Australian Government
Bureau of Meteorology

Major flooding in Huonville, July 2016

Submission to Tasmanian Government Flood Review

Document 3 of 3

25 November 2016

Submission Documents

Count	Document Title
1	Tasmanian record major flooding event - June 2016
2	Flood warning products for June 2016 flooding event
3	Major Flooding in Huonville, July 2016

Note:

1. Data used in this report has been subjected to limited quality checking during operations and may have errors
2. This product includes data made available to the Bureau by other agencies. Separate approval may be required to use the data for other purposes.
3. This report is not a complete set of all data that are available. It is a representation of some of the key information.

Report on the Major flooding in Huonville, July 2016
Published by the Bureau of Meteorology
GPO Box 1289
Melbourne VIC 3001
(03) 9669 4000
floodwarning@bom.gov.au
www.bom.gov.au

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1 Introduction

A warm west to southwesterly flow brought heavy rainfall to the west and south of Tasmania in July 2016. Widespread rainfall totals of over 100 mm were reported in the 48 hours to 9 am 15 July 2016, mainly in the southwest of the State. This rainfall fell on top of the snow that had accumulated about the elevated areas in the previous few days.

River levels throughout the Huon catchment rose rapidly in response to the rainfall and snow melt, peaking during the morning of Friday 15 July 2016, with moderate flooding at Judbury and major flooding at Huonville. The weather system also resulted in minor to moderate flooding in the lower River Derwent and smaller tributaries below Meadowbank Dam.

This report focuses on the Huon catchment and documents the meteorological and hydrological conditions relevant to the Huonville July 2016 flood event. The report also summarises the Bureau of Meteorology Flood Forecasting and Warning Services provided for the Huon River.

Section 2 contains a summary of the synoptic situation and rainfall for the Huon catchment during the Huonville July 2016 flood event.

Section 3 contains a description of the Huon catchment and a summary of the hydrological response to the rainfall during the Huonville July 2016 flood event.

Section 4 includes a summary description of the communications between the Bureau and key emergency response partners during the Huonville July 2016 flood event.

The flood warnings and watches issued for the Huonville July 2016 flood event are provided as Appendix 1.

A glossary of terms in provided as Appendix 2.

2 Meteorological summary

A front and low pressure system crossed Tasmania on the afternoon of Tuesday 12 July 2016, bringing a very cold air mass across the State. Snow had been forecast to fall below 100 metres on this day. By early morning on Wednesday 13 July 2016, the coldest air was over the State and there were confirmed reports of snow down to low levels. It is likely that there were significant snow falls into the southwest during this time.

Bureau weather forecasters noted a considerable moistening and warming of the air mass for Thursday 14 July 2016 leading to a forecast of 50 to 100 mm of rain across the elevated parts of the southwest. The high rainfall totals recorded across the Huon catchment on 14 and 15 July 2016 reflect this warmer air mass but the totals would have included a component of snow melt as well in the elevated rain gauges.

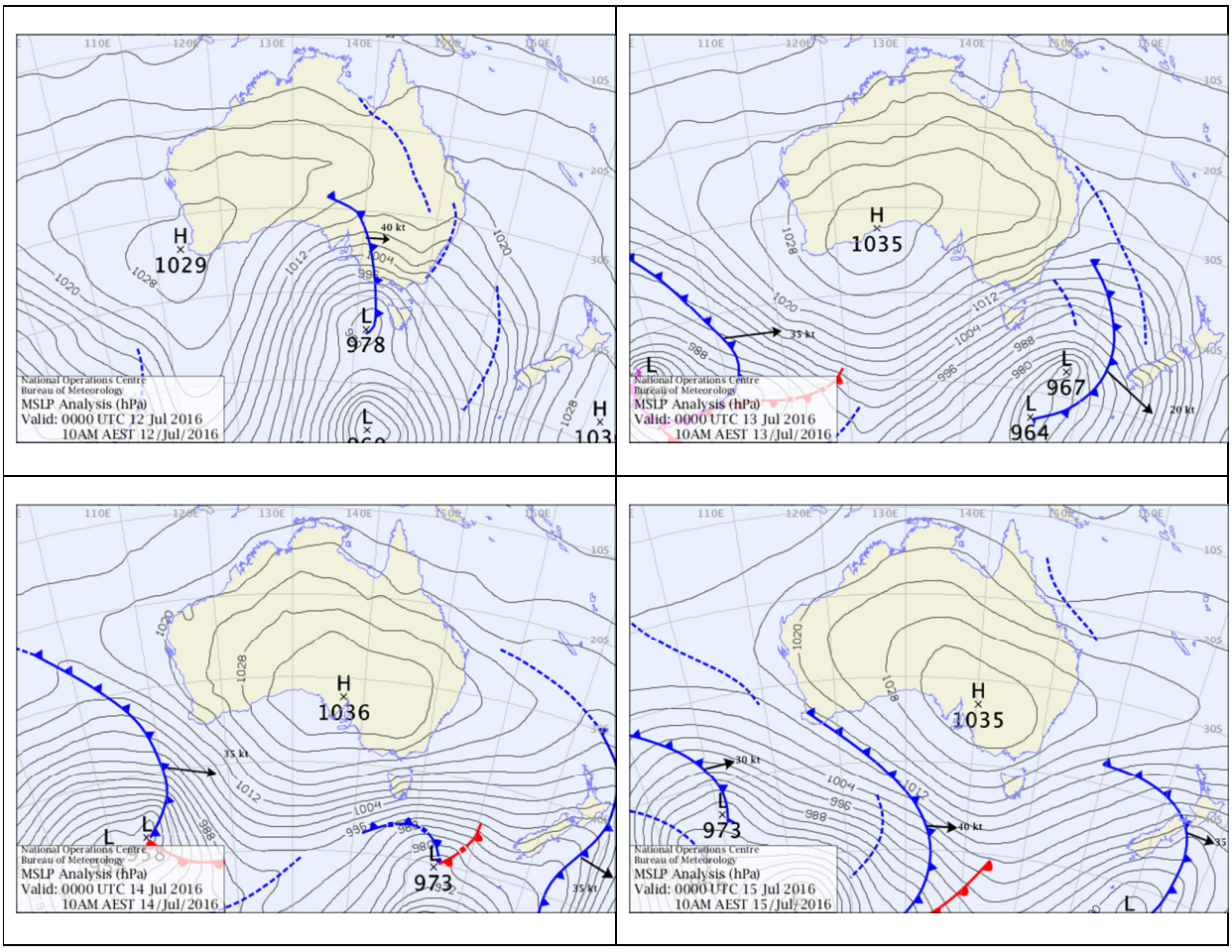


Figure **1** Synoptic Situation for Tuesday 12 July to Friday 15 July 2016, issued at 10 am AEST each day.

