



MINISTRY OF INFRASTRUCTURE
KINGDOM OF TONGA

METEOROLOGICAL SERVICES TROPICAL CYCLONE OPERATIONAL PLAN

First Edition
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Deputy Prime Minister
AND
Minister for Infrastructure

OFFICE OF THE DEPUTY PRIME MINISTER

Ref No.: DPM/2013

November 12th, 2013

Plan authorization and purpose

This “The Meteorological Service Tropical Cyclone Operational Plan” is authorized under Section 10(a) of the Emergency Management Act 2007 and was approved by the National Emergency Management Committee (NEMC) on 01 November 2013.

It provides for the operational arrangements and functions of the Fua’amotu Tropical Cyclone Warning Centre for the formulation, issuance and dissemination of Tropical Cyclone warnings for Tonga. It holds relevant information on the format of Tropical Cyclone warning’s for Tonga and the meaning of terms and language used to explain a current and future Tropical Cyclone state and forecast respectively. The document is intended both as an operational guide for the Tonga Meteorological Service and for relevant Tropical Cyclone response agencies and stakeholders. The plan is a live document and should be reviewed and amended as required. Any amendments to this document shall be endorsed by the NEMC.

The responsibility for the upkeep and maintenance of this manual lies with the Director of Meteorology.

Signed on the 12th day of November 2013 by

A handwritten signature in blue ink, appearing to read 'Samiu Kuita Vaipulu', written over a circular official seal.
A circular official seal in blue ink. The outer ring contains the text 'DEPUTY PRIME MINISTER' at the top and 'KINGDOM OF TONGA' at the bottom, separated by two stars. The center of the seal features a crown and a shield with a cross, surrounded by a laurel wreath.

Hon. Samiu Kuita Vaipulu
Acting Prime Minister of Tonga
& Minister for the Infrastructure
& Chairperson of the National Emergency Management Committee

Record of amendments

No	Pages affected	Amendment	Date
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Previous versions are saved both electronically and hardcopy

Distribution list

Hard copies of the “**Meteorological Service Tropical Cyclone Operational Plan**” is distributed to the following:

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25. OIC EUA Meteorological Station
26. Secretary General Tonga Red Cross
27. CEO Tonga Water Board
28. CEO Tonga Power Limited
29. General Manager of Tonga Telecommunications Cooperation
30. CEO for Digicel
31. General Manager Tonga Broadcasting Commission

The operational plan is also available for download (File Size 1MB) from the Tonga Meteorological Service website at www.met.gov.to

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1. **DEFINITIONS OF TERMS**

(a) **Tropical Disturbance ('Alotamaki)**

A non-frontal system of synoptic scale (>1000km) originating over the tropics with persistent enhanced convection and/or some indication of cyclonic characteristics. It is not identified by a number or name but is an area of interest for forecasters to keep a sharp eye out for possible cyclo-genesis

(b) **Tropical Depression ('Alotamaki Fakatalopiki)**

A tropical disturbance with a clearly defined cyclonic wind circulation in which the central position can be estimated, and maximum 10-minute average winds speed of less than 34 knots (63km/hr i.e. gale force) near the centre. There may be gale force winds in one or more quadrants but not near the centre. A tropical depression is normally identified by a number followed by the letter F in the area of responsibility of RSMC Nadi. E. g. Tropical Depression 09F, means the 9th tropical depression in the Fiji area of responsibility in the current tropical cyclone season.

(c) **Tropical Cyclone (Saikolone Fakatalopiki)**

A non-frontal low pressure system of synoptic scale (>1000km) developing over warm waters and having a definite organized wind circulation with a maximum 10-minute wind average wind speed of 34 knots (63 km/hr, i.e. gale force) or greater near the centre. Tropical cyclones are usually identified with a name. The list of names is appended in Annex 2 to this document as agreed to by the Tropical Cyclone Committee for the South Pacific and South East Indian Ocean.

(d) **Severe Tropical Cyclone (Saikolone Fakatalopiki Malohi)**

A tropical cyclone that has reached category 3 and/or above.

(e) **Tropical Cyclone Alert (Fakatokanga ke tokateu ki ha saikolone fakatalopiki)**

A warning providing information on the progress of a tropical depression or a tropical cyclone still some distance away with a significant probability of winds of 34 knots or stronger to affect a community within the next 24 to 48 hours.

(f) **Tropical Cyclone Warning (Fakatokanga saikolone fakatalopiki)**

A warning associated with expected 34 knots winds or stronger occurring within the next 24 hours.

(g) **Tropical Cyclone Advisory (Fakamatala'ea makehe pe Fanongonongo Saikolone Fakatalopiki)**

Tropical Cyclone Advisories (TCAs) are bulletins issued whenever the need arises to issue a tropical cyclone alert or tropical cyclone warning.

