

INTERGOVERNMENTAL AGREEMENT ON THE PROVISION OF BUREAU OF METEOROLOGY HAZARD SERVICES TO THE STATES AND TERRITORIES

Council of
Australian
Governments

An agreement between

- ◆ the Commonwealth of Australia and
- ◆ the States and Territories, being:
 - ◇ the State of New South Wales;
 - ◇ the State of Victoria;
 - ◇ the State of Queensland;
 - ◇ the State of Western Australia;
 - ◇ the State of South Australia;
 - ◇ the State of Tasmania;
 - ◇ the Australian Capital Territory; and
 - ◇ the Northern Territory of Australia.

This Agreement formalises and standardises services provided by the Bureau of Meteorology to state and territory emergency services agencies and allocates responsibilities of the Australian Government, states, territories and local governments for flood, fire weather, extreme weather and hazard impact event management.

Signed for and on behalf of each of the parties by:

The Hon Michael Keenan MP
Minister for Justice of
the Commonwealth of Australia



The Hon Josh Frydenberg MP
Minister for the Environment and Energy of
the Commonwealth of Australia



The Hon David Elliott MP
Minister for Emergency Services
of New South Wales



The Hon James Merlino MP
Minister for Emergency Services
of Victoria



The Hon William Byrne MP
Minister for Police, Fire and Emergency Services
of Queensland



The Hon Joe M. Francis MLA
Minister for Emergency Services
of Western Australia



The Hon Peter Malinauskas MLC
Minister for Emergency Services
of South Australia



The Hon Rene Hidding MP
Minister for Police, Fire and Emergency Management
of Tasmania



Mr Simon Corbell MLA
Attorney-General of the Australian Capital Territory
Minister for Police and Emergency Services



The Hon Adam Giles MLA
Chief Minister of the Northern Territory
Minister for Police, Fire and Emergency Services



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Background

- A** Economic activity and public safety are heavily impacted by severe weather. The forecasting and warning services of the Bureau of Meteorology (**Bureau**) are relied upon heavily whenever there are heatwaves, fires, cyclones, gales, floods, thunderstorms, fog, frost and other extreme weather events. The high impact of extreme weather events in Australia, combined with a growing population and infrastructure and assets, has seen increased demand on the services of the Bureau.
- B** The Bureau's mission is to provide Australians with the information they need to manage and live within their natural environment, encompassing the atmosphere, oceans, water, and land. In undertaking this mission, the Bureau has formed partnerships with State and Territory emergency services agencies (**Emergency Services Agencies**) to assist in the delivery of services that help to ensure the safety and resilience of Australians.
- C** For hazard warning systems to be fully effective, they must be multi-faceted and responsive in nature, and be developed and operated collaboratively through a number of agencies, and across different levels of government and jurisdictional boundaries. Emergency Services Agencies use the Bureau's information, warnings and advice to plan for, and manage, the impact of natural hazards on the Australian community.
- D** In July 2011, a review of the Bureau's capacity to respond to future extreme weather and natural disaster events and to provide seasonal forecasting services (**Review**) was undertaken. The Review identified 13 'Priority Actions' to mitigate risks requiring early attention and 16 'Options' that could provide savings, enhance efficiency or increase revenue for the Bureau.
- E** In response to the Review, the Australian Government, in partnership with the States and Territories, progressed the matters raised under Priority Action 3 ("formalise and standardise service levels provided to emergency services"), Priority Action 4 ("agree clear allocation of responsibilities to state and local government for flood management, with defined boundaries on the Bureau's role") and Option 21 ("apply a consistent cost-recovery model to all services delivered to state/territory fire agencies") through the establishment of the Standardisation of Bureau of Meteorology Services Taskforce (**Taskforce**) under the Australia-New Zealand Emergency Management Committee on 4 October 2013 and reporting to the Law, Crime and Community Safety Council of the Council of Australian Governments.

1 Purpose and objective

- 1.1 This Agreement is intended to formalise and standardise services provided to State and Territory Emergency Services Agencies, agree on clear allocation of responsibilities of the Australian Government, the States, Territories and local governments for Flood management, Fire Weather management and management of Extreme Weather and Hazard Impact Events.
- 1.2 This Agreement is entered into to implement the agreed approach for the delivery of the Bureau's Services to Emergency Services Agencies and includes the development of governance arrangements, Standard Services and Supplementary Services for Fire Weather, Flood, and Extreme Weather and Hazard Impact Events. The Agreement also outlines the agreed responsibilities for forecasting and warning services for Riverine Flooding and Flash Flood.
- 1.3 This Agreement, through clear articulation of roles and responsibilities, will further strengthen the existing collaborative relationship between the Bureau and Emergency Services Agencies, and help to plan for and manage the impact of Hazard Events for improved community safety outcomes.
- 1.4 This Agreement does not cover, and does not limit, the provision of services by the Bureau to organisations other than Emergency Services Agencies.

2 Roles and responsibilities

2.1 General

Each party, having regard to available resources and operational limitations, will;

- (1) continue to be accountable to the community for achieving outcomes in its area of responsibility;
- (2) use its best endeavours to strive for effective management of Hazard Events within their area of responsibility;
- (3) work towards consistent interpretation and public communication of threats; and
- (4) work together to raise the awareness of State and Territory Emergency Services Agencies in respect of the Services provided by the Bureau.

2.2 Responsible Ministers

- (1) The responsible Ministers for this Agreement are the Commonwealth Ministers responsible for Emergency Services and the Bureau of Meteorology and a Minister from each State and Territory, nominated by their respective Premier or Chief Minister.
- (2) The responsible Ministers will:
 - (a) oversee the coordination and implementation of this Agreement within their jurisdiction;
 - (b) endeavour to support a nationally consistent approach to the provision of Services to Emergency Services Agencies across the jurisdictions; and
 - (c) support the establishment of the Hazards Services Forum.

2.3 Commonwealth

The Commonwealth Government will:

- (1) establish and co-chair the Hazards Services Forum,
- (2) work with State and Territory governments and the Bureau to develop the Services to be provided by the Bureau to Emergency Services Agencies; and
- (3) consult with the Hazards Services Forum on proposed variation to the Services Schedules.

2.4 States and Territories

In accordance with clause 2.1, the State and Territory Governments will, having regard to available resources and operational limitations:

- (1) provide representatives to participate in meetings of the Hazards Services Forum as required;
- (2) work with the Commonwealth Government and the Bureau to develop the Services to be provided by the Bureau to Emergency Services Agencies; and
- (3) monitor the effectiveness of the Services within each of their jurisdictions and, where necessary, submit proposed variations to the Services Schedule to the Hazards Services Forum.

2.5 Bureau of Meteorology Hazards Services Forum

- (1) The parties will establish the Bureau of Meteorology Hazards Services Forum (**Hazards Services Forum**) to enable the States and Territories to request and prioritise changes to the Standard Services and to refer services that could possibly be categorised as Supplementary Services to the Bureau for its consideration.
- (2) The parties will ensure that the Hazards Services Forum operates in accordance with the Hazards Services Forum Terms of Reference.
- (3) The parties agree that while the Bureau will consult with the Hazards Services Forum, and the Hazards Services Forum will provide advice to the Bureau, the recommendations and decisions of the Hazards Services Forum will not be binding on the Bureau.
- (4) In addition to the responsibilities set out in the Hazards Services Forum Terms of Reference, the Hazards Services Forum will assist the Bureau with the process of consulting the States and Territories on modifications to Services Schedules.

2.6 The Bureau

- (1) The Bureau will aim to provide consistent Services across the nation. However, the parties acknowledge and accept that there may be circumstances based on hazard risk, population, climatological and other scientific factors that require the Bureau to vary the provision of Services for certain States or Territories, or to redirect its resources to address one or more particular Hazard Events.
- (2) The parties also acknowledge and agree that the ability of the Bureau to provide the Services is subject to:

- (a) the Bureau's available resources, operational limitations and any applicable policy considerations; and
- (b) the Emergency Services Agencies and relevant third parties discharging their responsibilities,

and that the Bureau may need to vary the scope of, suspend or withdraw a Service if there are excessive demands on the Bureau's services or resources, or if an Emergency Services Agency does not or cannot discharge its responsibilities. It is acknowledged that the Bureau will act reasonably in making such decisions, and will use reasonable endeavours to consult with any affected Emergency Services Agencies before varying the scope of, suspending or withdrawing a Service.

3 Services and Services Schedule

3.1 Standard Services and Supplementary Services

- (1) Services to be delivered by the Bureau to Emergency Services Agencies will be categorised as "Standard Services" and "Supplementary Services".
- (2) Standard Services are core Services that the Bureau will provide in the public interest in accordance with section 6(2) of the *Meteorology Act 1955* (Cth). As at the date of this Agreement, it is intended that the Bureau will not charge any fees for the provision of Standard Services to Emergency Services Agencies.
- (3) Supplementary Services are Services that are additional to Standard Services, and may be requested by an Emergency Services Agency from time to time.
- (4) As at the date of this Agreement, the Bureau will continue to charge Emergency Services Agencies to recover the cost of providing Supplementary Services.
 - (a) The Bureau intends that the charges for Supplementary Services will continue to be set in accordance with the Commonwealth's Cost Recovery Guidelines if the relevant Supplementary Service is not subject to competition (potential or actual).
 - (b) The charges for other Supplementary Services will continue to be competitively neutral and recognise the users' public interest functions.
 - (c) The Bureau may require Emergency Services Agencies to enter into an agreement with the Bureau for the provision of Supplementary Services.