In the 48 hours to 9 am Friday 15 July 2016, several sites reported more than 100 mm of rainfall which may have included some snow melt in the elevated gauges. Figure 2 shows the interpolated total rainfall for the State for these two days based on observed data at the official Bureau rainfall sites. Note the steep gradient from the higher totals in the west to the lower totals in the east. Very little rainfall was reported in Huonville itself.

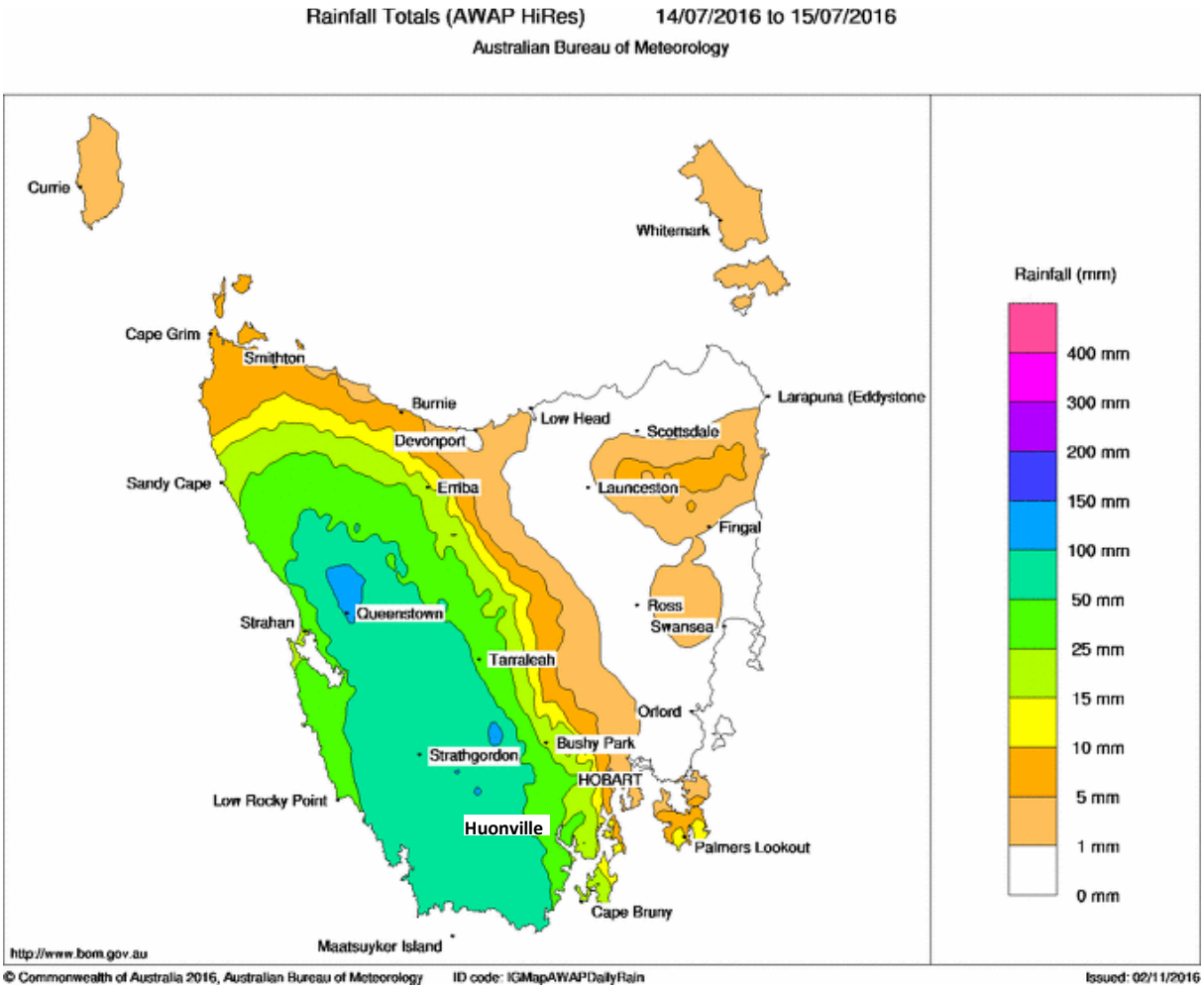


Figure 2 Two day rainfall totals for Tasmania to 9 am 15 July 2016

Table 1 shows the two day rainfall totals to 9 am Friday 15 July 2016 for the key real time rainfall sites that are part of the Huon catchment flood warning network. Several sites reported rainfall totals over 100 mm over the 48 hours, which may have included some snow melt. Again the strong gradient is clear, with the eastern most sites, Cannells Hill and Judbury, reporting significantly less rainfall than the sites in the west such as North Boomerang and Razorback.

Station Number	Station Name	Daily Rainfall to 9 am (mm)		Two day (48 hour) total to 9 am 15 July (mm)
		14-Jul-16	15-Jul-16	
597506	NORTH BOOMERANG (MT BOBS)	61.2	101.8	163.0
597017	STRATHGORDON (WORKS OFFICE)	42.0	102.8	144.8
597504	RAZORBACK (MCKAYS TRACK)	25.6	94.6	120.2
595016	SALVATION CK (FLORENTINE RV)	35.4	77.8	113.2
097024	WARRA	41.0	67.6	108.6
595500	MUELLER RIDGE (LAKE GORDON)	25.0	72.4	97.4
097083	SCOTTS PEAK DAM	27.8	41.8	69.6
595022	MURTS HILL (MOOGARA)	17.2	30.4	47.6
597502	FOOLS RIDGE (MT PICTON)	4.8	41.2	46.0
594017	CANNELLS HILL	9.6	25.8	35.4
094179	JUDBURY (HUON RIVER)	4.8	14.8	19.6

Table 1 Daily and two day rainfall totals to 9 am 15 July 2016 at key real time rainfall sites in the Huon catchment flood warning network

3 Hydrological summary

The Huon catchment is situated in southeastern Tasmania as shown in Figure 3. The Huon River itself starts below Scotts Peak Dam on Lake Pedder, and generally flows eastwards to the main population centres of Judbury and Huonville, near the mouth of the Huon River. The main tributaries include Picton, Weld, Arve, Russell and Mountain rivers. Much of the area lies within the World Heritage area and is remote and unpopulated.