(h) **Strong winds warning (Fakatokanga hako pe hakohako)**

A warning of strong average 10minute wind speeds of 25 to 33 knots expected to affect an area within 24hrs.

(i) **Gale warning (Fakatokanga matangi malohi)**

A warning of damaging average 10minute wind speeds of 34 to 47kts expected to affect a community with in 24hrs

(j) **Storm warning (Fakatokanga Afaa)**

A warning of destructive average 10 minute winds of 48-63knots expected to effect a community with in 24hrs

(k) **Hurricane warning (Fakatokanga Afaa Malohi)**

A warning of very destructive 10 minute average wind speeds of > 63kts expected to affect a community with in 24hrs.

(l) **Routine Weather Bulletin (Fakamatala'ea anga maheni)**

A bulletin issued at designated times to give weather information and forecasts to the general public or marine interests. These bulletins are normally issued at 3am, 11am and 7pm.

(m) **FLASH Tropical Cyclone Advisory (Fakamatala'ea makehe fakavavevave pe Fanongonongo Saikolone Fakatalopiki fakavavevave)**

FLASH Tropical Cyclone Advisories (FTCAs) are advisories issued whenever there is a significant change in the intensity or movement of a system and the need arises to issue tropical cyclone alerts or warning to new areas or re-activate warnings that were previously downgraded.

(n) **Radius of Gales (Letiasi 'o e matangi malohi takatakai 'i ha saikolone pe 'alotamaki fakatalopiki)**

Radius of gales is the distance from the eye to the outer periphery of the cyclonic system where gale force winds are expected.

(o) **Fua'amotu Tropical Cyclone Warning Centre (Senita Fakatokanga Saikolone Fakatalopiki/Afaa 'I Fua'amotu)**

The Fua'amotu Tropical Cyclone Warning Centre is the staff, equipment and procedures of Fua'amotu Weather Forecasting Centre designated specifically for responding to a tropical cyclone threat to Tonga

2. ACTIVATION OF THE FUA'AMOTU TROPICAL CYCLONE WARNING CENTRE

(FTCWC)

Whenever there is threat of a tropical cyclone (radius of gales) affecting any part of the Tonga Historic Waters as defined under the Maritime Zones Act of 2009 or affecting any coastline in Tonga within 48hrs, the Fua’amotu Tropical Cyclone Warning Centre (FTCWC) will be activated will provide Tropical Cyclone Advisories (TCAs) in the format laid out in Annex 1 to this Plan. A TCA will contain either a TROPICAL CYCLONE ALERT OR TROPICAL CYCLONE WARNING.

For the purpose of these procedures, any part of Tonga Historic Waters means anywhere within the bounds of Area 1 and Area 2 below.

(1) Area 1

173 deg W, 15 deg S to 173 deg W, 23 deg 30 min S to
 177 deg W, 23 deg 30 min S to 177 deg W, 15 deg S (as defined in the box below)

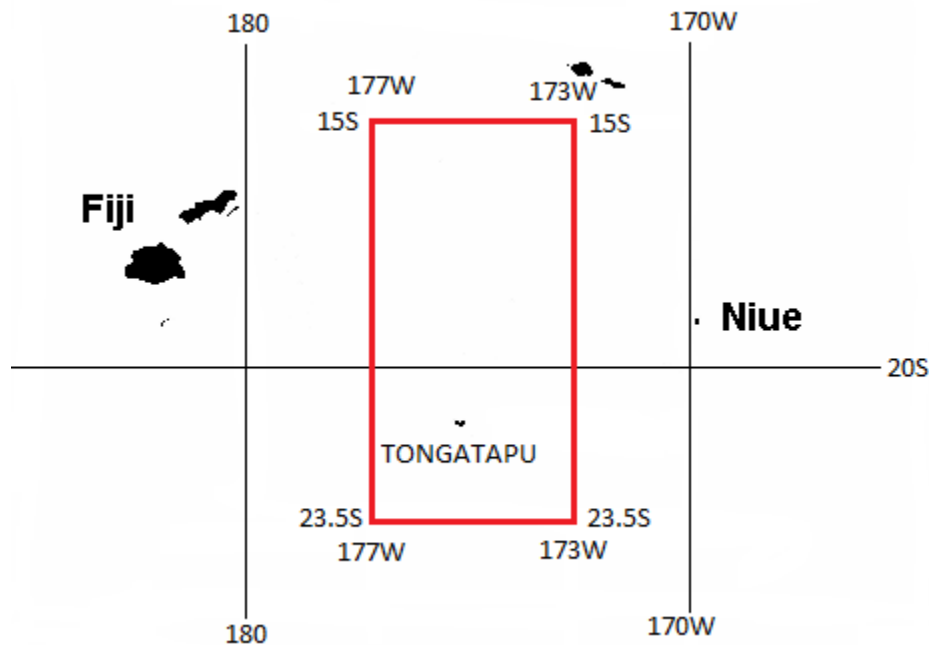


Figure 1: the Kingdom of Tonga as defined by the 1887 Proclamation

(2) Area 2

The islands, rocks, reefs, foreshores and waters lying within 12miles of Teleki Tokelau and Teleki Tonga.