3.2 Service exclusions

The Services do not include:

- (1) services provided by other Commonwealth Government agencies;
- (2) services provided by the Bureau to other Commonwealth Government agencies;
- (3) other services provided by the Bureau which are not Services in respect of the relevant Hazard Events; or
- (4) any natural hazard initiatives owned or implemented by a State or Territory within their jurisdiction.

3.3 Services Schedule

- (1) The Services Schedules describes the set of Standard Services in respect of Fire Weather, Flood and Extreme Weather and Hazard Impact Events that the Bureau will provide. Where applicable, the Services Schedules also describe further details on the definition of the Services.
- (2) The Services Schedules may also set out one or more Supplementary Services which are not considered Standard Services.
- (3) The Services Schedules do not contain an exhaustive list of all Supplementary Services that the Bureau may offer.
- (4) The parties agree and accept that the Services Schedules (as varied from time to time) exhaustively describe the set of Standard Services that the Bureau will provide to Emergency Services Agencies.

3.4 Variation to Services Schedule

- (1) The parties acknowledge that the Services that the Bureau will provide to Emergency Services Agencies will evolve over time and that certain Services may be introduced and withdrawn by the Bureau from time to time. The Bureau does not warrant that any particular Service will always be available, or will be available at a particular time.
- (2) To further the objectives of this Agreement, the parties agree that the Bureau may vary the Services that it provides to Emergency Services Agencies by varying the Services Schedule in accordance with this clause 3.4, without the need for formal variation to this Agreement, or further agreement between the Bureau and the Emergency Services Agencies.
- (3) If the Bureau wishes to vary a Services Schedule, the Bureau will submit the proposed variation to the Hazards Services Forum, and will consult the Hazards Services Forum and the States and Territories, at all times acting reasonably and consistent with the purpose and objectives of this Agreement.
- (4) The Hazards Services Forum may also, from time to time, after consulting with the States and Territories and the Bureau, submit proposed variations to the Services Schedules to the Bureau.
- (5) The Bureau will have full regard to the recommendation and advice of the Hazards Services Forum and act reasonably in determining any proposed variation to the Services Schedules. The parties acknowledge that the Bureau may also have regard to other factors such as available resources, operational limitations and any applicable policy considerations.
- (6) If the Bureau varies a Services Schedule, the Bureau will notify the Hazards Services Forum of the variation, and the variation will take effect on the Hazards Services Forum's receipt of such notice.
- (7) The Hazards Services Forum will agree on and establish a formal process through which variations to the Services Schedules will be proposed, considered and implemented in that Forum.

4 Fire Weather Services

- 4.1 The parties acknowledge the following, which provides context to this clause 4:

- (1) The Bureau has historical and statutory responsibility for the issue of warnings of weather conditions likely to endanger life or property, including weather conditions likely to give rise to bush fires.
 - (2) The responsibility for bush fire preparation, response and warnings of bush fires lies with State and Territory governments and local governments. This includes the determination of Fire Danger Ratings using a range of criteria incorporating forecast weather provided by the Bureau.
- 4.2 Having regard to the context set out in clause 4.1, the parties agree:
- (1) that the Bureau has the responsibility for provision of forecasting and warning services for weather conditions likely to give rise to bush fires in all jurisdictions in Australia;
 - (2) that to support the Bureau, the States and Territories will provide the Bureau with relevant information that is in their possession or control and required by the Bureau in order to discharge the Bureau's responsibilities; and
 - (3) to work together to mutually develop and maintain national standards for warnings of bush fires and Fire Danger Ratings subject to clause 4.1(2).
- 4.3 Specialised Services are provided by the Bureau to Emergency Service Agencies. These Services generally provide detailed technical information to assist these organisations in planning disaster mitigation strategies. The Standard Services and Supplementary Services relating to Fire Weather are delineated in Schedule 2 of this Agreement.

5 Extreme Weather and Hazard Impact Events

- 5.1 The parties acknowledge the following, which provides context to this clause 5:
- (1) The Bureau has historical and statutory responsibility for the issue of warnings of gales, storms and other weather conditions likely to endanger life or property.
 - (2) In practice, the Bureau of Meteorology issues these warnings whenever severe weather is occurring in an area or is expected to develop or move into an area.
 - (3) Warnings services may be more limited in some areas, particularly remote and unpopulated areas, as data may not be available for effective monitoring and prediction.
- 5.2 Having regard to the context set out in clause 5.1, the parties agree:
- (1) that the Bureau has the responsibility for provision of forecasting and warning services for Extreme Weather and Hazard Impact Events in all jurisdictions in Australia;
 - (2) that to support the Bureau, the States and Territories will provide the Bureau with relevant information that is in their possession or control and required by the Bureau in order to discharge the Bureau's responsibilities;
 - (3) to work together to mutually develop and maintain national standards for warnings for Extreme Weather and Hazard Impact Events, subject to clauses 5.1(2) and 5.1(3).
- 5.3 Tailored Supplementary Services are provided by the Bureau to Emergency Service Agencies. These Services generally provide detailed technical information to assist these organisations in planning disaster mitigation strategies. The Standard Services and

Supplementary Services relating to Extreme Weather and Hazard Impact Events are delineated in Schedule 4 of this Agreement.

6 Flood arrangements

6.1 The parties acknowledge the following, which provides context to this clause 6:

- (1) The Bureau has historical and statutory responsibility for the issue of warnings of weather conditions likely to give rise to Floods.
- (2) In practice, the responsibility for Flood preparation, Flood monitoring, developing forecasts and warnings and the dissemination of these warnings are shared between all levels of government.
- (3) Priority Action 3 of the Review recommends formalising and standardising service levels provided to emergency services.
- (4) Priority Action 4 of the Review recommends agreement on the clear allocation of responsibilities to State and local government for Flood management, with defined boundaries on the Bureau's role.
- (5) In its response to the Review (available at <http://www.bom.gov.au/governmentresponse/doc/munro-review.pdf>), the Commonwealth Government:
 - (a) recognised that an important first step to improving flood preparation, monitoring and warning arrangements is establishing clear and consistent roles and responsibilities for agencies involved in flood management at all levels of government;
 - (b) noted that these issues cannot be resolved by the Bureau alone, and will require whole-of-government consultation and cooperation, with State and local governments;
 - (c) agreed that it will be important to develop national standards for investment in, and operation of, flood monitoring networks and infrastructure; and
 - (d) noted that prime responsibility for flash flood warnings lies with States and Territories through local councils, and that the Bureau does not have the capacity to directly communicate with all councils during a major wide-spread disaster event on every occasion.

6.2 In relation to Priority Action 3 of the Review, the parties acknowledge that the Bureau has partially addressed this through the development of service level specifications for Flood forecasting and warning services in respect of all jurisdictions, and through the entry into data sharing agreements with a number of water data providers.

6.3 Without limiting clause 3.4, in respect of Riverine Flood Services, the parties acknowledge that the Bureau, in consultation with all Flood Warning Consultative Committees, has developed service level specifications applicable in each jurisdiction and those service level specifications have been accepted by (and in the case of Australian Capital Territory, on behalf of) the relevant States and Territories as at the date of this Agreement.

6.4 Having regard to the context set out in clause 6.1, the parties agree that:

- (1) the Bureau has the responsibility for provision of forecasting and warning services for Riverine Flooding in all States and Territories, except where otherwise outlined in Schedule 3; and

- (2) to support the Bureau, the States and Territories will provide the Bureau with relevant flood information that is in their possession or control and required by the Bureau in order to discharge the Bureau's responsibilities.

6.5 In relation to Flash Floods, the parties agree that:

- (1) all levels of government will collaborate in preparing the community for the potential of Flash Flooding, which by its nature may not allow sufficient lead time for site specific warnings and forecasts;
- (2) responsibility for Flash Flood warnings and systems lies with the States and Territories in partnership with local government (where appropriate) within their jurisdictions. States and Territories generally determine localities at risk of Flash Flooding from flood studies as part of a formal risk assessment process. The Bureau will support this role by:
 - (a) continuing to work actively with local governments to support the development of such systems and procedures;
 - (b) communicating supplementary information (to its standard warning products) , such as radar and rainfall forecasts, directly through the emergency services mechanism established in each State and Territory; and
 - (c) republishing any State, Territory or local government generated flash flooding information on its website if a mechanism for doing so is agreed and arranged prior to the operational event; and
- (3) the Commonwealth's responsibility in relation to Flash Floods is for the Bureau to provide forecasts and warnings for severe weather conditions and potential heavy rainfall conducive to Flash Flooding and to carry out applied research and development to improve the provision of severe weather information (e.g. areal, intensity and timing).

7 Financial arrangements

7.1 The parties agree that unless otherwise mutually agreed by the relevant parties (and having regard to available resources and operational limitations referred to in clause 2.1):

- (1) the Commonwealth will meet the cost of its activities associated with the implementation of the provisions of this Agreement; and
- (2) each of the States and Territories will meet the cost of its activities associated with the implementation of the provisions of this Agreement.