The Soil Dryness Index (SDI) is used as a measure of soil moisture deficit, with lower values indication wetter soil conditions. Figure 4 shows the SDI map for Tasmania calculated at 9 am on Wednesday 13 July. The large area of zero values in the west and south indicate that the soils in the Huon catchment were likely to have been saturated prior to the flood event. This generally leads to increased runoff from any imminent rainfall.

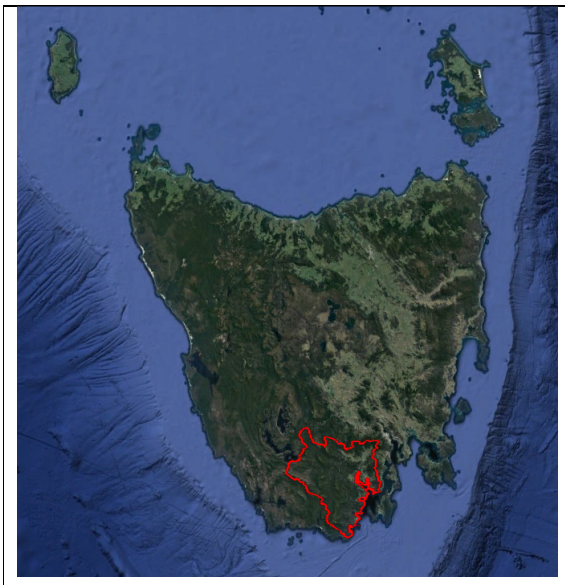


Figure 3 Map indicating the location of the Huon catchment

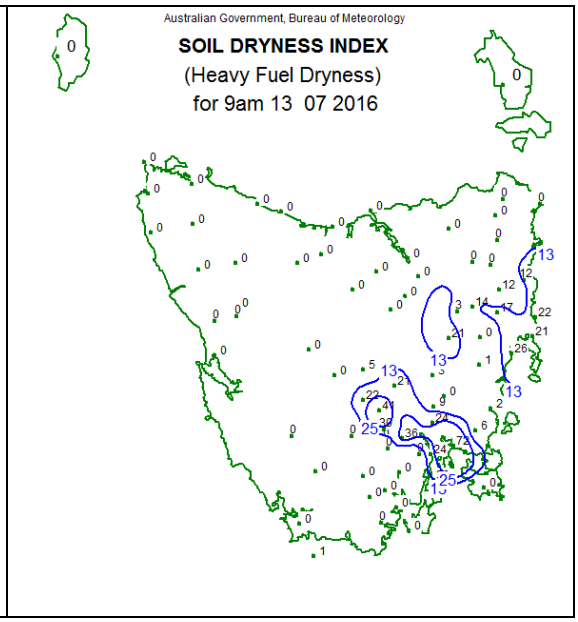
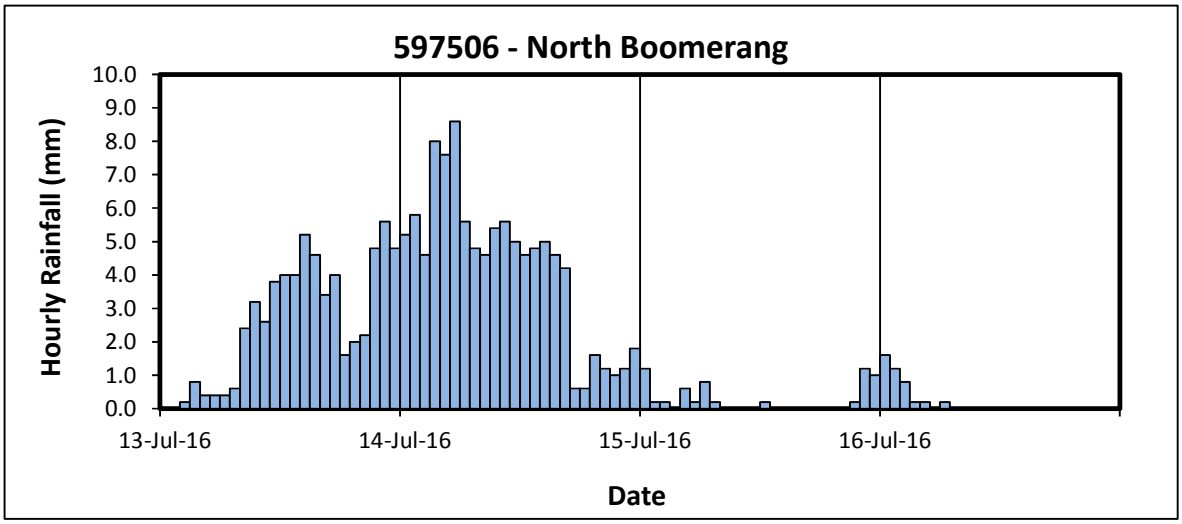
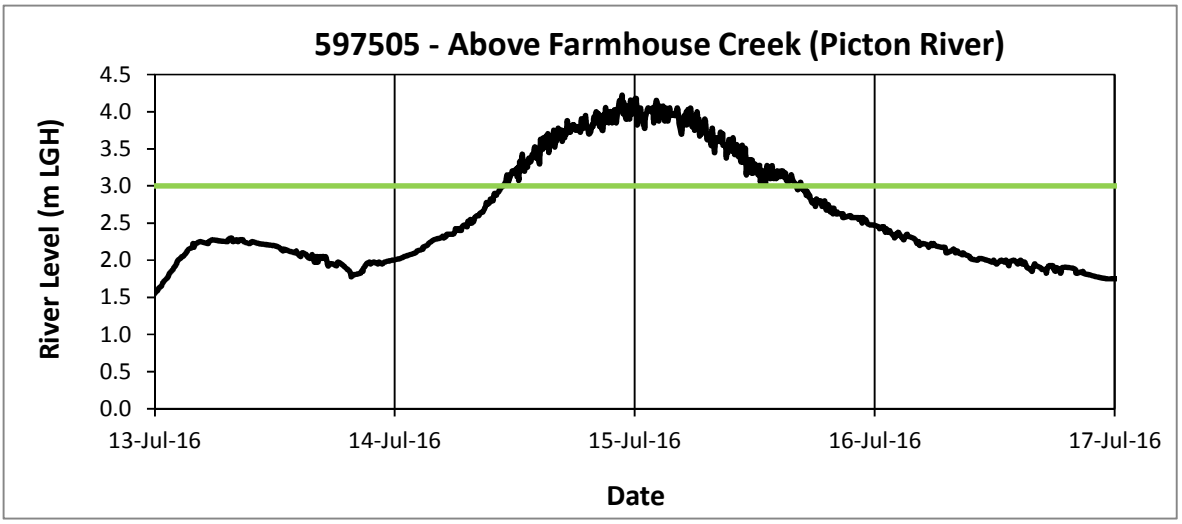
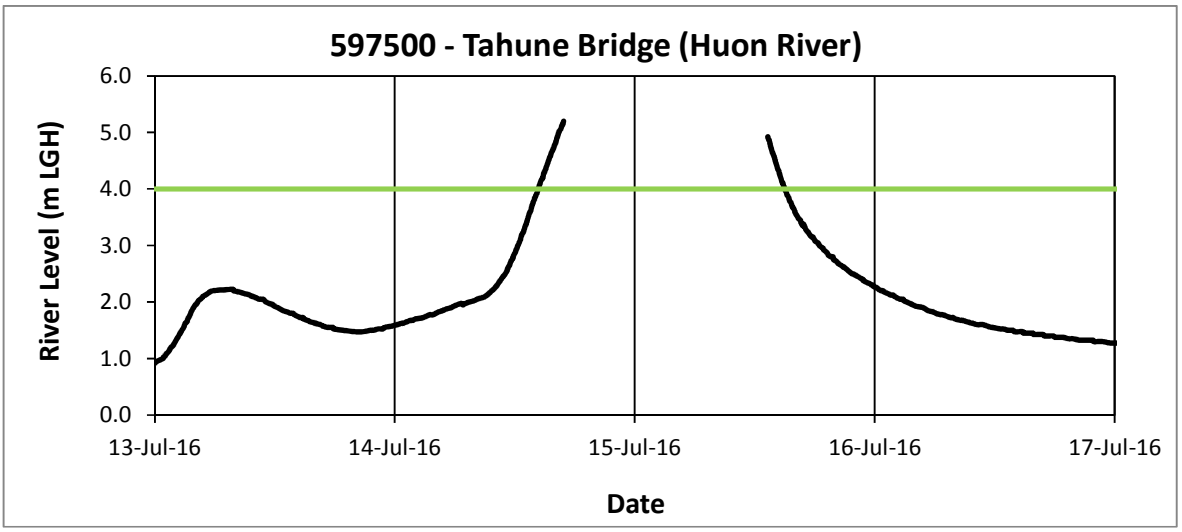