2a. Responsibility for Activation/De-activation of the FTCWC

The responsibility for the formal activation and de-activation of the FTCWC lies with the Director of the Meteorological Service. The activation and de-activation shall be in writing (using the forms in Annex 5 and 6 respectively) and shall be distributed to all members of the NEMC

and any other member approved by the NEMC.

De-activation of the FTCWC, will be in accordance with the criteria pertaining to Tropical Cyclone Advisories (TCA's) cancellation.

Upon the activation of the FTCWC, a 12hrs shift roster will be adopted to ensure enough staff resources are on hand to respond and the Tonga Meteorological Service Tropical Cyclone Response Plan (FTWCTCRP) (attached as Annex 3) shall be activated. The Forecaster on Duty at the time of the activation of the FTCWC shall inform all staff of the weather situation, and any working arrangements that have been established by the Director of Meteorology in response to the impending situation along with all necessary actions stipulated under the FTWCTCRP.

On the occasions where tropical depressions or tropical disturbances are experienced but not expected to develop into a tropical cyclone, general warnings will be issued in the normal routine weather bulletins.

The Fua'amotu TCWC is operated within the Meteorological Division of the Ministry of Infrastructure (MOI) and can be accessed 24 hours a day as follows:

Telephone: 35355 (*Direct to Forecast Desk*), 35008 (*Direct to Radio Operator on Duty*)
(Calls must be kept short).

Facsimile: 35123 and 35009

HF frequency: 5922kHz, 3167kHz, 3827kHz, 4042kHz, 6215 kHz, 7620kHz & 2182 kHz
VHF channel 16

Email: fmt_met@met.gov.to

TMS Web Site: www.met.gov.to

3. TROPICAL CYCLONE ADVISORIES

3.1 LANGUAGE

All Tropical cyclone "Alerts" or "Warnings" for Tonga will be contained in TROPICAL CYCLONE ADVISORIES (TCAs) as opposed to the regular Routine Weather Bulletins issued daily. All TCA's will be issued in both English and Tongan language.

3.2 NUMBERING OF ADVISORIES

All TCAs will be numbered sequentially, starting from NUMBER ONE until cancelled.

3.3 HEADING OF ADVISORIES

Where a system is already a Tropical Cyclone, its name shall be included in the heading of the TCA, e.g. "TROPICAL CYCLONE ADVISORY NUMBER THREE ISSUED FOR TONGA ON TROPICAL CYCLONE "HETA" ...(The list of cyclone names approved by the World Meteorological Organisation Southeast Indian Ocean & South West Pacific Tropical Cyclone Committee for use in RSMC Nadi is attached as ANNEX 2)

A Category will be assigned to each Tropical Cyclone Advisory.

The category system adopted by the Tonga Meteorological Services is the Australian and South Pacific Category System. The category system is laid out in Table 1 and describes the likely impact of each category. The Office issuing the TCA shall also be included in the heading so as the local time rounded to the latest 5 minutes prior to issue time.

e.g. "TROPICAL CYCLONE ADVISORY NUMBER THREE ISSUED FOR TONGA ON TROPICAL CYCLONE "HETA" (CAT 4) ISSUED FROM THE FUAAMOTU TROPICAL CYCLONE WARNING CENTRE AT 4:05AM....."

Tropical Cyclone Category

A Tropical Cyclone will be categorized as per the Australian and South Pacific Category System as follows: Category	10-Min Mean Wind	Maximum 3-Sec Gust
Potential damage		
<p>Category 1 (Tropical Cyclone)</p> <p>(Negligible house damage. Damage to some crops and trees. Boats may drag anchor e. g. TC CILLA)</p>	63 – 87 km/hr (34 – 47 knots)	Less than 125 km/hr (Damaging Winds)
<p>Category 2 (Tropical Cyclone)</p> <p>(Minor house damage. Significant damage to trees. Heavy damage to crops. Risk of power failure. Small boats may break anchor e. g. TC HINA)</p>	88 – 117 km/hr (48 – 63 knots)	125-169 km/hr (Destructive Winds)
<p>Category 3 (Severe Tropical Cyclone)</p> <p>(Some roof and structural damage. Power failure likely e. g. TC KINA)</p>	118 – 157 km/hr (64 – 85 knots)	170-224 km/hr (Very Destructive Winds)
<p>Category 4 (Severe Tropical Cyclone)</p> <p>(Significant roofing loss and structural damage, Dangerous airborne debris e. g. TC WAKA)</p>	159 – 200 km/hr (86 – 110 knots)	225-279 km/hr (Very Destructive Winds)
<p>Category 5 (Severe Tropical Cyclone)</p> <p>(Extremely dangerous with widespread destruction. e. g. TC HETA)</p>	Over 200 km/hr (Over 110 knots)	Over 280 km/hr (Very Destructive Winds)