7.2 This clause 7 does not limit the Bureau's ability to charge Emergency Services Agencies to recover the cost of providing Supplementary Services, as outlined in clause 3.1(3).

8 Commencement, review, variation and termination

8.1 This Agreement commences immediately upon its execution by all the parties.

8.2 This Agreement will be reviewed five years after its commencement. This review will be conducted by a body agreed by the parties. If agreement cannot be reached by all parties, Clause 9 regarding dispute resolution shall take effect.

8.3 This Agreement may be varied only by the unanimous agreement, in writing, of the parties.

- 8.4 Unless otherwise agreed by the parties, this Agreement will automatically expire on the 10th anniversary of its commencement date. However, if a Hazard Event exists as at the date of termination that requires the Services of the Bureau, the parties agree that this Agreement will survive during the period of the Hazard Event.
- 8.5 This Agreement may also be terminated by the unanimous agreement, in writing, of the parties.

9 Dispute Resolution

- 9.1 If a dispute about this Agreement arises between the parties, it must be resolved expeditiously:
- (1) by the Hazards Services Forum if it remains in operation;
 - (2) if the Hazards Services Forum does not exist, or if the dispute remains unresolved, then the dispute may be referred to the Minister with responsibility for the Bureau of Meteorology to resolve with the relevant state and territory responsible minister/s; and
 - (3) if the dispute continues to remain unresolved, it may be referred to the LCCSC for resolution as soon as practicable.
- 9.2 In this clause 9, Responsible Minister means the Minister responsible for emergency services in their respective jurisdiction.

10 Interpretation

In this Agreement, unless expressed to the contrary words importing the singular include the plural and vice versa.

11 Definitions

- 11.1 In this Agreement, unless the contrary intention appears:
- (1) **Bureau** means the Bureau of Meteorology of the Commonwealth of Australia.
 - (2) **Emergency Services Agency** means an emergency services agency or organisation in a State or Territory (including local government, where applicable) that is responsible for the management of or response to emergency events in its respective State or Territory.
 - (3) **Extreme Weather and Hazard Impact Event** has the meaning given in Schedule 4.
 - (4) **Fire Weather** has the meaning given in Schedule 2.
 - (5) **Flash Flood** or **Flash Flooding** has the meaning given in Schedule 3.
 - (6) **Flood** or **Flooding** has the meaning given in Schedule 3.
 - (7) **Flood Warning Consultative Committees** means the committees established in each State and the Northern Territory and chaired by the Bureau. Membership of the committees is drawn from key stakeholder agencies with an interest in flood forecasting and warning services. The New South Wales Flood Warning

Consultative Committee acts on behalf of New South Wales and the Australian Capital Territory.

- (8) **Hazard Event** means an event giving rise to the need for emergency management by one or more Emergency Services Agencies, being:
- (a) Fire Weather;
 - (b) Flood; or
 - (c) Extreme Weather and Hazard Impact Event.
- (9) **Hazards Services Forum** means the Bureau of Meteorology Hazards Services Forum established pursuant to the Hazards Services Forum Terms of Reference, and referred to in clause 2.5.
- (10) **Hazards Services Forum Terms of Reference** means the terms of reference set out in Schedule 1.
- (11) **LCCSC** means the Law, Crime and Community Safety Council of the Council of Australian Governments, and its successor or replacement council.
- (12) **Review** means the “Review of the Bureau of Meteorology’s capacity to respond to future extreme weather and natural disaster events and to provide seasonal forecasting services” commissioned by the Department of Sustainability, Environment, Water, Population and Communities, dated December 2011, available at <http://www.environment.gov.au/system/files/resources/bc0cc118-a6f2-496c-82fd-0b092c4cc7a5/files/bom-review.pdf>.
- (13) **Riverine Flooding** means any Flooding where the rain-to-flood delay time is relatively high and typically more than six hours, but excludes Flooding caused by:
- (a) elevated sea levels;
 - (b) Storm Surge;
 - (c) Flash Floods;
 - (d) failure of any man-made infrastructure, for example failure of dams or levees; or
 - (e) urban overland flow.
- (14) **Services** means the services provided by the Bureau to Emergency Services Agencies in respect of one or more Hazard Events, as categorised further into Standard Services and Supplementary Services, but excludes those services referred to in clause 3.2.
- (15) **Services Schedule** means each of Schedule 2, Schedule 1 and Schedule 4 (as amended from time to time by the Bureau pursuant to clause 3.4).
- (16) **Standard Service** has the meaning given in clause 3.1(2).
- (17) **Storm Surge** means the rise in water level due to a tropical storm or cyclone or a middle latitude storm. The storm surge height is the difference between the observed tide level and the level that would have occurred in the absence of the cyclone or storm (i.e. the astronomical tide).

- (18) **Supplementary Service** has the meaning given in clause 3.1(3).
- (19) **Taskforce** means the taskforce referred to in paragraph E of the Background.

Schedule 1

Terms of Reference of the Bureau of Meteorology Hazards Services Forum

Name:	Bureau of Meteorology Hazards Services Forum
Co-Chairs:	Division Head, Hazards, Warnings and Forecasts in the Bureau of Meteorology and Director-General, Emergency Management Australia in the Australian Attorney-General's Department
Meeting Regularity:	Bi-annually (proposed at end of March and end of September each year) or as required

Introduction

The *Standardisation of Bureau of Meteorology (Hazards) Services Taskforce* was established by the ANZEMC in October 2013. The Taskforce, jointly chaired by the Australian Bureau of Meteorology (the Bureau) and the Australian Attorney-General's Department (AGD), delivered detailed recommendations to the Australia-New Zealand Emergency Management Committee (ANZEMC) and Law Crime and Community Safety Council (LCCSC) of the Council of Australian Governments (COAG) in early 2015 to standardise the Bureau's hazard services to emergency service organisations across Australia and to agree clear allocation of responsibilities to Commonwealth, State, Territory and Local Government for flood management. One of the Taskforce's key outcomes was agreement on a set of nationally-consistent standard and supplementary services covering the Bureau's hazard-related services for fire weather, flood and extreme weather and hazard impact events.

In order to ensure the Bureau's hazard services remain nationally standardised into the future, it was agreed to establish the Bureau of Meteorology Hazards Services Forum (the Hazards Services Forum). The Hazards Services Forum will immediately progress the issues that have remained outstanding from the Taskforce in order to achieve standardisation of all the Bureau's hazard-related services. The establishment of the Hazards Services Forum will be formalised by the signing of a formal agreement between the Commonwealth and State and Territory Governments at the Law Crime and Community Safety Council in late 2015 (the "National Agreement on the Provision of Bureau of Meteorology Hazard Services to States and Territories").

Purpose

The Hazards Services Forum facilitates consultation with state and territory operational emergency services agencies to guide current and future strategic development of the Bureau of Meteorology's hazard services. Specifically, the Hazards Services Forum will provide advice on the appropriateness and relative priority of requested changes to the Bureau's standard services, increasing the Bureau's ability to more effectively meet community needs.

Scope

The scope considered by the Hazards Services Forum includes all hazard related services provided to state and territory emergency services agencies by the Bureau. These services are provided by the Bureau under s6.1(c) of the *Meteorology Act 1955* which requires the Bureau to provide advice, forecasts and warnings in relation to meteorological matters including "gales, storms and other weather conditions likely to endanger life or property, including conditions likely to give rise to floods or bush fires" and through other Australian Government policy directives.

The following items were considered out-of-scope:

- Services provided by other Commonwealth Government agencies.
- Services provided by the Bureau to Commonwealth Government agencies.
- Other Bureau services not related to natural hazards.
- Natural hazard initiatives owned by and being implemented by the state and territory emergency service agencies within their own State/Territory.

Responsibilities

The Hazards Services Forum will:

1. Oversee the implementation of the outcomes of the Standardisation of Bureau of Meteorology (Hazards) Services Taskforce, including the roles and responsibilities of the parties as outlined in the “National Agreement on the Provision of Bureau of Meteorology Hazard Services to States and Territories” for the term of the Agreement;
2. Ensure the creation of linkages and relationships between the Hazards Services Forum’s work and related projects and activities proposed or taking place within the Commonwealth, State, Territory and Local Government, and maximise possible outcomes presented by future funding opportunities for the improvement of hazard services;
3. Advise emergency services agencies of current and future Bureau capabilities that would contribute to their emergency roles;
4. Take technical advice on matters that impact upon the provision of existing or future Bureau hazard services, and provide advice to the Bureau on the appropriateness and relative priority of proposed changes to standard and supplementary services; and;
5. Examine and provide advice on the strategic directions of the state and territory emergency service agencies in concert with future directions and capabilities of the Bureau’s hazard services.

Operation

The authority, membership and operation for the Hazards Services Forum are as follows:

Authority

The Hazards Services Forum has been established as a consultation mechanism to provide advice from operational emergency services agencies to the Bureau and to ensure that the Bureau’s current and future hazard services meet community needs. Giving due consideration to the advice of the Hazards Services Forum, the Director of Meteorology remains responsible for any decisions that impact on the management of the Bureau under the relevant legislation.

Membership

The Division Head, Hazards, Warnings and Forecasts in the Bureau of Meteorology and the Director-General, Emergency Management Australia in the Australian Attorney-General’s Department, are the Co-Chairs of the Hazards Services Forum.