Figure 4 Map showing SDI for the 13 July 2016

There are five river gauges in the Huon catchment used for flood warning purposes, supported by a real time rainfall network. Figure 5 shows the observed river level in local gauge height (metres LGH) during the Huonville July 2016 flood event for the Picton River above Farmhouse Creek, along with the Huon River at Tahune Bridge, Judbury and Huonville. Data was not available at Huon River at Harrison's Opening during the Huonville July 2016 flood event due to an instrumentation failure. The hourly rainfall for North Boomerang is also shown to compare the timing of the rainfall and flooding. Where defined, the flood classifications are shown for each site; Minor Flood Level (green), Moderate Flood Level (orange) and Major Flood Level (red). Definitions of these flood classifications can be found in Appendix 2. Note that only Minor Flood Levels have been defined for the sites at Picton River above Farmhouse Creek and the Huon River at Tahune Bridge.


597506 - North Boomerang
Hourly Rainfall (mm)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
13-Jul-16
14-Jul-16
15-Jul-16
16-Jul-16
Date


597505 - Above Farmhouse Creek (Picton River)
River Level (m LGH)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
13-Jul-16
14-Jul-16
15-Jul-16
16-Jul-16
17-Jul-16
Date


597500 - Tahune Bridge (Huon River)
River Level (m LGH)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
13-Jul-16
14-Jul-16
15-Jul-16
16-Jul-16
17-Jul-16
Date

