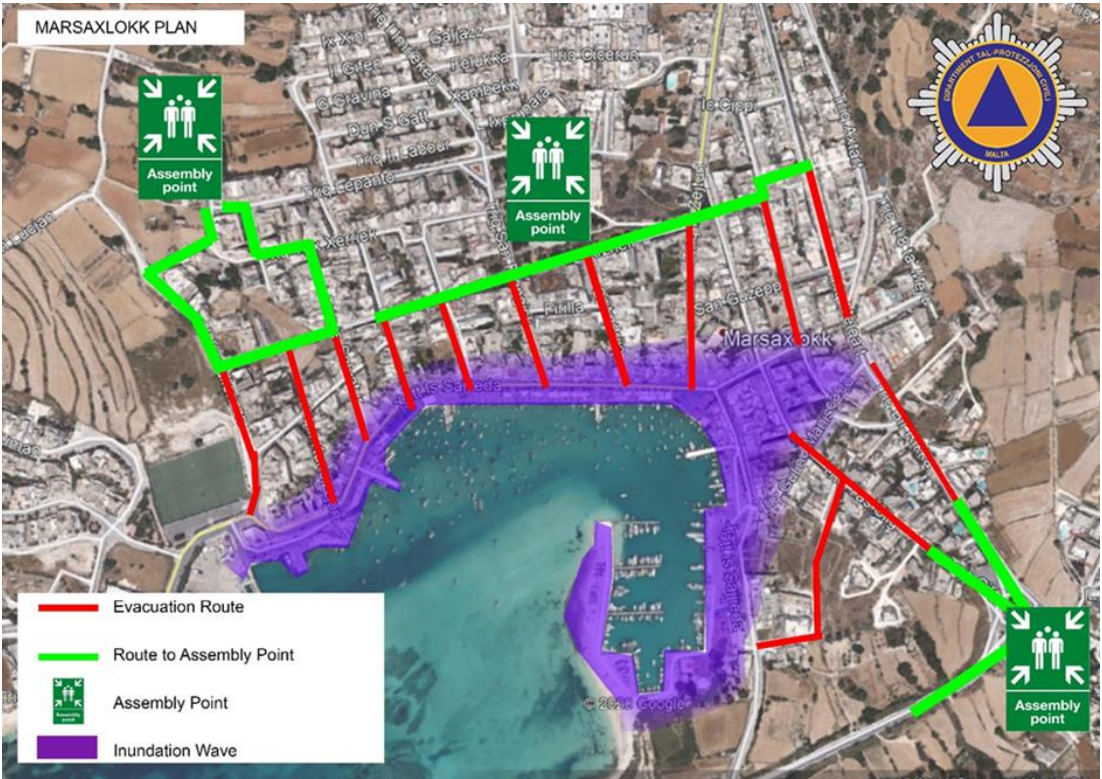
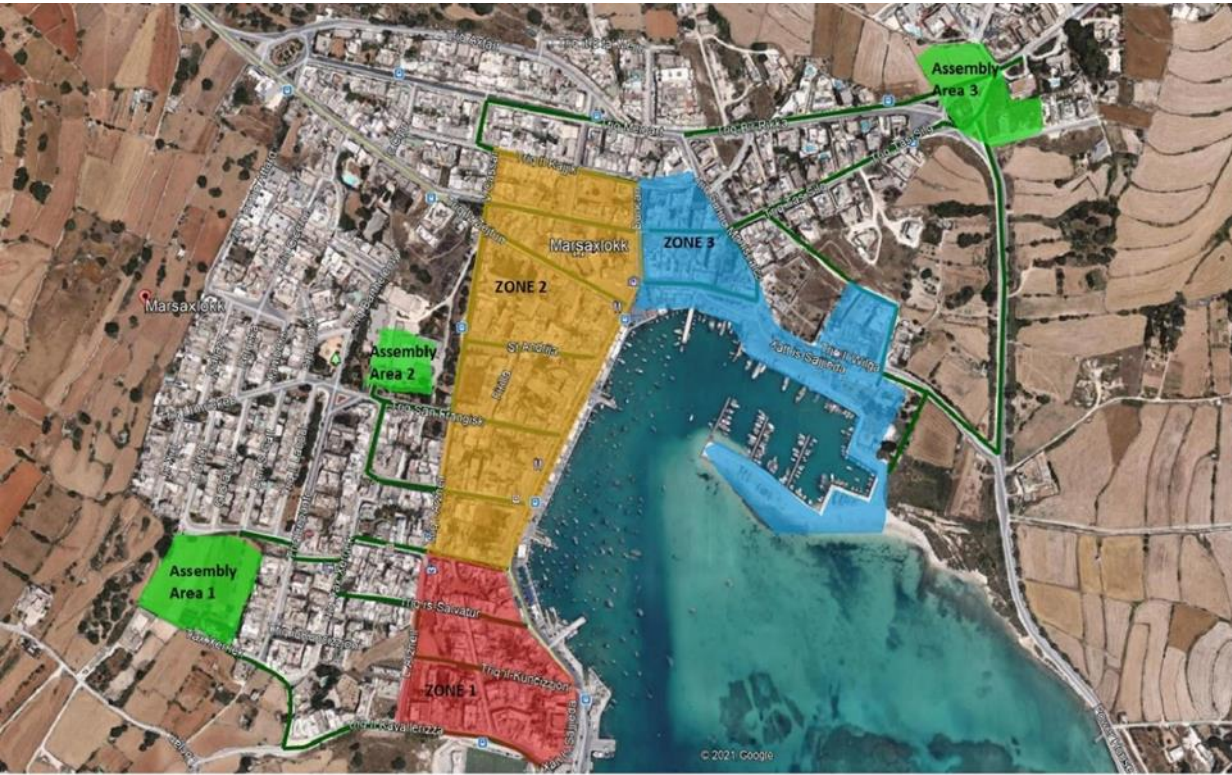
# Tsunami simulation – M7.9 earthquake in the Ionian Sea