The other members of the Hazards Services Forum are:

- In addition to the Co-Chairs, no more than one representative from the Bureau of Meteorology and the Australian Attorney-General’s Department;
- From within the operational emergency services agencies of each state and territory, at least one (no more than two) senior strategic operational officers at the deputy commissioner/assistant commissioner level or other appropriate senior officials;
- At least one (but no more than two) representatives from the Australian Local Government Association; and
- At least one (but no more than two) representatives from the Australasian Fire and Emergency Services Authorities Council.

With the exception of the Co-Chairs, members of the Hazards Services Forum are required to nominate an appropriate proxy that will take their place if they are unable to attend a meeting. The Bureau will provide and fund a Secretary for the Hazards Services Forum.

Membership of the Hazards Services Forum may be altered by agreement between the Co-chairs. Advisers and observers may attend meetings with the prior written approval of the Co-Chairs.

The Hazards Services Forum may, at its discretion, seek and receive advice to assist it in the performing of its duties from:

- Government officers at a Commonwealth or State and Territory level;
- Technical and peak bodies; and
- Other external parties and/or private providers.

At its discretion, the Hazards Services Forum may establish technical working groups to provide advice on specific matters of a technical nature.

The Hazards Services Forum will establish a process to evaluate proposed changes to the Bureau's hazard services against agreed criteria, including its level of national or state/territory priority, resource requirements (initial and ongoing), community benefits and delivery timeframes.

Conflict of Interest

Members of the Hazards Services Forum must declare any interests, whether personal, financial or commercial, which might conflict or restrict provision of fair and independent involvement in Hazards Services Forum matters.

The Co-Chairs must be advised of any such conflicts, whether established, potential or apparent, and take the necessary steps to resolve or otherwise deal with the conflict including the option of deciding that the member should leave the meeting while the matter is under consideration.

Confidentiality

The discussions and papers of the Hazards Services Forum will normally remain confidential unless otherwise communicated through the decisions and minutes of the meetings.

The meeting minutes and papers are 'For Official Use Only'. They should not be released to any person outside the Hazards Services Forum without prior written approval of the Co-Chairs.

The distribution of Hazards Services Forum materials should be limited to required consultation and other parties as determined by the Co-Chairs.

The Secretary to the Hazards Services Forum is responsible for providing advice on security and appropriate marking of papers in line with the Australian Government's standard protective security markings for official information.

Agenda and Papers to the Meetings

Completed papers to be considered by the Hazards Services Forum at the meetings must be provided to the Secretary at least 4 working weeks prior to the set meeting date, unless otherwise agreed.

Papers received after this time will be subject to consideration by the Co-Chairs as to their importance or otherwise for late inclusion on the meeting agenda.

The Secretary will prepare an agenda in consultation with the Co-Chairs. The Secretary will ensure both the agenda and papers are forwarded to Hazards Services Forum members at least 2 working weeks prior to the set meeting date.

Timing and Structure of Meetings

The Hazards Services Forum will meet approximately twice per year in person. Meeting dates will be set in December each year for the following year by the Secretary in consultation with the Co-Chairs and members as required.

Additional meetings may occasionally be called outside of these regular meetings as required at the discretion of the Co-Chairs in consultation with members.

Venue, catering and equipment will be arranged, and costs will be met by the Bureau. Travel expenses of jurisdictions will be met by jurisdictions.

Minutes of Meetings

If significant disagreements arise regarding the contents of the minutes, the Secretary will consult with the Co-Chairs before amendments are made.

Minutes will be distributed to members once signed-off by the Co-Chairs.

Review of Terms of Reference

These Terms of Reference can be reviewed at the discretion of the Hazards Services Forum. Changes to these Terms of Reference require the endorsement of the Co-Chairs.

Schedule 2

Schedule of Current Fire Weather Services

1 Definitions

1.1 **Fire Weather** means the threat of weather conditions conducive to supporting or accelerating the burning of areas of natural vegetation.

2 Nationally-agreed services

2.1 Table A below outlines those current Fire Weather Services that are nationally-agreed by the ANZEMC Standardisation of Bureau of Meteorology Hazards Services Taskforce. A short description of these services, as well as whether it is a standard or supplementary service is also included. Table B outlines those Fire Weather Services that have not been nationally-agreed and which are subject to further work across key stakeholders. The numbering shown below is consistent with the contents of the Action Plan for Fire Weather Services contained within the ANZEMC Standardisation of Bureau of Meteorology Hazards Services Taskforce's Final Report.

Table A – Nationally-Agreed Current Fire Weather Services

Description of the Fire Weather Services
Section 2.1 – Monitoring & Prediction
2.1.1 Grassland Curing
<p>Grassland curing is a measure of how dry grasslands are and this is used as an input to derive grassland fire danger indices. Each jurisdiction varies in its method of monitoring and providing grassland curing information to the Bureau of Meteorology, and this is a major contributor to cross-jurisdictional variation in fire danger ratings.</p> <p>It was agreed that the Bureau of Meteorology would use agency provided satellite derived curing, although some agencies will need some assistance to develop this capability.</p> <p>Standard Service</p>
2.1.5 Fire Season Dates
<p>Fire season dates from the Bureau of Meteorology’s perspective define when the regional forecast office uses specific fire weather forecasters to edit grids and provide agreed fire weather products. These dates vary around the country, and are considered acceptable and necessary given the range of climates.</p> <p>Standard Service</p>
Section 2.2 – Interpretation
2.2.3 Fire Danger Meters
<p>Fire danger index meters are methods that combine weather and fuel information to derive a fire danger index. There is consistency across jurisdictions on the fire danger index meters used.</p> <p>Standard Service</p>
Section 2.3 Products
2.3.1 Fire Weather Warning Trigger
<p>The Fire Weather Warning product warns for weather conditions conducive to the spread of bushfires. Fire agencies have usually been quite involved in developing the “triggers” for when it is issued, and therefore we have the situation where there is variation in approach to the warning.</p> <p>No immediate change proposed, but outcomes of fire danger research may provide future direction.</p> <p>Standard Service</p>

Description of the Fire Weather Services

2.3.2 Fire Weather Action Statements

Action statements are inserted towards the end of the Fire Weather Warning, the content of which has been determined by jurisdictional fire agencies. Although there was an attempt to have a national framework which included standard action statements when the fire danger rating scale was developed in 2009/2010, there are still quite a number of differences between jurisdictions.

It was agreed that a standard statements regarding calls to action would be included in the warning.

Standard Service

2.3.3 Total Fire Ban Issuing Agency

Total Fire Bans were until recently the only mechanism that prescribed the lighting of fires and other activities that create an ignition risk. Since 2009 the declaration of some Fire Danger Ratings is becoming a method of prescribing activities, either by State legislation or by insurance risk mitigation. The decision to implement a Total Fire Ban is taken by the appropriate fire agency, but in some jurisdiction the Bureau of Meteorology issues a product on their behalf.

It was agreed that the Bureau of Meteorology would cease issuing the Total Fire ban with the messaging to be carried by the state jurisdiction, although a transition plan for this is required.

Standard Service

2.3.4 Total Fire Ban Cancellation

In some jurisdictions, a Total Fire Ban can be cancelled by the fire agency if the factors resulting in the issue of the ban, including weather conditions change during the day. Variation in this practice is acceptable, although this will become redundant when 2.3.3 (Total Fire Ban Issuing Agency) plan is implemented.

Not applicable.

2.3.5 Wind Change Forecast Charts

Wind change charts are used to provide guidance of wind change development on days of significant (usually very high fire danger or above) fire danger, and consist of forecast times of wind change position. Due to the complex nature of wind changes, these charts are only provided for areas where wind change movements can be appropriately approximated by this product.

It was agreed that no changes to this service would occur in the short-term.

Standard Service

2.3.6 Fire Weather Estimates – Issuance Times

Fire Weather Estimates provide detailed forecasts of expected weather and fire danger indices and are used by jurisdictions for bushfire preparedness and

Description of the Fire Weather Services

planning.

The issuance time of the fire weather estimates varies around the jurisdictions.

It was agreed that the Bureau of Meteorology would move towards providing standard issue times in consultation with agencies.

Standard Service

2.3.7 Fire Weather Estimates – Forecast number of days

Fire Weather Estimates provide detailed forecasts of expected weather and fire danger indices and are used by jurisdictions for bushfire preparedness and planning.

The Fire Weather Estimates are issued in each state for a variable number of days. This is generally only for the next day, but in some jurisdictions they are issued for up to the next 4 days. It is expected that other products (such as gridded forecasts, graphical forecasts) will eventually supersede the current text forecast.

It was agreed that forecaster generated products be standardised to the next day only, with other days to be mostly automated. Forecasters will retain the ability to provide direct input on high impact days.

Standard Service

2.3.8 Fire Weather Estimates – Weather Elements Included

Fire Weather Estimates provide detailed forecasts of expected weather and fire danger indices and are used by jurisdictions for bushfire preparedness and planning.

There is a weather elements section which includes information on lightning, rainfall, wind speeds and atmospheric mixing heights, and each jurisdiction currently receives different data in this section.

It was agreed that the fire weather estimates contain a standard set of weather elements.

Standard Service

2.3.9 Fire Weather Estimates – Thresholds in Area Section

Fire Weather Estimates provide detailed forecasts of expected weather and fire danger indices and are used by jurisdictions for bushfire preparedness and planning.