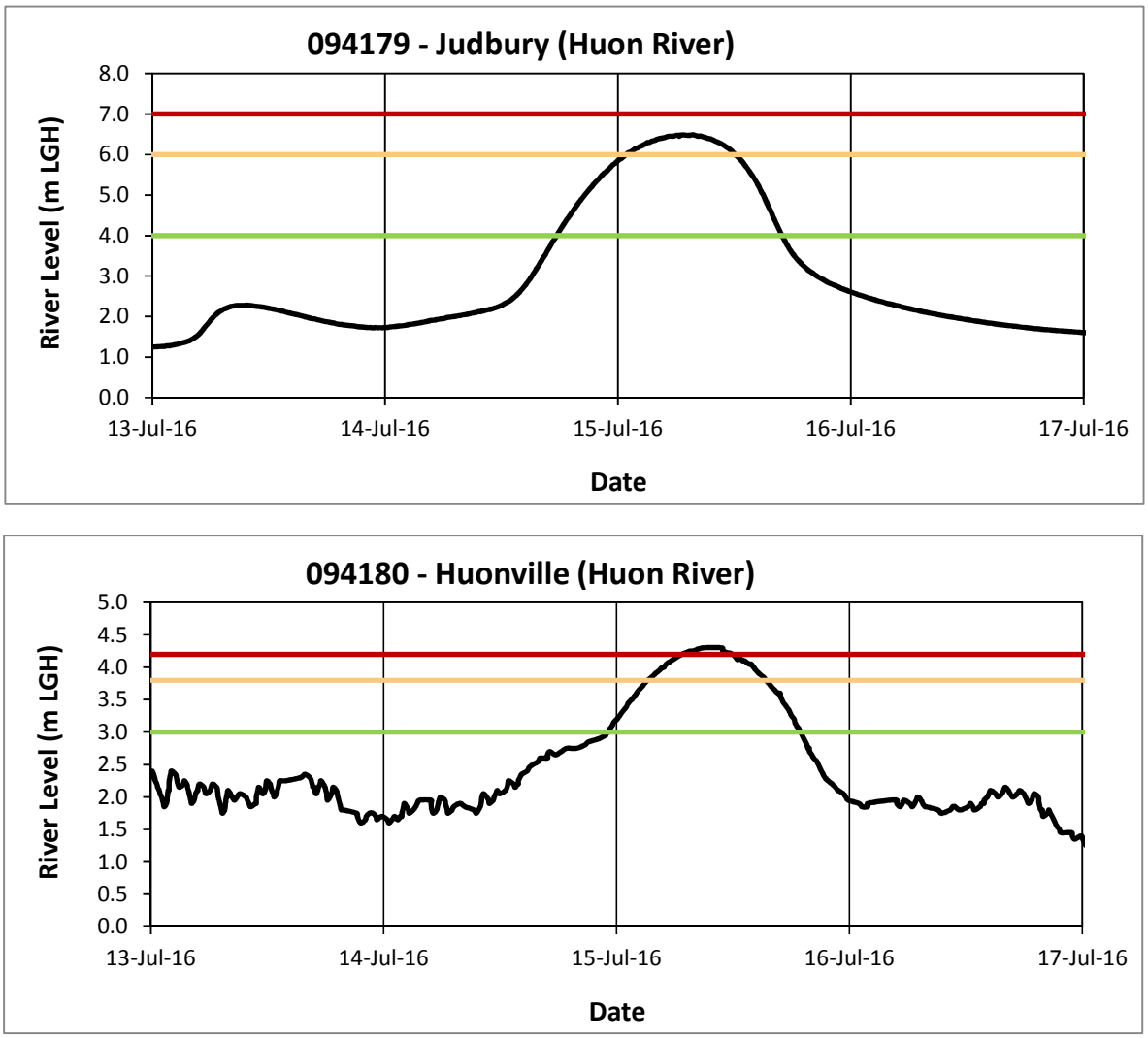


Figure 5 Observed river levels at the Huon catchment river sites for the period 13 to 17 July 2016. Flood classifications for each site; Minor Flood Level (green), Moderate Flood Level (orange) and Major Flood Level (red). Note that only Minor Flood Levels have been defined for the sites at Picton River above Farmhouse Creek and the Huon River at Tahune Bridge. LGH = local gauge height

The observed peak flood levels for the Huonville July 2016 flood event are summarised in Table **2**. There was an instrumentation outage at the Tahune Bridge river gauge between 5:00 pm 14 July and 1:00 pm on the 15 July 2016, resulting in a data gap. Therefore, the peak river level for Tahune Bridge was estimated by the Tahune Airwalk operators based on flood debris. It can be seen that the travel time between the upstream site (Picton River) and the downstream site (Huonville) was less than 12 hours. While Judbury and Huonville have long periods of record for historical comparison, the other sites are relatively new.

Bureau ID	Location	Peak Level July 2016 (m)	Time	Flood Class	July 2016 Rank	Start of Data	Record Peak Level (m)	Record Date (month/ year)
597505	Abv Farmhouse Creek (Picton River)	4.18	15-Jul 00:00 am	Minor+	2	2011	5.38	6/2015
597500	Tahune Bridge (Huon River)	~7	15-Jul am	Minor+	Record	2009		
094179	Judbury (Huon River)	6.49	15-Jul 06:45 am	Moderate	6	1901	8.80	1901
094180	Huonville (Huon River)	4.30	15-Jul 08:50 am	Major	3	1948	4.44	2/1996

Table 2 Peak river level summary for the Huonville July 2016 flood event in the Huon River catchment + No Moderate or Major Flood Levels defined ~ estimated based on flood debris

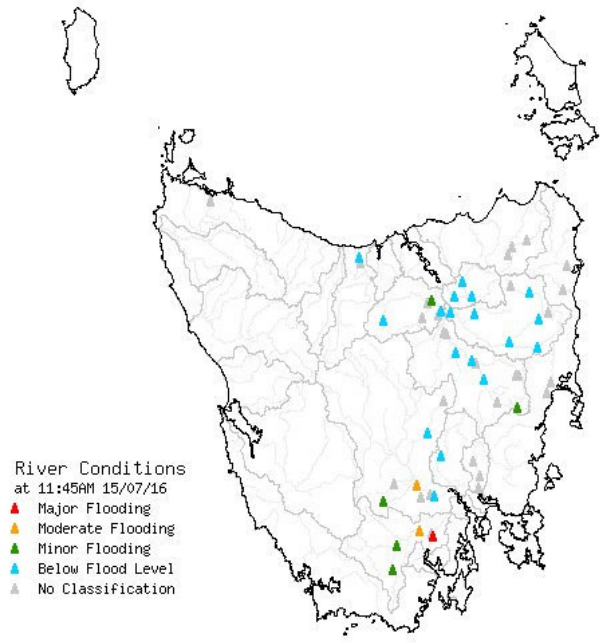


Figure 6 Tasmanian River Conditions map at 11:45 am 15 July 2016

4 Communication and warnings

The Service Level Specification (SLS) documents and describes the flood forecasting and warning services provided by the Bureau in Tasmania, including the Bureau's role in the Total Flood Warning System and its interaction with other stakeholders. The Bureau issues flood watches and warnings, and provides a threshold-based rainfall and river alerting service for specific sites.

Flood watches and warnings are issued directly to a list of stakeholders with emergency management responsibilities. The direct dissemination methods supported include email, fax and internet protocols. The format of messaging in flood related products conforms to a nationally consistent standard. Flood watches and warnings are also communicated by the Bureau via:

- **Radio**: Radio stations, particularly the ABC, broadcast flood warning information as part of their news bulletins, or whenever practicable. This form of broadcast may be covered in separate agreements between the Bureau and broadcasters.
- **Weather warning service:** Flood warning information is recorded on a contracted telephone information service. Calls to this service incur a fee-for-service charge.
- **Internet:** Flood watches and warnings are published on the Bureau's public web site and available by internet protocols, along with related rainfall and river level information.

Emergency management partners and media can also access flood level and warning information directly from the Bureau Flood Warning Centre and Bureau National Operations Centre, subject to operational constraints. The Bureau does not publish to the public the contact details for the Flood Warning Centres and Bureau National Operations Centre.

The Tasmanian Flood Warning Centre operated 24 hours per day during the main part of the Huonville July 2016 flood event, from 8 am Thursday 14 July to 10 pm Friday 15 July 2016. The primary purpose of a Flood Watch is to provide early advice to communities and the relevant emergency service organisations of the potential threat from a developing weather situation. The first Flood Watch was issued for southern river basins around 4 pm Wednesday 13 July 2016, followed by an initial Moderate Flood Warning for the Huon River around 10 am on Thursday 14 July 2016. The Flood Watches and Warnings issued for the Huonville July 2016 flood event are summarised in Table 3. Flood warnings for Moderate and Major flood classifications were updated every three hours. Several Twitter messages were issued to support the warning messages, particularly the initial Moderate Flood Warning and the upgrade to the Major Flood Warning for Huonville.