Table 1 : Tonga Tropical Cyclone Category System

TCA's containing Tropical Cyclone "Alerts" or "Warning" shall be headed "TROPICAL CYCLONE ALERT" OR "TROPICAL CYCLONE WARNING" as appropriate. Where a TCA contains warnings for some areas and alerts for some areas the warning header shall take precedence.

Tropical Cyclone Alert

A TCA containing a TROPICAL CYCLONE ALERT will give progress information on the development of an incipient cyclone or the progress of a cyclone still some distance away, if there is significant probability that winds over one or more parts of Tonga may later reach gale force or stronger. Alerts will be started, where possible, about 48 hours before the likely onset of gales or stronger winds and will be maintained until such time as specific warnings become necessary, or the threat to Tonga recedes.

Bulletins containing TROPICAL CYCLONE ALERTS will be issued at least every six hours, at regular bulletin times where possible.

Tropical Cyclone Warning

A TCA containing a TROPICAL CYCLONE WARNING will give GALE, STORM or HURRICANE Warning for specified areas according to the maximum average wind force expected. It will be issued when there is an expected occurrence of gales or stronger winds within 24 hours over the areas so warned. Apart from average wind speeds, expected winds in momentary gusts will also be given.

Type of Warning	Average Winds* Expected	Beaufort Force	Typical Effects
GALE WARNING	63-87 km/hr (34-47 knots)	8, 9	Very rough to high seas Normally minor damage on land, mainly to Branches and loose materials
STORM WARNING	88-117 km/hr (48-63 knots)	10, 11	High to very high seas Damage to trees, crops, overhead wires, Temporary shelters and weaker structures Often accompanied by heavy rain and flooding.
HURRICANE WARNING	Over 117 km/hr (Over 63 knots)	12	Phenomenal seas, heavy surf and abnormally high storm tides Severe damage to trees, crops, overhead wires and many buildings. Accompanied by torrential rain and flooding

**Winds averaged over a 10-minute period. Momentary gusts will be much stronger.*

3.4 ADVISORIES

Advisory Issue times

TROPICAL CYCLONE ADVISORIES, subject to the availability of satellite and synoptic data and numerical model guidance shall be issued at:

- 6hour intervals from when gales or stronger winds are expected within 48hrs (ALERTS)

- 3hour intervals when gales or stronger winds are expected within 24hrs (WARNINGS)

Advisory Format

Immediately after the Advisory Heading, the Second paragraph will either be a TROPICAL CYCLONE ALERT OR WARNING. It will then be followed by a GALE, STORM OR HURRICANE WARNING directed at a specific island or island group.

It will then be followed by a description of the system, its location, intensity, movement and forecast. This is then followed by specific warnings to specific islands or island groups with the island (s) or island (s) group with the highest risk being mentioned first. Specific warnings will refer to expected wind intensity and direction and likely weather associated.

Coastal Marine warnings may follow the specific island/island group warnings or under a separate heading...INFORMATION FOR MARINERS at the end of the bulletin.

Specific reference to the tide forecasts shall also be mentioned as well as a reference to a barometer reading from the nearest meteorological station to the system at the time.

Finally the advisory bulletin should mention when to expect the next advisory. An example of a full TCA is included in Annex 1.

3.5 FLASH ADVISORIES

If information becomes available which points to a substantial change in the situation, thus invalidating the current warning, a TCA will be issued as soon as possible to inform users of the sudden change in the situation. Such an intermediate TCA will be brief and contain essential information including, for example, new areas threatened or changed movement of the cyclone. The numbering sequence for TCAs will be retained. All intermediate bulletins will be identified for emphasis by the prefix "FLASH" e.g. "FLASH TROPICAL CYCLONE ADVISORY NUMBER 10 FOR TONGA ON TROPICAL CYCLONE KINI ISSUED AT"

3.6 RECEIPT OF ADVISORIES

It is the responsibility of partner stakeholders within the tropical cyclone early warning system to inform the Fua'amotu Tropical Cyclone Warning Centre of the receipt of the first TCA. In the absent for such confirmation, the FTWC will act on the assumption that TCAs are being received normally.

3.7 AUTHORITY TO ISSUE TROPICAL CYCLONE ADVISORIES

The authority to issuing TCA's for Tonga rests with the Director of Meteorology. All TCAs shall also be issued or supervised by a Meteorologist. For the purpose of these procedures the definition of a meteorologist is stipulated in WMO Doc. 258 on Education and Training.