The threat to Malta is generally from a far-field event, with travel times > 45 min.






▲ IDSL

● Sea-surface simulation point



Evacuation plans were drawn up on the basis of inundation simulations for worst-case scenario, using HySea codes

Sign	Text	Number
	<b>Tsunami Hazard Zone</b>	8
	<b>Evacuation Route</b>	11
	<b>Assembly Area</b>	3

Time (UTC)	Time (Local Time)	Elapsed Time	Event	Who	What	Notes	Tsunami Alert Device, TAD-PAGE 1	Tsunami Alert Device, TAD-PAGE 2	Tsunami Alert Device, TAD-PAGE 3	Tsunami Alert Device, TAD-PAGE 4	SIREN	VOICE MESSAGE in TAD
09:00	10:00	00:00	Earthquake		CPD National Focal Point							
09:07	10:07	00:07	1 <sup>st</sup> TSP message WATCH	CPD	Informs all Local bodies and issue an alert							
				CPD	Calls Univ. Malta to better understand the situation							
				Univ. Malta	checks EQ parameters and TOAST system							
9:08	10:08	0:08	GDACS Orange Alert	GDACS	<a href="https://www.gdacs.org/report.aspx?eventid=1256377&amp;eventtype=EQ">https://www.gdacs.org/report.aspx?eventid=1256377&amp;eventtype=EQ</a>	GDACS expects arrival in Marsaxlokk at 10:10, 0.3 m (Birzebbuga)						
9:22	10:22	0:22		CPD								
9:25	10:25	0:25	2nd message (Tsunami WATCH ONGOING message): tsunami waves detected in Sicily, Messina - 1.8m, Portopalo - 0.6m	CPD	Receives email from INGV AND launches Alert on TADs	CIVIL PROTECTION DEPARTMENT HAS ISSUED A <b>TSUNAMI WARNING</b> . DANGER OF COASTAL FLOODING. MOVE TO HIGHER GROUND NOW. KEEP AWAY FROM THE COAST UNTIL CPD SAYS IT IS SAFE TO RETURN.  Earthquake of Magnitude 7.9/in Sicily. A TSUNAMI has been generated/confirmed by level gauges.	Message 002 – TSP <sup>1</sup> alert: <b>** EXERCISE**</b> <b>TSUNAMI CONFIRMED WAVE EXPECTED IN 30 MIN</b>	<b>** EXERCISE**</b> <b>MOVE TO HIGH GROUND OR INLAND</b>			YES	YES
				CPD	Activate local emergency management system							
10:10	11:33	1:33		CPD	receive email from INGV							
9:57	10:57	0:57	Wave arrives in Portomaso AND at the first IDSL in Marsaxlokk	CPD	Call Portomaso Port Authority to ask if waves are seen							