An automatic River and Rainfall Alert service is also provided by the Bureau through an agreement with the State Emergency Service, as outlined in the Service Level Specification. Once the trigger river level or rainfall accumulation threshold is reached, an alert is issued. For river alerts, the alert is re-issued after 24 hours if the river level remains above the alert level. Rainfall alerts are re-issued if total rainfall accumulated in the previous 24-hours is still exceeding alert level. During the Huonville July 2016 flood event, four river alerts and one rainfall alert were issued. A summary of the river alerts issued for the Huon catchment has been included in Table 3.

Flood Watches	First issue	Last issue	Number of products
All southern river basins	3.59 pm Wed 13 July	9.52 am Fri 15 July	4

Flood Warnings	First issue	Last issue	Number of products
Huon River	10:05 am Thu 14 July	9:51 am Sat 16 July	12

Catchment	River Alert	Flood Warnings			
		Minor	Moderate	Major	Final
Huon River	4	1	6	4	1

Table 3 Number of flood products issued during the Huonville July 2016 flood event in the Huon River catchment

It is important to note that during the same period 13 to 16 July 2016, there were also flood warnings current for the Derwent, North Esk, South Esk, Macquarie and Jordan river basins. These catchments were also being monitored and warnings updated during this time.

The flood watches and warnings issued for the Huon catchment in July 2016 are located in Appendix 1:Flood warnings Products.

5 Summary

This report describes the meteorological and hydrological conditions that contributed to major flooding in the Huon River catchment in Tasmania in July 2016. The Huon River at Huonville peaked at an observed level of 4.30 m at 8:50 am on 15 July 2016, slightly below the peak flood level on record of 4.44 m in February 1996.

The soils in the Huon catchment were likely to have been saturated prior to the flood event. A front and low pressure system crossed Tasmania on the afternoon of 12 July 2016, bringing a very cold air mass across the State, with snow falling to low levels by early morning on the 13 July 2016. It is likely that there were significant snow falls into the southwest during this time.

A warm air mass followed on 14 July 2016. In the 48 hours to 9 am Friday 15 July, several sites reported more than 100 mm of rainfall, including some snow melt in the elevated gauges. The rainfall distribution across the catchment showed a steep gradient from higher totals in the west to lower totals in the east. Very little rainfall was reported in Huonville itself.

The first Flood Watch was issued by the Bureau for southern river basins around 4 pm Wednesday 13 July 2016, followed by an initial Moderate Flood Warning for the Huon River at Judbury and Huonville around 10 am on Thursday 14 July 2016. The flood warning was upgraded to a Major Flood Warning for Huonville around 4 am on Friday 15 July. The Bureau maintained close communications with key partners, such as the State Emergency Service, throughout the Huonville July 2016 flood event.

Appendix 1: Flood warnings products

A copy of each of the flood watches and flood warnings issued for the Huon catchment for the Huonville July 2016 flood event are contained in this Appendix.

Flood Watch – Southern River Basins

- First issued 3:59 pm EST Wednesday 13 July 2016
- Finalised 9:52 am EST Friday 15 July 2016
- Total number of flood watches issued – 4

Flood Warning – Huon River Basin

- First Moderate flood warning issued – 10:05 am EST Thursday 14 July
- Upgraded to Major flood warning – 4:40 am EST Friday 15 July
- Downgraded to Moderate flood warning – 3:57 pm EST Friday 15 July 2016
- Downgraded to Minor flood warning – 7:30 pm EST Friday 15 July 2016
- Finalised – 9:51 am EST Saturday 16 July
- Total number of flood warnings issued – 12 (+ 1 reissue)

IDT20620
Australian Government Bureau of Meteorology
Tasmania

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning.

INITIAL FLOOD WATCH FOR ALL SOUTHERN RIVER BASINS
Issued at 3:59 pm EST on Wednesday 13 July 2016

By the Bureau of Meteorology, Hobart.

A flood watch has been issued for all southern river basins.

A strong west to southwesterly flow will persist over the State during Thursday and Friday, bringing showers to the west and south, falling as snow about the higher peaks.

Rainfall totals of 30 to 40mm are likely in the west and south, with higher totals possible about elevated areas. Snow has fallen over much of this area today. This will start to melt as the temperature warms and will add to any runoff over the next few days.

Catchments in the south are saturated after significant rainfall in May and June. With the forecast rainfall, river rises are expected. Catchment specific flood warnings will be issued for southern river basins if and when required.

Minor to moderate flooding is still continuing in the north of the State after heavy rainfall earlier in the week. A moderate flood warning is still current for the South Esk River basin and minor flood warnings are current for the Meander, Macquarie and North Esk River basins.

Strong flows may occur in small creeks and low lying areas in locations that receive heavy rainfall on Thursday.

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning. The Bureau of Meteorology does not provide a flood warning service for all of the catchments covered by this flood watch.

FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Weather Forecast:
Showers, falling as snow to about 1000m.

Next Issue:
The next flood watch will be issued by 10:00AM EST Thursday 14 July 2016.

For the latest rainfall and river level information see
www.bom.gov.au/tas/flood

IDT20620
Australian Government Bureau of Meteorology
Tasmania

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning.

FLOOD WATCH FOR ALL SOUTHERN RIVER BASINS
Issued at 10:05 am EST on Thursday 14 July 2016

By the Bureau of Meteorology, Hobart.

A flood watch continues for all southern river basins.

A strong west to southwesterly flow will persist over the State during Thursday, bringing showers to the west and south.

Rainfall totals of 50 to 80mm are likely in the west and south during Thursday, with higher totals possible about elevated areas. Snow fell over much of this area during Wednesday. This will start to melt as the temperature warms and will add to any runoff over the next few days.

Catchments in the south are saturated after significant rainfall in May and June. With the forecast rainfall, river rises are expected. Catchment specific flood warnings will be issued for southern river basins if and when required.

Minor to moderate flooding is continuing in the north of the State after heavy rainfall earlier in the week. Minor flood warnings are current for the South Esk, North Esk, Jordan and Macquarie River basins.

Strong flows may occur in small creeks and low lying areas in locations that receive heavy rainfall on Thursday.

A road weather alert is current for reduced visibility due to heavy rain.

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning. The Bureau of Meteorology does not provide a flood warning service for all of the catchments covered by this flood watch.

FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Weather Forecast:
Showers, heavy about the west and south.

Next Issue:
The next flood watch will be issued by 4:00PM EST Thursday 14 July 2016.

For the latest rainfall and river level information see
www.bom.gov.au/tas/flood

IDT20620
Australian Government Bureau of Meteorology
Tasmania

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning.