There is an area data section of the fire weather estimates, which gives the percentage of district, start time, and number of hours above certain fire danger index thresholds. The thresholds provided in each state vary considerably. There is a case for some variation due to climatology (i.e. in Tasmania), but other variations are not required given the volatility of the index to small input changes.

It was agreed that the thresholds be standardised to standard 4 levels where possible, allowing only for acceptable differences due to climatology.

Description of the Fire Weather Services

Standard Service

2.3.10 Fire Weather Products – Amendment Criteria

For historical and climatological reasons there are complex differences in criteria used to determine when amendments to fire weather products are required. Having different Amendment Criteria makes it difficult for the Bureau of Meteorology to move staff between regions and creates an additional training load.

It was agreed that the Bureau of Meteorology develop standard Amendment Criteria in consultation with jurisdictions.

Standard Service

2.3.11 Fire Weather Outlook

The Fire Weather Outlook provides a brief description of the weather situation for each of the next 4 days.

It was agreed that the provision of these products cease following the 2014/15 season, as they have been superseded by grid and graphical services.

Standard Service (ceasing in 2015)

2.3.12 Fire Weather Briefing

The Fire Weather Briefing is currently provided in Victoria. It provides an update on the forecast for that day and any issues with observational equipment.

It was agreed that this product be made a supplementary service.

Supplementary Service

2.3.13 Dangerous Fire Weather Advice

This product is a text description to give notice of upcoming weather which may produce dangerous fire conditions.

It was agreed that this product be made a supplementary service.

Supplementary Service

2.3.14 Grid information – Australian Digital Forecast Database

Gridded information provides access to all fire weather information on a 3km or 6 km grid for 4 days and is provided through FTP access. Fire weather grids are only available during the defined fire weather season. Some other grids (e.g. rainfall) may be available for other time periods due to policies determined by other Bureau Programs.

It was agreed that this service be provided as the primary product for fire weather information, with data available for the next 4 days and all year round. Some automation will be required outside of fire weather season, although forecasters will retain the ability to focus on high impact weather.

Description of the Fire Weather Services

Standard Service

2.3.15 Fire Weather Images

Images of fire danger indices are provided in each state. There is some variation in fuel types and thresholds used, but this is acceptable due to variation in climate.

Standard Service

2.3.16 Fire Danger Ratings Product

The fire danger ratings product is a table displaying the forecast fire danger rating for each forecast district for the next 4 days. It is provided as guidance to the jurisdiction for determining the official fire danger rating and the need for fire bans.

It was agreed that this service be provided in all jurisdictions as a standard service.

Standard Service

2.3.17 Spot Fire Forecasts (12 to 30 hour forecast)

Spot fire forecasts are detailed forecasts provided for going wildfires.

There are some acceptable differences due to fuel type and climate, but it was agreed that some elements such as forecast length, outlook information and maximum number of forecasts be standardised.

Standard Service

Section 2.4 Communication

2.4.1 Registered User Websites

Registered User Websites were originally established to assist agencies in disseminating information to the Brigade level. A more appropriate model is to provide fire weather information by a National Fire Weather Page to the wider community and for fire agencies to disseminate more specific information (such as cost recovery products) and xml versions of products obtained by ftp using their Intranet.

It was agreed that the Bureau would develop a national fire weather page to replace current registered user websites.

Standard Service

2.4.2 Rating Adjustment

In some jurisdictions, the proposed fire danger rating provided by the Bureau (using criteria specified by agency) is adjusted by the fire agency based on other factors (e.g. going fires, public holidays). This is acceptable as it remains the fire agencies responsibility to adjust the rating based on other factors.

Description of the Fire Weather Services

Standard Service

2.4.3 Meetings

Routine pre and post season meetings are held to discuss the past season and requests for changes to services.

Standard Service

Section 2.5 Capability Development

2.5.2 Exercise Support

Agencies do not generally need to develop mock exercises for wildfire response. There are occasional exercises in relation to Hazmat, Counter Terrorism or Animal Health Emergencies. Except for minor involvement, services provided in support of these exercises should generally be provided on a cost recovery basis.

Supplementary Service

2.5.3 Training

The Bureau has historically provided fire weather training assistance to agencies. In recent years this training, when requested, has been generally provided on a cost recovery basis to ensure that adequate resources are available. The agencies have raised the importance of having a fire weather forecaster available to deliver the training, not just develop the curriculum or resources.

Supplementary Service

2.5.4 Media Briefings

During major Severe Weather Events, including major bushfires, the Bureau provides media briefings under its Corporate Communications Program. Out-posted forecasters in particular contribute through media briefings held at State Control or Coordination Centres. It is understood that Bureau staff will only comment about the weather situation.

Standard Service

2.5.5 Major Campaign Field Deployment

On rare occasions in the past the Bureau has deployed forecasters to the forward campaign incident management team to provide field intelligence. This has not been provided for many years.

It was agreed that these services be provided as a supplementary service.

Supplementary Service

Description of the Fire Weather Services

2.5.6 Extended services (particularly extra BoM forecasters) to State Control Centres

During significant campaign fires, additional forecasters may be requested by the jurisdictions to attend the State Control Centres (or the Incident Management Team in the ACT). This could be to increase the hours of coverage of the out-posted forecaster position or to provide an out-posted forecaster in regions where that service does not already exist. This is currently provided on a cost recovery basis due to the significant costs the Bureau has in providing extra forecasting support to a region via surge capacity. However, as part of its standard service the Bureau will make every effort to provide an additional liaison officer at State Control Centres during critical high level briefings when requested by agencies for serious fires. These arrangements are currently in place and being activated by the Bureau.

Supplementary Service

Table B – Schedule of Fire Weather Services that are yet to be Nationally-Agreed

Description of the Fire Weather Services that are yet to be determined

Section 2.1 – Monitoring & Prediction

2.1.2 Grass Fuel Load

Each jurisdiction varies in its method of monitoring and providing grass fuel load information to the Bureau of Meteorology for derivation of grassland fire danger indices. This variation does not currently have a large impact on Bureau systems or processes; however it is a major contributor to cross-jurisdictional variation in fire danger ratings which erodes public confidence in the rating information.

Outcomes of the CFA Project titled “Development of the improved assessment of grassland curing and fire behaviour modelling” are to be closely monitored for potential national application.

Standard or Supplementary Service not applicable

2.1.3 Forest Soil Dryness

Variations exist as to the type of forest soil dryness indicator (known as KBDI or SDI index) that is used in the calculation of drought factor. Neither measure provides a satisfactory solution, especially in areas of increased rainfall variability.

Standard or Supplementary Service not applicable.

Description of the Fire Weather Services that are yet to be determined

2.1.4 Fuel Type Allocation

Emergency Service agencies define which grid locations are forest, grass, moorland or combined fuel types. There is variation on how this is done, which results in different methods being used when calculating an overall fire danger rating for a district.

Standard or Supplementary Service not applicable.

Section 2.2 – Interpretation

2.2.1 Forest Fire Danger Scale

Consistency of wording for “Catastrophic” (Code Red is used in Victoria) is desirable, mainly for a consistent public message. For the purposes of the Bureau providing agencies with suggested FDRs, national consistency in thresholds is desirable.

Standard or Supplementary Service not applicable.

2.2.2 Grassland Fire Danger Scale

Consistency of wording for “Catastrophic” (Code Red is used in Victoria) is desirable, mainly for a consistent public message. For the purposes of the Bureau providing agencies with suggested FDRs, national consistency in thresholds is desirable.

Standard or Supplementary Service not applicable.

Section 2.3 Products

2.3.18 Spot Fire Forecasts (4 day outlook product)

This product provides forecast morning and afternoon weather conditions and fire danger indices for locations requested by fire agencies. This is provided as a supplementary service to provide agencies assistance with prescribed burning or other longer term planning.

Standard or Supplementary Service to be determined

Section 2.4 Communication

2.4.4 Regular Briefings

Regular briefings, on a continuous scheduled basis, are a way to provide agencies with information about the potential for significant fire weather events up to a week in advance. These regular briefings are currently completed in one jurisdiction by fire weather forecasters, while other jurisdictions include this service within the role of the out-posted forecaster, or on a cost recovery basis. It is proposed that these dedicated services be provided on a cost recovery basis throughout, which are preferably part of the duties of an out-posted forecaster.

Standard Service if occasional briefing is required from available forecaster capacity or Supplementary Service if required on a dedicated basis

Description of the Fire Weather Services that are yet to be determined

for an extended period of time.

Section 2.5 Capability Development

2.5.1 Planned Burning Support

It is understood that planned or prescribed burning is a key deliverable of fire agencies. The provision of Spot Fire Weather forecasts and other support of planned (or prescribed) burning programs is considered a cost-recovery activity. Some jurisdictions are using State Control Centre meteorologists to provide this service on a cost recovery basis. Some agencies consider that the Commonwealth should provide greater funding for prescribed burning programs as this is a Natural Hazard mitigation program, and that one method of Commonwealth support is through the Bureau providing fire weather services for planned burning using its appropriations. Extending the Fire Weather Season to cover the periods of planned burning would require significant extra staff resources.