For the purpose of these procedures the issuance of the first and last TCA shall both be approved by the Director or any other Officer delegated to do so.

The authority to conduct briefings and media interviews with respect to tropical cyclones also lies with the Director of Meteorology. The Director may delegate these responsibilities as necessary.

3.8 CANCELLATION OF TROPICAL CYCLONE ADVISORIES

The cancellation of a TCA shall be in line with the following criteria:

- (a) A tropical cyclone has weakened to a point where it no longer is capable of producing sustained gale force winds within Tonga's Boundary as defined in Figure 1.
- (b) A tropical cyclone radius of gales has moved out of Tonga's Boundary.

3.9 BACKUP TO FUA'AMOTU TROPICAL CYCLONE WARNING CENTRE

Nadi TCWC and Regional Specialized Meteorological Centre (RSMC Nadi) will provide backup services to Fua'amotu TCWC. Wellington TCWC in turn provides backup Services for Nadi.

4. TROPICAL CYCLONE LOCATION AND MOVEMENT

The location of a Tropical Cyclone will be determined with respect to its centre which is given in Latitude and Longitude coordinates (to one-tenth of a Degree) in the Marine Section and in distance (in Kilometers) in the Public Section to the nearest island or place. The general direction of movement of the cyclone centre is indicated together with the speed at which it (the centre) is moving. For example in the Public section of the TCA, TROPICAL CYCLONE WAKA HAD ITS CENTRE LOCATED ABOUT 370 KM NORTHWEST OF NOMUKA AT 9 AM TODAY MOVING SOUTH AT 20 KM/HR.

For the Public section of the TCA the movement will be in KM/HR and there will be no referenced using Latitude and Longitude coordinates but use instead the distance in KM to the nearest island. Knots and Latitude and Longitude coordinates will be used in reference to marine warnings.

5. TROPICAL CYCLONE INTENSITY AND SIZE

The intensity and size of a Tropical Cyclone is given in terms of maximum (10-minute) average winds and momentary gusts close to its centre (within the eye wall) and the distribution or extent of winds of 34 KNOTS (GALE FORCE) and above from the cyclone centre. These are generally estimated. All winds are stated in Kilometers per Hour (KM/HR) and distances in Kilometers (KM) (except in the case of information for Mariners which is stated in KNOTS and Nautical Miles (NM) respectively). Where possible the estimated central pressure may be given usually corresponding with the maximum estimated winds. For example, THE CYCLONE IS ESTIMATED TO HAVE MAXIMUM AVERAGE WINDS OF 150 KM/HR WITH MOMENTARY GUSTS TO 220 KM/HR CLOSE TO ITS CENTRE. VERY DESTRUCTIVE HURRICANE FORCE WINDS EXTEND TO ABOUT 50 KM FROM THE CENTRE AND DESTRUCTIVE STORM FORCE WINDS TO ABOUT 100 KM FROM THE CENTRE. DAMAGING GALE FORCE WINDS EXTEND TO ABOUT 200 KM FROM THE CENTRE.

6. CRITERIA FOR RECOMMENDING RADIO TONGA ONE(A3Z) TO REMAIN ON AIR

Due to the maximum coverage provided by Radio Tonga One (A3Z) on 1017kHz to reach different parts of the Kingdom at once it is important that A3Z is on standby to broadcast the latest tropical cyclone information.

The FTCWC will recommend Radio Tonga One (as a key partner in Tonga's tropical cyclone warning system) to remain on air and on standby for broadcast of warnings on these criteria.

- (a) That a TCA's has not been issued on a tropical depression or a tropical cyclone but there is sufficient likelihood that warning criteria will be met during the normal closure times of Radio Tonga One (normally between the hours of 12am and 6am Local time).
- (b) If a TCA or TCAs have been issued for any part of Tonga and has/have not been cancelled.

6.1 METHOD OF COMMUNICATING WITH RADIO TONGA ONE (A3Z)

The method of communication shall be via the most practical means from the Director of Meteorology to the Manager of A3Z or in the absence of these persons, the designated persons authorized to do so.

In the unlikely event that a TCA is issued by FTCWC during the closure times of Tonga Broadcasting Commission (TBC) that same method of communication shall apply for the immediate activation of A3Z.

Once A3Z has been notified, it is expected that all warnings shall be received through the Tonga Meteorological Service website at www.met.gov.to and/or through the emailing list. In the event of the failure of these modes of communication then both parties shall agree on the most practical method of communication.