9:59	10:59	0:59	Wave arrives at the second IDSLs in Marsaxlokk	ALERT	TAD Panel Activated, Siren activated	TSUNAMI Detected /in Marsaxlokk now!  Wave arrives/in 2-3 minutes!!  Go to High Ground or inland/TSUNAMI ** TSUNAMI	Message 004 – tsunami in Marsaxlokk:  ** EXERCISE**  TSUNAMI DETECTED IN MARSAXLOKK	** EXERCISE**  WAVE ARRIVES IN 2-3 MIN	** EXERCISE**  MOVE QUICKLY TO HIGH GROUND OR INLAND	** EXERCISE**  EVACUATE THIS AREA!!	YES	YES
10:33	11:33	1:33	3rd Message (Tsunami WATCH ONGOING message): update Level, 2.2 Messina, 1.2 Portopalo				Message 003 – waves ongoing:  ** EXERCISE**  TSUNAMI IS ONGOING. REMAIN IN HIGH GROUND					
10:50	11:50		Final Message (End of tsunami WATCH)	CPD	Receives "End of tsunami WATCH" from INGV		Message 006 – TSP end of tsunami waves  ** EXERCISE**  NO MORE TSUNAMI WAVE IS EXPECTED	** EXERCISE**  YOU CAN GO BACK TO YOUR ACTIVITIES			NO	NO
11:00	12:00	2:00	End of Exercise (even if this is not the case in a real life)	CPD	Declares the END OF EXERCISE		Message 007 – exercise final message:					NO



# TSUNAMI WARNING

Sorveglianza Sismica Sala di Roma <sorvsism@ingv.it>

Fri, 5 Nov  
2021,  
10:25

to croom.cpd, fredrick.sammut, alessandro.annunziato, me, martin-paul.aquilina, civilprotection

\*\*\*\*\* TEST TEST TEST TEST\*\*\*\*\*

TSUNAMI MESSAGE NUMBER 002  
NEAM INGV IT-NTWC TSUNAMI SERVICE PROVIDER  
ISSUED AT 0925Z 05 NOV 2021

... TSUNAMI WATCH ONGOING ...  
THIS ALERT APPLIES TO ALBANIA ... ALGERIA ... BOSNIA\_HERZEGOVINA ...  
CROATIA ... CYPRUS ... EGYPT ... FRANCE ... GREECE ... ISRAEL ...  
ITALY ... LEBANON ... LIBYA ... MALTA ... MONACO ... MONTENEGRO ...  
MOROCCO ... SLOVENIA ... SPAIN ... SYRIA ... TUNISIA ... TURKEY ...  
UK

THIS ALERT IS ADDRESSED TO ALL COUNTRIES AND INSTITUTIONS SUBSCRIBED  
TO THE SERVICES OF INGV TSP IN ITS MONITORING AREA

THIS MESSAGE IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY  
NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE  
DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY  
ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS  
ORIGIN TIME - 0900Z 05 NOV 2021  
COORDINATES - 37.12 NORTH 16.95 EAST  
DEPTH - 10 KM  
LOCATION - IONIAN\_SEA  
MAGNITUDE - 7.9

ALERT LEVEL IS ASSIGNED ACCORDING TO THE ABOVE ESTIMATIONS OF  
EARTHQUAKE PARAMETERS AND BASED ON ICG/NEAMTWS DECISION MATRIX