Standard or Supplementary Service to be determined

Schedule 3 Schedule of Current Flood Services

1 Definitions

1.1 **Flash Flooding** means any Flooding of short duration with a relatively high peak discharge in which the time interval between the observable causative event and the Flood is less than six hours.

1.2 **Flood or Flooding** means the covering of normally dry land by water that has escaped or been released from the normal confines of:

- (1) any lake, or any river, creek or other natural watercourse, whether or not altered or modified; or
- (2) any reservoir, canal or dam,

The standard classifications used to describe three severity levels for Flooding, and which are set out in service level specifications applicable in each jurisdiction and accepted by all of the Flood Warning Consultative Committees as at the date of this Agreement, are:

- (i) Minor Flooding – Causes inconvenience. Low-lying areas next to watercourses are inundated. Minor roads may be closed and low-level bridges submerged. In urban areas inundation may affect some backyards and buildings below the floor level as well as bicycle and pedestrian paths. In rural areas removal of stock and equipment may be required.
- (ii) Moderate Flooding – In addition to the above, the area of inundation is more substantial. Main traffic routes may be affected. Some buildings may be affected above the floor level. Evacuation of flood affected areas may be required. In rural areas removal of stock is required.
- (iii) Major Flooding – In addition to the above, extensive rural areas and/or urban areas are inundated. Many buildings may be affected above the floor level. Properties and towns are likely to be isolated and major rail and traffic routes closed. Evacuation of flood affected areas may be required. Utility services may be impacted.

2 Riverine Flooding

2.1 The Bureau has the responsibility for provision of forecasting and warning services for Riverine Flooding in all jurisdictions in Australia, except that for:

- (1) the Port Phillip and Westernport catchments, Melbourne Water Corporation is currently responsible for flood forecasting and warning; and

- (2) the Lower Murray, the South Australian Department of Environment, Water and Natural Resources is currently responsible for flood forecasting and warning.

3 Nationally-agreed services

- 3.1 Table A below outlines those current Flood Services that are nationally-agreed by the ANZEMC Standardisation of Bureau of Meteorology (Hazards) Services Taskforce. A short description of these services, as well as whether it is a standard or supplementary service is also included. Table B outlines those Flood Services that require agreement on transitional arrangements, further review or an agreed national mechanism to achieve national consistency. The numbering shown below is consistent with the contents of the Action Plan for Flood Services contained within the ANZEMC Standardisation of Bureau of Meteorology Hazards Services Taskforce's Final Report.

Table A – Nationally-Agreed Current Flood Services

Description of the Flood Services
Section 2.1 – Monitoring & Prediction 1 (Data Networks)
2.1.1 Number of sites in flood warning network (rain and river as at June 2012)
The number of observation locations providing rainfall and river height data for the flood warning services, owned and operated by various agencies including the Bureau. Standard Service
2.1.3 Bureau owned and maintained river height sites
The number of river height observation locations which are owned and operated by the Bureau. Standard Service
Section 2.2 - Monitoring & Prediction 2 (Prediction)
2.2.2 Forecast rainfall provided for reservoir operations
Information provided to reservoir operators by the Bureau on expected forecast rainfall that will impact their operations. Standard Service
2.2.3 Reservoir release strategies to assist Bureau forecasting at locations downstream of dams
The information provided by reservoir operators to the Bureau to assist with flood forecasting and warning for areas downstream of the reservoirs. The prediction of flow being released is the responsibility of the reservoir operators. Standard Service
Section 2.3 Interpretation
2.3.1 Establishment of Flood Classifications
The impact of flooding in an area is classified as minor, moderate or major according to an agreed definition in this schedule at clause 1.2 to enable the community to relate the severity of flooding easily. Standard Service

Description of the Flood Services

2.3.2 Collection of Flood Intelligence to support interpretation

The term Flood Intelligence is used to collectively identify information such as flood behaviour and information on inundation levels of critical infrastructure identified through sources such as flood risk studies and historical records. This Flood Intelligence is used to interpret river height predictions and flood impacts. The Bureau uses Flood Intelligence in operations, for example prioritising efforts during widespread flooding, minimising uncertainties in predictions around levees and contributing to better situational awareness.

Standard Service

2.3.3 Bureau contribution to flood mapping studies

Bureau provides technical input into flood mapping studies, including on catchment hydrology and recorded historical flood behaviour. The Bureau also provides design rainfall estimates to help estimate design floods for flood studies.

Standard Service

2.3.4 Other agencies contribution to assist emergency services with local interpretation

While the emergency response agencies carry the prime responsibility of interpreting the Bureau flood forecasts into expected flood behaviour using Flood Intelligence, other agencies such as Catchment Management Authorities and Water Authorities assist the emergency services with their local knowledge of the area.

Standard Service

Section 2.4 Message Construction 1 (Flood Watch)

2.4.1 Flood Watch - Covers all catchments including catchments without flood forecasting systems and data networks

Flood Watch is an early advice of increased flood risk over an area issued by the Bureau up to four days in advance of flooding using forecast rainfall and an assessment of the catchment wetness.

Standard Service

2.4.2 Purpose of Flood Watch

The primary purpose of a Flood Watch advice is to provide early advice that a risk of flooding exists to specific communities and the relevant emergency service organisations.

Standard Service

2.4.3 Issuing criteria for a Flood Watch

Description of the Flood Services

A Flood Watch is issued when hydrological and meteorological guidance indicates that minor flooding is possible and/or when guidance indicates an increased risk of flooding causing impacts, in consultation with stakeholders as required.

Standard Service

Section 2.5 Message Construction 2 (Flood Warnings)

2.5.1 Flood Warnings

Flood warnings are issued when flooding at a forecast location is expected or occurring in a river catchment where the Bureau offers a Flood Warning service.

Standard Service

2.5.2 Number of basins with flood warning service

The extent of the flood warning service has grown over a number of years and the number of basins covered by this service varies according to the understanding of flood risk of the areas and availability of observed rainfall and river level data.

Standard Service

2.5.3 Provide warning services for quick response riverine catchments with time to peak of less than 6hrs

The Bureau flood warning service is targeted at riverine flooding with response times of more than six hours.

Standard Service

2.5.4 Provide warning for flash floods caused by overland flow

Flooding from overland flow occurs mainly in urban areas which do not have well-defined flow paths. On urbanised impermeable surfaces rainfall runs off like a sheet across the area, in contrast to flow along a well-defined river network.

Standard Service

2.5.5 Use of Standard Emergency Warning Signal (SEWS) for significant events

State Emergency Warning Signal (SEWS) is a distinctive audio signal that alerts the community to the broadcast of an urgent safety message relating to a major emergency/disaster. There are small differences in the way this service is applied in each jurisdiction.

Standard Service

2.5.6 Number of “forecast locations” for which forecasts are provided

Description of the Flood Services

Forecast location is a location for which the Bureau provides a forecast of future water level either as the class of flood that is predicted (minor, moderate or major) or as a level and class.

Standard Service

2.5.7 Number of “information locations” for which current flood class level are provided

Information location is a non-forecast location at which flood classifications are defined and observations of water level data are provided.

Standard Service

2.5.8 Number of “data locations” for which only the data is provided

Data location is a location for which just the observed water level data is provided. Flood classifications are not available for these locations and forecasts of future water level are not produced.

Standard Service

2.5.9 The Bureau Flood Warning Centre operates 24 hours a day as standard during coastal river floods

The Bureau Flood Warning Centres (FWC) are activated and manned during flood events only. The Centres operate 24 hours a day on an as required basis. Coastal flooding is typically fast changing and may require continuous operation of the FWC once flooding starts.

Standard Service

2.5.10 Update frequency

Flood Warnings are updated at an appropriate frequency to the catchment and flood severity, as defined in the Bureau’s Service Level Specification

Standard Service

Section 2.6 Message Construction 3 (Alert Products)

2.6.1 Automated alert products for early warning

Using observations of rainfall and river height, alerting of a previously defined recipient can be done by using automated systems.

Standard Service

2.6.2 Seasonal flood risk

The understanding of future flood risk at a seasonal scale (one to three months) that can be used by Emergency Services Agencies to plan ahead.

Standard Service

Description of the Flood Services

2.6.3 Flood scenarios

A hypothetical scenario of potential for future flooding carried out one to two days ahead of expected flooding, for mainly significant flood events using meteorological and hydrological conditions.

Standard Service

2.6.4 Regularly updated outlook and longer term products

The Bureau provides early advice on potential for flooding at a longer scale than seasonal outlooks, possibly for the next six to twelve months using climatic indicators and modelling.

Standard Service

Section 2.7 Communication 1 (Recipients of Bureau Products)

2.7.1 Local Councils

Local Councils are key recipient of Bureau products helping them to carry out their statutory obligations.

Standard Service

2.7.2 Emergency Services (including Police, Fire Brigade etc.)

Emergency Services are the key clients of the Bureau, with the Bureau providing key information to support them to carry out flood emergency operations.

Standard Service

2.7.3 State/Territory Water Agencies

The Bureau products provide very useful and sometimes essential information to State/Territory water agencies to support them with their water and flood management functions.

Standard Service

2.7.4 Water Authorities

The Bureau products provide useful and sometimes essential information to water authorities (such as Catchment Management Authorities) who operate locally to support them with their water and flood management functions.

Standard Service

2.7.5 Media

Description of the Flood Services

The media plays a key role in disseminating information from the Bureau to the community.