7. DISTRIBUTION OF TROPICAL CYCLONE ALERTS AND WARNINGS

Internationally the Tonga Meteorological Service will distribute all the Tropical Cyclone Advisories it issues via the Global Telecommunication System (GTS) of the World Meteorological Organisation. This will be done through email to METSERVICE NZ LTD at input@metSERVICE.com for automatic switching to the GTS using the following message format and appropriate WMO header.

To: input@metSERVICE.com
From: fmt_met@met.gov.to
Subject: PASSAFTN

FPT040 NFTF DDHMM

*****TROPICAL CYCLONE ADVISORY MESSAGE*****

This is the same header used for the routine weather forecast.

Within the country, the Fua'amotu TCWC will disseminate all TCA's directly to the local radio stations and accessible media outlets for immediate broadcast to the public through the most practical means. TCA's will also be broadcast on the Coastal Maritime Radio (Nuku'alofa Radio A3A) for the maritime community. The TMS will also notify and update the National Emergency Management Office (NEMO) on alerts and warning information. Warnings issued from FTCWC are received at NEMO and at the Vava'u Meteorological Station via satellite on the Emergency Managers Weather Information Network System (EMWIN). The dissemination of warnings and alerts issued by the FTCWC to the Local Government and providing advice on National Response to a TC event is the responsibility of NEMO.

Internally, the Forecaster on Duty shall inform all the Officers-in-Charge of all Meteorological Stations in the Kingdom by the most convenient means of the weather situation and any tropical cyclone working arrangements established by the Director of Meteorology during a tropical cyclone event.

7.1 TONGA BROADCASTING COMMISSION

Tonga Broadcasting Commission (TBC) will broadcast all ALERTS and WARNINGS (including marine warnings when these are in force) on receipt and at regular intervals thereafter.

The TBC in collaboration with TMS will also broadcast media interviews on a regular basis with the Director of MET and/or the Duty Forecaster when and as required.

7.2 NATIONAL EMERGENCY MANAGEMENT OFFICE (NEMO)

NEMO in collaboration with TMS has the responsibility to disseminate TCAs to agencies that form the National Emergency Management Committee or otherwise.

7.3 NUKU'ALOFA RADIO A3A

Will broadcast all marine bulletins including marine warnings contained in TCAs. It will also broadcast all TCAs containing GALE, STORM or HURRICANE WARNINGS on receipt as well as at scheduled weather broadcast times. (It may not broadcast TCAs designated as TROPICAL CYCLONE ALERTS which are meant for land areas). It will also repeat ALL WARNINGS at the end of first silence period after receipt and at 3 minutes past each hour. The broadcast frequencies are the International Maritime HF Freq 6215 and 2182 kHz and VHF Channel 16.

7.4 WEBSITE

The latest TCA for Tonga can be accessed and is made available on the Tonga Meteorological Service Web Site at <http://www.met.gov.to> along with other tropical cyclone information like tropical cyclone tracking maps

7.5 EMAIL LIST

The latest TCA for Tonga will also be made available on the Tonga Meteorological Service group emailing list tca@met.gov.to. Users can subscribe to this emailing list by sending an email to metstaff@met.gov.to. The email list is a live document and is updated when new contacts are received.

7.6 SMS TXT Service

The TMS may issue SMS text warnings to selected cell phone users depending on the capacity and capability of the carrier. Carriers who wish or intend to release SMS warning messages to the general public should do so in collaboration with the Fua'amotu Weather Forecasting Centre to avoid mis-information and mis-interpretations at all times. The Carriers are invited to use the products issued by FTCWC as the "Official" warning information for Tonga on a tropical cyclone event but when information used in such services are derived from outside sources and NOT from the FTCWC, the Carriers should clearly state the source of such information to avoid public and stakeholder confusion when information provided is not the same with those issued by the FTCWC.

ANNEX 1

EXAMPLE OF A TROPICAL CYCLONE ADVISORY

TROPICAL CYCLONE ADVISORY NUMBER 1 ISSUED FOR TONGA AT 8:30PM (31/12/04).

TROPICAL CYCLONE WARNING

A HURRICANE WARNING IS NOW IN FORCE FOR THE VAVA'U GROUP. A STORM WARNING IS NOW IN FORCE FOR THE HA'APAI GROUP

SEVERE TROPICAL CYCLONE WAKA, CATEGORY 4, WAS LOCATED NEAR 17.2 SOUTH 175.0 WEST OR ABOUT 190KM SOUTH-SOUTHEAST OF NIUAFO'OU OR 189KM SOUTHSOUTHWEST OF NIUATOPUTAPU OR 186KM NORTHWEST OF VAVA'U AT 6:00PM TODAY. CLOSE TO ITS CENTRE THE CYCLONE IS EXPECTED TO HAVE AVERAGE WINDS UP TO 165KM/H WITH MOMENTARY GUSTS TO 230KM/H, POSSIBLY INCREASING TO 175KM/H WITH MOMENTARY GUSTS TO 250 KM/H BY 2:00AM TOMORROW MORNING (1/1/02). THE CYCLONE IS MOVING SOUTH-SOUTHEAST ABOUT 20KM/H AND EXPECTED TO GRADUALLY TURN SOUTHEAST, ACCELERATING FURTHER. ON ITS CURRENT TRACK THE CENTRE IS EXPECTED TO BE UPON VAVA'U OR 150 KM NORTH-NORTHWEST OF HA'APAI BY 2:00AM TOMORROW MORNING (1/1/02). VERY DESTRUCTIVE WINDS ARE EXPECTED TO BEGIN A FEW HOURS BEFORE THE CYCLONE PASSES NEARBY OR OVERHEAD.