FLOOD WATCH FOR ALL SOUTHERN RIVER BASINS
Issued at 3:29 pm EST on Thursday 14 July 2016

By the Bureau of Meteorology, Hobart.

A flood watch continues for all southern river basins.

A strong westerly flow will persist over the State during Thursday, bringing showers to the west and south. Showers will start to ease during Friday morning.

Since 9AM Thursday rainfall totals of 20 to 40mm have been reported about the west and south. A further 20 to 50mm are likely in the west and south for the remainder of Thursday, with higher totals possible about elevated areas. Snow fell over much of this area during Wednesday. This will start to melt as the temperature warms and will add to any runoff over the next few days.

Catchments in the south are saturated after significant rainfall in May and June. With the forecast rainfall, river rises are expected.

A Moderate flood warning is current for the Huon River basin. Minor flood warnings are current for the Derwent, South Esk, Jordan and Macquarie River basins. Further catchment specific flood warnings will be issued if and when required.

Strong flows may occur in small creeks and low lying areas in locations that receive heavy rainfall on Thursday.

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning. The Bureau of Meteorology does not provide a flood warning service for all of the catchments covered by this flood watch.

FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Weather Forecast:
Showers, heavy about the west and south.

Next Issue:
The next flood watch will be issued by 10:00AM EST Friday 15 July 2016.

For the latest rainfall and river level information see
www.bom.gov.au/tas/flood

IDT20620
Australian Government Bureau of Meteorology
Tasmania

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning.

FINAL FLOOD WATCH FOR ALL SOUTHERN RIVER BASINS
Issued at 9:52 am EST on Friday 15 July 2016

By the Bureau of Meteorology, Hobart.

A flood watch for all southern river basins has been finalised.

A strong westerly stream eases and tends northwesterly Friday as a high to the north of Tasmania slowly moves eastward. The flow strengthens late on Sunday as a front approaches from the west. The front will cross Tasmania during Monday.

Since 9AM Thursday rainfall totals up to 61 mm have been reported about the southwest. Snowmelt has contributed to elevated river levels. Less than 5 mm of rain is forecast for the remainder of Friday.

Catchments in the south are saturated after significant rainfall in May and June.

A major flood warning is current for the Huon River basin. A moderate flood warning is current for the Derwent. A minor flood warning is current for the South Esk basin. Further catchment specific flood warnings will be issued if and when required.

Note: This Flood Watch is a "heads up" for possible future flooding and is NOT a Flood Warning. The Bureau of Meteorology does not provide a flood warning service for all of the catchments covered by this flood watch.

FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Weather Forecast:
Showers about the west, far south and Bass Strait islands, easing during the morning and contracting to the west. Fine elsewhere.

Next Issue:
No further flood watches will be issued for this event.

For the latest rainfall and river level information see www.bom.gov.au/tas/flood

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Initial Moderate Flood Warning for the Huon River

Issued at 10:05 am EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 1

Moderate flooding is expected to develop in the Huon River Thursday evening.

Rainfall totals of 50 to 80mm are forecast for the remainder of Thursday into Friday morning. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are possible during Thursday into Friday.

Huon River above Tahune:
Strong river rises are expected in the Upper Huon river.

Picton River:
River levels are likely to reach the minor flood level in the Picton river near mid-day Thursday. High river levels will continue into Friday.

Huon River - Tahune to Judbury:
Moderate flooding is expected along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 2.20 metres and rising. The Huon River at Tahune Bridge is expected to exceed the minor flood level (4.00 m) late Thursday afternoon. A minor flood peak is expected overnight Thursday into Friday.

The Huon River at Judbury is currently at 2.04 metres and rising. The Huon River at Judbury is expected to exceed the minor flood level (4.00 m) Thursday afternoon. A moderate flood peak is likely overnight Thursday into Friday.

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 1.75 metres and steady. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday afternoon. A moderate flood peak is expected overnight Thursday into Friday. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:

The next warning will be issued by 01:00 pm EST on Thursday 14 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 2.83, Rising, 09:34 AM THU 14/07/16
Huon River at Tahune Bridge, 2.20, Rising, 09:42 AM THU 14/07/16
Huon River at Judbury, 2.04, Rising, 08:00 AM THU 14/07/16
Huon River at Huonville, 1.75, Steady, 09:32 AM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Initial Moderate Flood Warning for the Huon River

Issued at 1:09 pm EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 2

Moderate flooding is expected to develop throughout the Huon River Thursday evening.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 4 hours since 9am a further 15 to 25mm has been recorded. Rainfall totals of 40 to 70mm are forecast for the remainder of Thursday into Friday morning. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:
Strong river rises are expected in the Upper Huon river.

Picton River:
Minor flooding is now occurring in the Picton. Further rises in river levels expected for the remainder of Thursday into Friday.

Huon River - Tahune to Judbury:
Moderate flooding is expected along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 3.15 metres and rising. The Huon River at Tahune Bridge is expected to exceed the minor flood level (4.00 m) late Thursday afternoon. The river level is expected to peak between 5.70 and 6.00 metres overnight Thursday into Friday.

The Huon River at Judbury is currently at 2.04 metres and rising. The Huon River at Judbury is expected to exceed the minor flood level (4.00 m) Thursday afternoon. The river level is likely to peak between 5.70 and 6.00 metres overnight Thursday into Friday (Moderate Flood level 6.0 metres).

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 1.75 metres and steady. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday afternoon. The river level is likely to peak between 3.80 and 4.10 metres early Friday morning. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 04:00 pm EST on Thursday 14 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.33, Rising, 01:03 PM THU 14/07/16
Huon River at Tahune Bridge, 3.35, Rising, 01:02 PM THU 14/07/16
Huon River at Judbury, 2.28, Rising, 12:00 PM THU 14/07/16
Huon River at Huonville, 2.25, Rising, 12:52 PM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Moderate Flood Warning for the Huon River

Issued at 1:25 pm EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 2

Moderate flooding is expected to develop throughout the Huon River Thursday evening.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 4 hours since 9am a further 15 to 25mm has been recorded. Rainfall totals of 40 to 70mm are forecast for the remainder of Thursday into Friday morning. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:

Strong river rises are expected in the Upper Huon river.

Picton River:
Minor flooding is now occurring in the Picton. Further rises in river levels expected for the remainder of Thursday into Friday.

Huon River - Tahune to Judbury:
Moderate flooding is expected along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 3.15 metres and rising. The Huon River at Tahune Bridge is expected to exceed the minor flood level (4.00 m) late Thursday afternoon. The river level is expected to peak between 5.70 and 6.00 metres overnight Thursday into Friday.