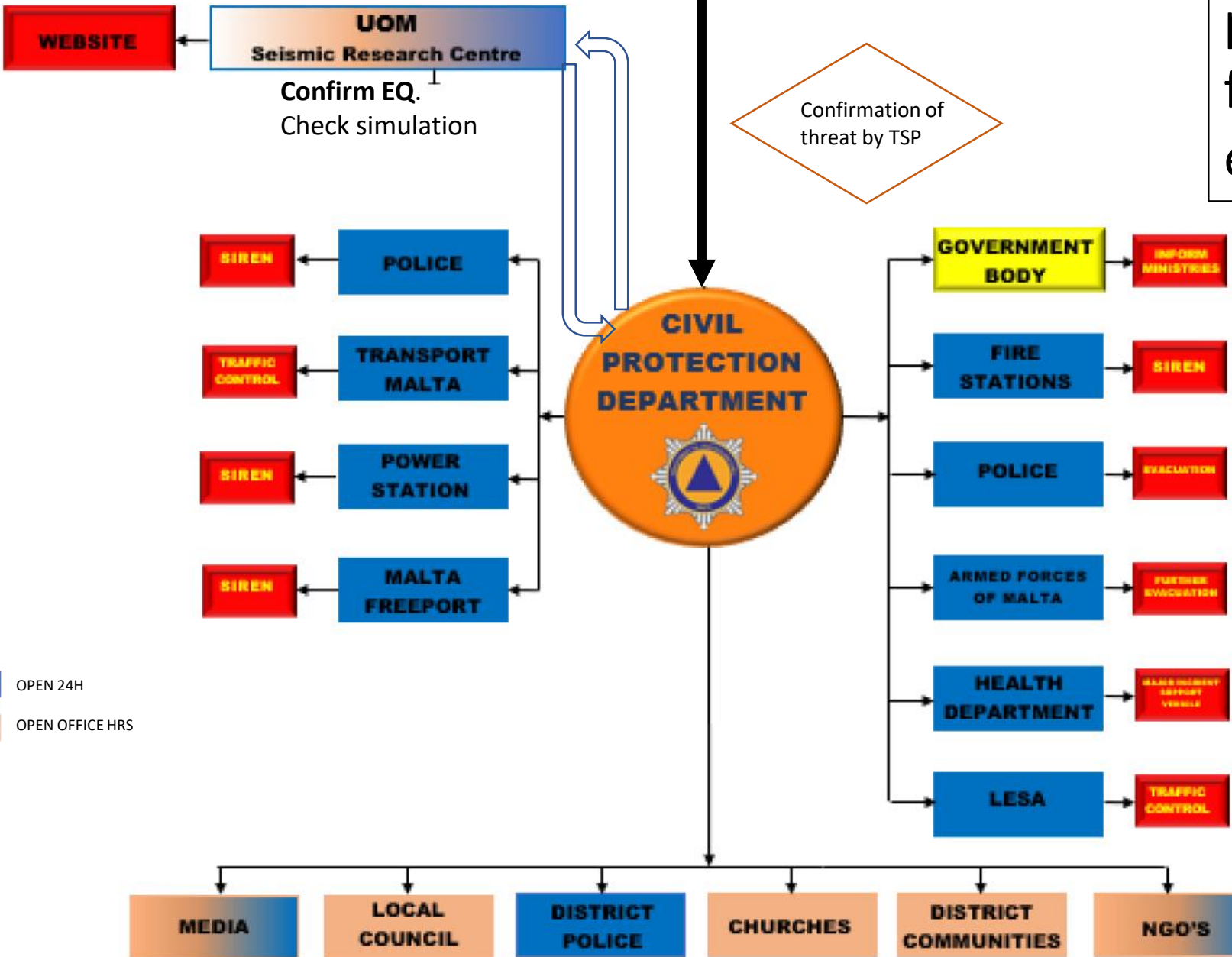
EVALUATION OF TSUNAMI WATCH

**SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED.**

THIS TSUNAMI CAN STRIKE COASTLINES WITH A WAVE HEIGHT GREATER THAN  
0.5M AND/OR CAUSE A TSUNAMI RUN-UP GREATER THAN 1M. THIS  
CENTER WILL CONTINUE TO MONITOR SEA LEVEL GAUGES NEAREST THE REGION  
AND  
REPORT IF ANY ADDITIONAL TSUNAMI WAVE ACTIVITY IS OBSERVED.  
AUTHORITIES

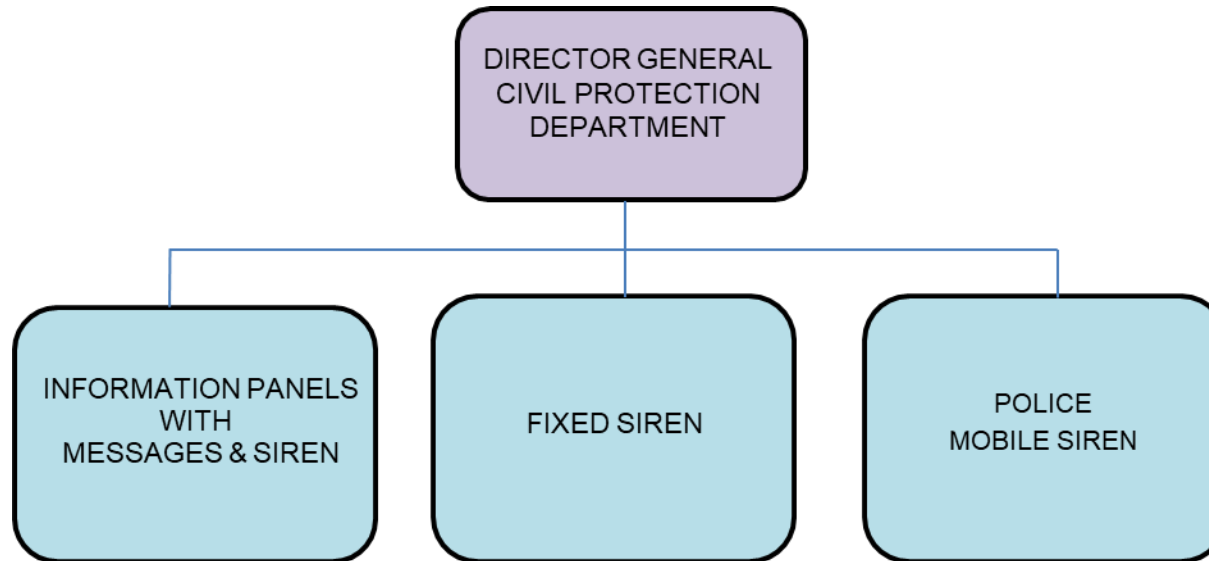
**Tsunami Regional Warning Provider (INGV)**