Standard Service

2.7.6 Community (through the web)

The community directly access the Bureau products and services through the web.

Standard Service

2.7.7 Users using registered user websites

The Bureau provides special access to registered users of certain products that are of special significance to them and not available to the public.

Standard Service

2.8 Communication 2 (Dealing with the media)

2.8.1 All warnings sent to media and other agencies

The warnings are disseminated to the media and designated agencies for further distribution.

Standard Service

2.8.2 Bureau hydrologists provide media interviews during floods

The media request access to technical specialists to provide technical insight into developing flood situations.

Standard Service

2.9 Communication 3 (Additional Briefings)

2.9.1 Primary emergency management agency liaison during events

The Bureau provides information directly to emergency management agencies in several ways: Answering direct telephone queries, participating in teleconferences, attending briefings, etc.

Standard Service

2.9.2 Media Briefings

During significant flood events the Bureau provides media briefings using its Corporate Communications Program. In addition, out-posted forecasters in particular contribute through media briefings held at State Control or Coordination Centres. It is understood that Bureau staff will only comment about the

Description of the Flood Services

weather and flood situation in a technical sense.

Standard Service

2.9.3 Government Briefings

The Bureau provides briefings to Government using agreed protocols as required through national office, including to the Australian Government Crisis Coordination Centre.

Standard Service

2.9.4 Bureau flood staff embedded in State control or emergency coordination centres

The Bureau provides technical input through staff located at State control or emergency centres.

Standard Service

2.10 Protective Behaviour

2.10.1 Roadshows to support pre-season preparation, including participation in industry events

The Bureau participates in roadshows arranged by emergency services to raise the awareness of future flood risk at the start of wet season and provides information on relevant operations and products of Bureau flood warning services.

Standard Service

2.10.2 Contributes to simulation exercises and training

The Bureau provides technical input to carry out flood simulation designed to test the processes and systems, carried out by response agencies.

Standard Service

2.10.3 Flood awareness material

The Bureau contributes to the development of awareness material. They could be in the form of pamphlets, web sites, brochures or booklets. For example, the Bureau supported the Emergency Management Australia in the development of the booklet, "What to do, before, during and after a flood".

Standard Service

2.11 Review (of the Total Flood Warning System performance)

2.11.1 Contribution to reviews of flood warning systems and post flood activities

At the request of emergency services, the Bureau participates in community debriefs, flood event reviews, surveys of the community, etc.

Description of the Flood Services

Standard Service

Table B – Flood Services that are yet to be fully agreed

Description of the Flood Services that are yet to be determined

Section 2.1 – Monitoring & Prediction 1 (Data Networks)

2.1.2 Bureau supports local council networks

A local council network is one that has been installed and operated to fulfil a responsibility of that local council (such as flash flood warning) or where the local council was fully funded to install the network through grant funding (Commonwealth or other). These networks require regular maintenance, and upgrades. Some of these gauges, which are not owned by the Bureau, are currently maintained by the Bureau.

A transition plan is to be agreed to and implemented with affected jurisdictions taking into account outcomes from current network reviews (such as in Queensland and Victoria). The Bureau will continue current maintenance and support arrangements for non-Bureau owned gauges on the basis that the transition of maintenance responsibility for these gauges from the Bureau to the gauge owners will be completed no later than the end of 2017. The Bureau will continue to maintain gauges owned by it on an on-going basis unless specific gauges are found to be surplus to flood forecasting and warning requirements.

Standard or Supplementary Service to be determined

2.1.4 Network maintenance responsibility differences

The differences in maintenance responsibility have developed over a number of years to meet resourcing and other pressures of the past and present. A national strategic flood warning infrastructure plan to be developed in collaboration with jurisdictions.

Standard or Supplementary Service to be determined

2.1.5 External Key Data Providers

The data provided by external data providers play a critical role in the provision of the flood warning service. Such providers come from a variety of backgrounds.

A national strategic flood warning infrastructure plan to be developed in collaboration with jurisdictions.

Description of the Flood Services that are yet to be determined

Standard or Supplementary Service to be determined

Section 2.2 - Monitoring & Prediction 2 (Prediction)

2.2.1 Number of basin for which prediction is carried out

The Bureau provides flood forecasts over a number of basins making the best assessment of the relevant meteorological and hydrological conditions using a defined methodology.

The flood forecasting services for the Port Phillip and Westernport catchments and the Lower Murray to be reviewed with key stakeholders including the Emergency Services.

Standard or Supplementary Service to be determined

Schedule 4

Schedule of Current Extreme Weather and Hazard Impact Event Services

4 Definitions

4.1 **Extreme Weather and Hazard Impact Event** means any or all of the following:

- (1) tropical cyclone,
- (2) severe weather (including severe thunderstorms), being:
 - (a) severe weather including damaging/destructive winds, heavy rainfall conducive to Flash Flooding, blizzards, damaging/dangerous surf and storm tides; or
 - (b) severe thunderstorms including tornados, damaging/destructive winds, heavy rainfall conducive to Flash Flooding and large hail.
 - (c) tsunami, being generated primarily by undersea earthquakes, which may cause dangerous currents, surges and waves in the marine environment, and also potentially dangerous inundation of low-lying coastal areas for larger events;
 - (d) an event giving rise to the need for an agricultural warning to support decision-making by the agricultural sector, such as livestock and crop warnings; and
 - (e) other extreme weather and hazard impact events, including haze/air quality, extreme heat, road hazards, hazmat incidents, biosecurity incidents and pandemic.

The technical details of these events will be defined by the Bureau in consultation with the Hazards Services Forum and the States and Territories.

4.2 **Marine Wind** means wind hazardous to mariners in our coastal waters.

5 Nationally-agreed services

5.1 Table A below outlines those current Extreme Weather and High Impact Event services that are nationally-agreed by the ANZEMC Standardisation of Bureau of Meteorology Hazards Services Taskforce. A short description of these services, as well as whether it is a standard or supplementary

service is also included. Some of these agreed services are subject to planned future changes that are detailed in the separate detailed Extreme Weather Products Overview

- 5.2 The numbering shown below is consistent with the contents of the Action Plan for Extreme Weather and High Impact Events contained within the ANZEMC Standardisation of Bureau of Meteorology Hazards Services Taskforce's Final Report.

Table A – Nationally-Agreed Current Extreme Weather and Hazard Impact Event Services

Updated Description of the Extreme Weather and Hazard Impact Event Services
2. Products
Section 2.1 – Tropical Cyclone
2.1.1 Tropical Cyclone Seasonal Outlook
The seasonal cyclone outlook gives a probabilistic overview of the forthcoming season based on climate indicators like El Niño–Southern Oscillation and the Indian Ocean Dipole. The season is rated for above, near or below average numbers of systems. Standard Service
2.1.2 Tropical Cyclone Outlook
The Tropical Cyclone Outlook provides probabilities for the formation of cyclones in each zone. The outlook provides likelihoods for days 1, 2 & 3 as well as a statement on conditions out to day 7. Standard Service
2.1.3 Tropical Cyclone Information Bulletin
The Tropical Cyclone Information Bulletin provides information on cyclones that are within the Australian area of responsibility, but do not represent a threat to coast or island communities within the next 48 hour. These products may be issued up to 24 hours prior to a tropical cyclone forming. Standard Service
2.1.4 Tropical Cyclone Advice – Content
A Tropical Cyclone Advice is activated when a tropical cyclone is expected to cause gales in coast or island communities within the next 48 hours. This product contains watch and warning messages. The watch message is related to areas under threat within 48 hours but beyond 24 hours. The warning message is related to threats within 24 hours. Standard Service
2.1.5 Tropical Cyclone Advice – Wind Threshold Trigger
The trigger to issue a Tropical Cyclone Advice is based on wind strength and amount of time before affecting land areas. Standard Service
2.1.6 Tropical Cyclone Advice – Update Frequency

Updated Description of the Extreme Weather and Hazard Impact Event Services

Tropical Cyclone Advices will be updated at following frequencies:

- Containing watch only – 6 hourly
- Containing warning – at least 3 hourly
- Coastal Crossing – hourly within six hours of crossing for Cat-2 and above.

There will always be an advice issued as any system crosses the coast or if an unexpected development occurs.

Standard Service

2.1.7 Tropical Cyclone Forecast Track Map

The Tropical Cyclone Forecast Track Map provides a graphical outlook of the tropical cyclone threat over the coming 72 hours.

Standard Service

2.1.8 Tropical Cyclone Technical Bulletin

These bulletins provide technical data relating to the tropical cyclone presented in a formatted text file for users wishing to automatically ingest information into their systems.

Standard Service

2.1.9 Tropical Cyclone Storm Surge Advice/Warning

These products are provided by the respective Tropical Cyclone Warning Centres to provide more detailed forecasts of possible storm surge generated by a coastal tropical cyclone. Each Region has a different methodology in calculating and presenting the data. This is partly through agreements to meet State and Territory operations and partly due to differing technologies available to the Bureau in each region.

Standard Service

Section 2.2 – Thunderstorm

2.2.1 Severe Thunderstorm Warning: Cell Based

A warning service that provides rapid-update warnings for severe thunderstorms detected by radar in defined major population centres. It includes text and also graphics showing individual thunderstorm cells and their forecast movement.