FOR VAVA'U AND HA'APAI GROUPS :

WINDS GRADUALLY INCREASING TO VERY DESTRUCTIVE WITH AVERAGE SPEEDS TO 165KM/H AND GUSTS TO 230KM/H, POSSIBLY INCREASING TO 175KM/H WITH MOMENTARY GUSTS TO 250KM/H FROM EARLY TOMORROW MORNING. FREQUENT HEAVY RAIN WITH SQUALLY THUNDERSTORMS. PHENOMENAL SEAS. VERY DAMAGING HEAVY SWELLS.

FOR NIUAFO'OU AND NIUATOPUTAPU :

DESTRUCTIVE WINDS WITH AVERAGE SPEEDS TO 80KM/H WITH GUSTS TO 200KM/H GRADUALLY DECREASING. FREQUENT HEAVY RAIN WITH SQUALLY THUNDERSTORMS. VERY HIGH SEAS. VERY DAMAGING HEAVY SWELLS.

FOR TONGATAPU GROUP :

WINDS GRADUALLY INCREASING TO AVERAGE SPEEDS TO 75KM/H AND GUSTS TO 90KM/H FROM EARLY TOMORROW MORNING. PERIODS OF HEAVY RAIN WITH SQUALLY THUNDERSTORMS. HIGH SEAS. VERY DAMAGING HEAVY SWELLS. FLOODING, INCLUDING SEA FLOODING EXPECTED.

THE NEXT HIGH TIDE WILL BE AT 10:30PM TONIGHT AND LOW TIDE AT 4:00AM TOMORROW MORNING.

THE MEAN SEAS LEVEL PRESSURE RECORDED AT VAVA'U AT 8PM TONIGHT WAS 1002 MILLIBARS

THE NEXT TROPICAL CYCLONE ADVISORY FOR TONGA WILL BE ISSUED AROUND 11:00PM THIS EVENING.

ANNEX 2**NAMES OF CYCLONES IN THE NADI'S AREA OF RESPONSIBILITY**

The name of a new cyclone is determined by sequentially cycling through lists A, B, C and D, then starting list A again. Names from the standby list E are used as replacements when necessary.

LIST A	LIST B	LIST C	LIST D	LIST E (Standby)
Ana	Arthur	Atu	Amos	Alvin
Bina	Becky	Bune	Bart	Bela
Cody	Chip	Cyril	Colin	Cook
Dovi	Denia	Daphne	Donna	Dean
Eva	Elisa	Evan	Ella	Eden
Fili	Fotu	Freda	Frank	Florin
Gina	Glen	Garry	Gita	Garth
Hagar	Hettie	Haley	Hali	Hart
Irene	Innis	Ian	Iris	Isa
Judy	Joni	June	Jo	Julie
Kerry	Ken	Kofi	Kala	Kevin
Lola	Lin	Lusi	Leo	Louise
Mal	Mick	Mike	Mona	Moses
Nat	Nisha	Nute	Neil	Niko
Olo	Oli	Odile	Oma	Opeti
Pita	Pat	Pam	Pami	Pearl
Rae	Rene	Reuben	Rita	Rex
Sheila	Sarah	Solo	Sarai	Suki
Tam	Tomas	Tuni	Tino	Troy
Urmil	Vania	Ula	Vicky	Vanessa
Vaianu	Wilma	Victor	Wiki	Wano
Wati	Yasi	Winston	Yolanda	Yvonne
Xavier	Zaka	Yalo	Zazu	Zidane
Yani		Zena		
Zita				