Chain of command proposed and tested for TLM Marsaxlokk exercise



■ OPEN 24H  
■ OPEN OFFICE HRS

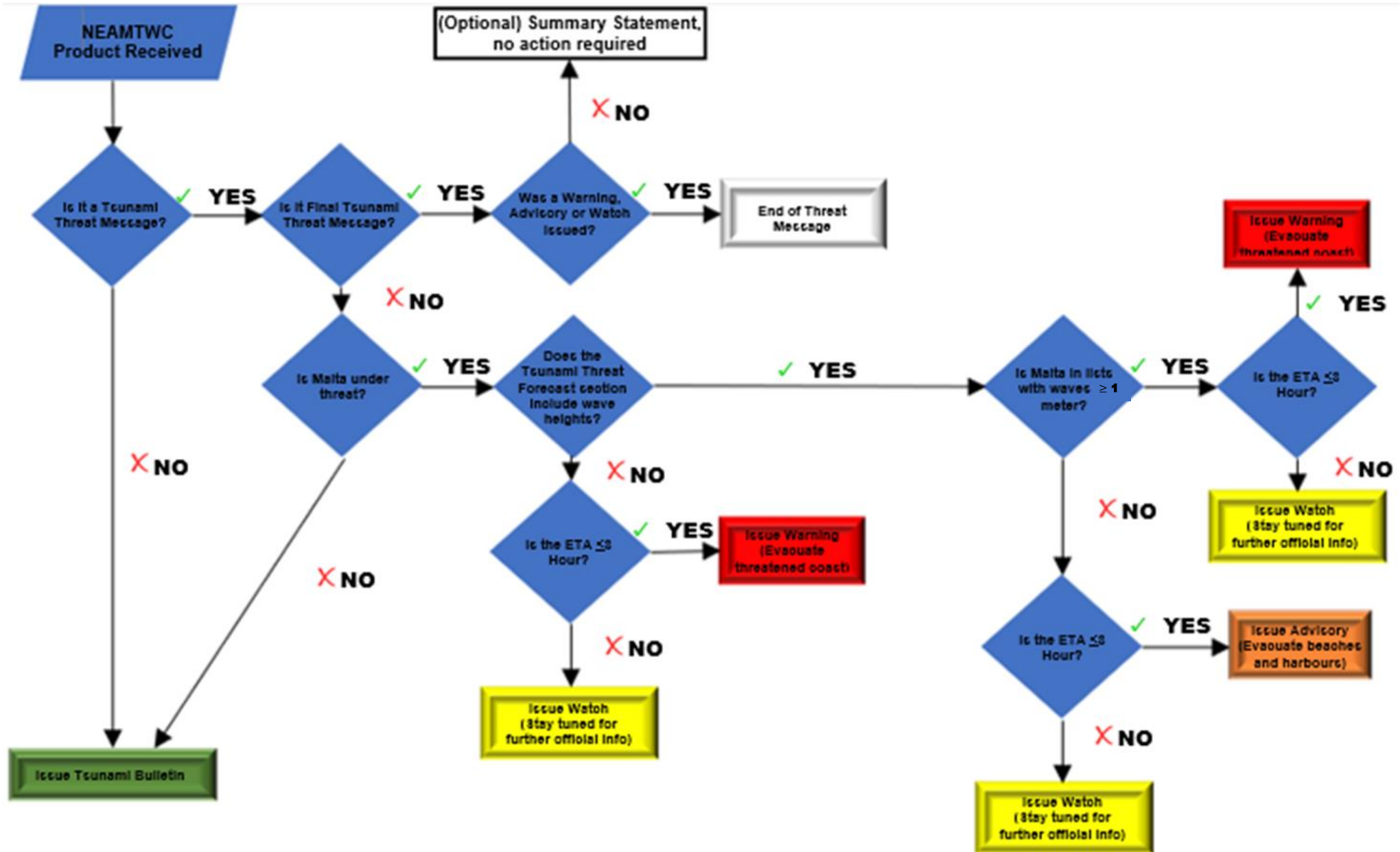
## Alert sirens activation by CPD





# The Evacuation Exercise





# THANK YOU

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