Standard Service

2.2.2 Severe Thunderstorm Warning: State Based

A warning service that provides a general warning for the threat of severe thunderstorms across the whole State/Territory. Graphical content is provided in

Updated Description of the Extreme Weather and Hazard Impact Event Services

some jurisdictions.

Standard Service

2.2.3 Thunderstorm Outlook

A 2 day outlook for thunderstorms issued for Emergency Service Agencies in some jurisdictions. These contain text and graphic content.

Standard Service

Section 2.3 – Generic Severe Weather Warning

2.3.1 Severe Weather Warning – Content

A text based warning that covers a number of land-based severe weather phenomena which are not the direct consequence of thunderstorms. These include severe wind gusts, land gales, blizzards, heavy rainfall, damaging waves or dangerous surf and broad-scale storm surge. The scope of phenomena does vary between States and Territories.

Standard Service

2.3.2 Severe Weather Warning – Wind Threshold

The standard wind threshold for Severe Weather Warning is > 34 knots average wind or > 48 knots wind gusts. Some variations exist due to climatological differences. For example, thresholds for mountain peaks could be different due to more commonly experiencing strong winds.

Standard Service

2.3.3 Severe Weather Warning – Damaging waves or dangerous surf

The threat of damage to coastal infrastructure or dangerous surf conditions is provided in the severe weather warning for a limited number of jurisdictions.

Standard Service

2.3.4 Severe Weather Warning – Abnormally High Tides

The threat of abnormally high tides liable to cause some coastal inundation is provided in the severe weather warning for a limited number of jurisdictions.

A detailed service providing forecast tide levels at three specific locations is provided in South Australia (see section 2.7.3).

Standard Service (Severe Weather Warning)

Supplementary Service (detailed forecast heights for specific locations)

Section 2.4 - Tsunami

Updated Description of the Extreme Weather and Hazard Impact Event Services

The tsunami warning service provides warnings for three types of threat scenarios in the event of a significant earthquake or disturbance under the ocean:

- No threat
- Marine Threat
- Land threat

The service is managed from the Bureau of Meteorology National Operations Centre, with the Regions providing an on-forwarded service to their jurisdiction (if affected).

2.4.1 National No Threat Bulletin

Message provided when significant earthquake occurs, but there is no tsunami threat to Australia generated.

Standard Service

2.4.2 National Watch Bulletin

Message provided after earthquake has occurred – pending confirmation of tsunami genesis.

Standard Service

2.4.3 State/Territory Tsunami Warning

To advise the community that a tsunami threat does exist and to advise them of the level of threat and action they should take.

Standard Service

2.4.4 National Tsunami Warning Summary

National summary of tsunami warnings current for Emergency Services Agencies and the media.

Standard Service

2.4.5 National Tsunami Event Summary

To provide the public, media, emergency authorities and government with summary information that can be used in post-event analysis

Standard Service

Section 2.5 – Marine Weather

2.5.1 Ocean Wind Warning

These are wind warnings for high seas that are within Australia's area of responsibility. These are now all prepared centrally, except for tropical cyclones

Updated Description of the Extreme Weather and Hazard Impact Event Services

where the warning is prepared by the respective Tropical Cyclone Warning Centre.

Standard Service

2.5.2 Coastal Wind Warning Summary

These are (mean) wind and wave warnings for Australian coastal waters. The warning detail is embedded in the forecast product, with a warnings summary provided in tandem to simply flag the areas affected by the hazard.

Standard Service

2.5.3 Local Waters Warning Threshold

Warnings for some local waters are issued at a lower threshold of 20 knots rather than the standard 25 knots. This only occurs in Tasmania.

All thresholds to be set to 25 knots

Standard Service

2.5.4 Squall warning for marine areas

A squall warning is issued for Port Phillip and Western Port. This is a product only provided in Victoria and covers localised squalls that may affect small boat users in the bays.

Standard Service

2.5.5 Hazardous surf

In conditions of a large surf that is dangerous to public in the surf zone, a statement is included in some forecasts to advise of these conditions. This only occurs in Queensland and New South Wales.

Standard Service

Section 2.6 – Agricultural Weather

2.6.1 Sheep Graziers Advice

These are advices or warnings of adverse conditions hazardous to young lambs and newly shorn sheep.

Standard Service

2.6.2 Crop Damage

These are warnings of conditions (other than frost) conducive to specific crop damage (by disease or direct physical damage).

Updated Description of the Extreme Weather and Hazard Impact Event Services

Standard Service

2.6.3 Frost Warning

These are advices or warnings of surface frost threat in the southern states.

Standard Service

Section 2.7 – Assorted other hazard services

2.7.1 Road Weather Alert

These are warnings for unusually hazardous weather conditions for road users (fog, ice, light rain on greasy roads, gusty winds, very heavy rain, etc). They are generally only issued for capital cities - with a focus on rush-hour.

Standard Service

2.7.2 Bushwalkers' Alert

This product is only produced in Tasmania. This warning is for weather conditions that may be hazardous to bushwalkers in the Tasmanian wilderness. .

Standard Service

2.7.3 Storm Surge (Non Tropical Cyclone) Advice

A non-tropical cyclone storm surge service that is outside the scope of the Severe Weather Warning is provided in South Australia for specific clients and is for three defined harbour locations near Adelaide.

Supplementary Service

2.7.4 Grid Services

The Australian Digital Forecast Database provides gridded forecast information across Australia.

Standard Service

2.7.5 Health Threats and High-Impact events affecting Agriculture (including Haze/Air Quality)

There are a number of rare, high impact threats for which protocols may exist or ad-hoc arrangements are implemented in the event of occurrence. These mainly relate to incidents that may result in the spread of pathogens, noxious gases or other such threats. These are generally managed outside the scope of the general Bureau services with other agencies managing action plans. Such events would include:

- Foot & Mouth Disease outbreak or similar

Updated Description of the Extreme Weather and Hazard Impact Event Services

- Radioactive threat due to accident or terrorist threat
- Biological threat due to accident or terrorist threat
- Locust Plague
- Bird Flu outbreak or similar
- Major atmospheric contamination from chemical fire, spills or similar
- Major environmental contamination (water or land) from chemical spill

Animal health directives do exist for some Regions.

Standard Service

2.7.6 Extreme Heat

A new pilot heatwave service was introduced for Australia for the 2013/14 season. The service is produced centrally and consists of a national map of heatwave threat. This service was maintained into the current 14/15 season

Standard Service

3. Communication

Section 3.1 Media

Specific policies on Media services for extreme weather were not covered in this standardisation process as it was out of scope.

Not Applicable

Section 3.2 – High Impact Alerts

3.2.1 Standard Emergency Warning Signal (SEWS)

State Emergency Warning Signal (SEWS) is a distinctive audio signal that alerts the community to the broadcast of an urgent safety message relating to a major emergency/disaster. There are small differences in the way this service is applied in each jurisdiction.

Standard Service

3.2.2 Automated Alerts Messaging

Automatic alerts messaging involves the automated calling of all telephones in the affected area. This is generally only reserved for the most serious events – and is authorised by the state jurisdictional authority.

N/A

Updated Description of the Extreme Weather and Hazard Impact Event Services

Section 3.3 – Operational ES Liaison

3.3.1 Pre-season brief

Briefings provided by the Bureau to relevant agencies and community groups before the commencement of the new season, generally based on seasonal forecasts produced by the Bureau's National Climate Centre.

Standard Service

3.3.2 Event briefings

During major severe weather events including major bushfires, the Bureau provides media briefings under its Corporate Communications Program. Out-posted forecasters in particular contribute through media briefings held at State Control or Coordination Centres.

Standard Service. Supplementary service for dedicated and extended off-site briefings, usually by out-posted forecasters.

3.3.3 Permanent out-posting Arrangements

Permanent posting of Bureau personnel with a state operations centre (paid for by the state Emergency Service Agency).

Supplementary Service

3.3.4 Temporary out-posting Arrangements

Arrangements where Bureau personnel may be semi-permanently posted at a state operations centre during a defined major event.

Standard Service

3.3.5 Training

Training on severe weather has been provided in some regions. This is generally provided as a supplementary service on a request basis or by the permanent out-posted forecaster.

Supplementary Service

Section 3.4 – Standard Government Briefings

3.4.1 – Australian Attorney-General's Department Crisis Coordination Centre

These briefings are provided by the Bureau's National Operations Centre during severe weather events. Initially provided for just the large scale disruptive events, the criterion for issue has steadily moved to include less significant severe weather events.

Standard Service

Updated Description of the Extreme Weather and Hazard Impact Event Services

3.4.2 – State Authorities

This covers briefings to various authorities, committees and interest groups at the state level and possibly local government. These will be maintained at a manageable level of scope.

Standard Service

3.4.3 – Registered Users Page

These registered users pages provide specific products for the needs of the respective jurisdictions. This is being consolidated into one registered user page resource.

Standard Service

Section 3.5 – Community Action Statements

These are action statements that are provided and/or sanctioned by the jurisdictions for inclusion in warnings provided by the Bureau (e.g. do not drive into flooded sections of road). These are generally taken from a predefined list of action items to match the expected threat (e.g. large hail). A national standard list is to be created through consultation between the Bureau, jurisdictions and Emergency Management Australia.

Standard Service