ANNEX 3**FUA'AMOTU TROPICAL CYCLONE WARNING CENTRE TROPICAL CYCLONE RESPONSE PLAN (FTCWCTCRP)**

SITUATION	METEOROLOGICAL SERVICE ACTION
Tropical Cyclone Alert (48hrs to 24hrs before expected impact)	<ol style="list-style-type: none"> 1. Contact RSMC Nadi or other regional centers for confirmation and second opinion on system 1. Issue Tropical Cyclone Advisory at least every 6hrs 2. Brief all Forecasters and MET Offices 3. Brief CEO and Minister 4. Brief NEMO 5. Check Communication systems and contingencies required for on-going cyclone response 6. Check standby generator and fuel 7. Activate tropical cyclone duty roster 8. Brief the NEOC when required 9. Inform public through live broadcasts 10. Maintain collaboration with early warning agencies
Tropical Cyclone Warning (24hrs to 0hrs before expected impact)	<ol style="list-style-type: none"> 1. Maintain contact with RSMC Nadi or other regional centers for consensus on system 2. Issue Tropical Cyclone Advisories at least every 3hrs 3. Brief CEO and Minister 4. Brief NEMO 5. Brief the NEOC 6. Inform public through live broadcasts 7. Maintain collaboration with early warning agencies
Cyclone impact	<ol style="list-style-type: none"> 1. Continue to issue TCAs as required 2. Maintain relay of TCAs and/or briefings to Minister, NEMO, NEOC and distribution list 3. Maintain public information through live media interviews and presentations where possible 4. Maintain collaboration with regional specialized meteorological centers
Post Impact (Within 24hrs)	<ol style="list-style-type: none"> 1. Cancellation of TSAs/operational stand down 2. Return Meteorological Service to normal operations 3. Maintain liaison with NEMO 4. Confirmation check of Met Service equipment and damage assessment 5. Prepare and complete meteorological report for CEO and Minister, NEMC and WMO 6. Participate in initial national damage assessment process

ANNEX 4

OPERATIONAL CONTACTS

Name	Email	Phone
Minister of Infrastructure	skvaipulu@yahoo.com	7717186/8781694
CEO of Infrastructure	rfaoliu@gmail.com	7713901
Director of Meteorology	ofaf@met.gov.to	7713903/8451320/8832930
Senior Forecaster	molenit@met.gov.to	7760999/8871934
Manager Tonga Broadcasting Commission	nanisefifita@gmail.com	7863304/7763304
Director of NEMO	Levenih5@gmail.com	26340/8752500

ANNEX 5**ACTIVATION OF FUA'AMOTU TROPICAL CYCLONE WARNINGS CENTRE NOTICE**

Date/Time of Activation	Friday 01 November 2013/1400hrs
Activation # /Season	1/2013-14
Activation Narrative	
At about 1500hrs (28.10.13) Severe Tropical Cyclone "JUDY", Category 3 was located at LAT 13.5S, LON 173W or about 150km SW of Apia moving South at 10KTS. On its current forecast track, Tropical Cyclone "JUDY" is likely to bring Gale force winds or greater to the Niua's in the next 48hrs. Therefore the Fua'amotu Tropical Warning Centre has been activated until further notice and Tropical Cyclone Advisories will be issued and cancelled as warranted.	
Forecast Track	INSERT CYCLONE TRACK HERE
Meteorological Service Duty Forecaster	(1) Activate TMS Tropical Cyclone Response plan (2) Issue Tropical Cyclone Advisories as required
Activating Authority	----- Director of Meteorology (Signature)
Meteorological Service Contacts	Telephone: 35355/35008 Fax: 35123 Email: fmt_met@met.gov.to Web: www.met.gov.to Director Mobile: 7713901 Senior Forecaster Mobile: 8871934 HF frequency: 2182, 3167, 3827, 4042, 5922, 6215, 7620kHz VHF channel 16

ANNEX 6**DE-ACTIVATION OF FUA'AMOTU TROPICAL CYCLONE WARNINGS CENTRE NOTICE**

Date/Time of de-activation	Friday 03 November 2013/0900hrs
De-activation # /Season	1/2013-14
De-Activation Narrative	At about 0800hrs (03.11.13) Severe Tropical Cyclone "JUDY", Category 3 was located at LAT 23.7S, LON 173W or about 250km SE of Tonga moving SE at 15KTS. Based on its current position, Severe TC JUDY (85G100KTS) has moved out of Tonga's boundary. The forecast track indicate that "JUDY" will continue to move further away from Tonga to the SE in the next 24hours and is not expected to cause any further threat to Tonga. All tropical cyclone advisories for Tonga on this system has been cancelled. The FTCWC is therefore formally de-activated and all Meteorological Operations will now return to normal routine operations.
Forecast Track	INSERT CYCLONE TRACK HERE
Meteorological Service Duty Forecaster	(1) De-activate FTCWC Tropical Cyclone Response plan (2) Return to normal operations
Activating Authority	----- Director of Meteorology (Signature)
Meteorological Service Contacts	Telephone: 35355/35008 Fax: 35123 Email: fmt_met@met.gov.to Web: www.met.gov.to Director Mobile: 7713901 Senior Forecaster Mobile: 8871934 HF frequency: 2182, 3167, 3827, 4042, 5922, 6215, 7620kHz VHF channel 16