The Huon River at Judbury is currently at 2.04 metres and rising. The Huon River at Judbury is expected to exceed the minor flood level (4.00 m) Thursday afternoon. The river level is likely to peak between 5.70 and 6.00 metres overnight Thursday into Friday (Moderate Flood level 6.0 metres).

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 1.75 metres and steady. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday afternoon. The river level is likely to peak between 3.80 and 4.10 metres early Friday morning. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 04:00 pm EST on Thursday 14 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.38, Rising, 01:23 PM THU 14/07/16
Huon River at Tahune Bridge, 3.48, Rising, 01:17 PM THU 14/07/16
Huon River at Judbury, 2.28, Rising, 12:00 PM THU 14/07/16
Huon River at Huonville, 2.20, Falling, 01:22 PM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Moderate Flood Warning for the Huon River

Issued at 3:51 pm EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 3

Moderate flooding is expected to develop throughout the Huon River Thursday evening. Strong river rises are occurring throughout the catchment, with the river level at Tahune exceeding the Minor flood level during Thursday afternoon.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 7 hours since 9am a further 30 to 45mm has been recorded. Rainfall totals of 20 to 50mm are forecast for the remainder of Thursday into Friday morning with higher totals possible about elevated areas. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:
Minor flooding has developed in the Upper Huon River. River levels are expected to continue rising during Thursday.

Picton River:
Minor flooding has developed in the Picton. River levels are expected to continue rising during Thursday.

Huon River - Tahune to Judbury:
Moderate flooding is expected along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 4.62 metres and rising. The Huon River at Tahune Bridge is expected to peak between 5.70 and 6.00 metres overnight Thursday into Friday.

The Huon River at Judbury is currently at 3.30 metres and rising. The Huon River at Judbury is expected to exceed the minor flood level (4.00 m) Thursday afternoon. The river level is likely to peak between 5.70 and 6.00 metres overnight Thursday into Friday (Moderate Flood level 6.0 metres).

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 2.50 metres and rising. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday afternoon. The river level is likely to peak between 3.80 and 4.10 metres early Friday morning. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:

FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 07:00 pm EST on Thursday 14 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.63, Falling, 03:48 PM THU 14/07/16
Huon River at Tahune Bridge, 4.62, Rising, 03:37 PM THU 14/07/16
Huon River at Judbury, 3.30, Rising, 03:43 PM Thu 14/07/16
Huon River at Huonville, 2.50, Rising, 03:22 PM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Moderate Flood Warning for the Huon River

Issued at 7:04 pm EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 4

Moderate flooding is expected to develop throughout the Huon River Thursday evening. Strong river rises are occurring throughout the catchment, with the river level at both Tahune and Judbury exceeding the Minor flood level during Thursday afternoon.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 10 hours since 9am a further 50 to 60mm has been recorded. Rainfall totals of 10 to 30mm are forecast for the remainder of Thursday into Friday morning with higher totals possible about elevated areas. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to continue rising during Thursday.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to continue rising during Thursday.

Huon River - Tahune to Judbury:
Moderate flooding is likely along the Huon River - Tahune to Judbury.

Minor flooding developed in the Huon River at Tahune during Thursday afternoon. The Huon River at Tahune Bridge is currently at 5.35 metres and rising. The Huon River at Tahune Bridge is expected to peak between 5.70 and 6.00 metres Thursday evening.

Minor flooding developed in the Huon River at Judbury during Thursday afternoon. The river is currently at 4.48 metres and rising. The Huon River at Judbury is likely to peak between 5.70 and 6.00 metres overnight Thursday into Friday.

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 2.70 metres and rising. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday evening. The river level is likely to peak between 3.80 and 4.10 metres early Friday morning. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 10:00 pm EST on Thursday 14 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.83, Rising, 06:58 PM THU 14/07/16
Huon River at Tahune Bridge, 5.35, Rising, 06:49 PM THU 14/07/16
Huon River at Judbury, 4.55, Rising, 06:58 PM Thu 14/07/16
Huon River at Huonville, 2.75, Rising, 06:52 PM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Moderate Flood Warning for the Huon River

Issued at 10:03 pm EST on Thursday 14 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 5

Moderate flooding is expected to develop throughout the Huon River Thursday evening. Strong river rises are occurring throughout the catchment, with the river level at both Tahune and Judbury exceeding the Minor flood level during

Thursday afternoon.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 10 hours since 9am a further 75mm has been recorded. Rainfall totals of 15 to 30mm are forecast for the remainder of Thursday into Friday morning with higher totals possible about elevated areas. Rainfall will start to ease to showers during Friday morning. Snow melt is expected to increase flood levels during the next 24 hours.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to continue rising during Thursday.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to continue rising during Thursday.

Huon River - Tahune to Judbury:
Moderate flooding is likely along the Huon River - Tahune to Judbury.

Minor flooding developed in the Huon River at Tahune during Thursday afternoon. The Huon River at Tahune Bridge is currently at 5.45 metres and rising. The Huon River at Tahune Bridge is expected to peak between 5.70 and 6.00 metres Thursday evening.

Minor flooding developed in the Huon River at Judbury during Thursday afternoon. The Huon River at Judbury is currently at 5.38 metres and rising. The Huon River at Judbury is likely to peak between 5.70 and 6.00 metres overnight Thursday into Friday.

Huon River around Huonville:
Moderate flooding is expected along the Huon River around Huonville.

The Huon River at Huonville is currently at 2.85 metres and rising. The Huon River at Huonville is expected to exceed the minor flood level (3.00 m) Thursday evening. The river level is likely to peak between 3.80 and 4.10 metres early Friday morning. High tides in the Huon River may affect the timing and magnitude of this peak.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 07:00 am EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.98, Falling, 09:53 PM THU 14/07/16
Huon River at Tahune Bridge, 5.45, Steady, 09:49 PM THU 14/07/16

Huon River at Judbury, 5.38, Rising, 09:48 PM Thu 14/07/16
Huon River at Huonville, 2.85, Rising, 09:07 PM THU 14/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

TOP PRIORITY: The Bureau and Emergency Services would appreciate this message being broadcast regularly.

Major Flood Warning for the Huon River

Issued at 4:40 am EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 6

Major flooding is expected to develop in the Huon River around Huonville early Friday morning. The river level is expected to peak around Huonville between 4.20 and 4.40 metres Friday morning.

Strong river rises are occurring throughout the catchment, with the river level at Tahune Bridge currently exceeded the minor flood level and at Judbury exceeding the moderate flood level (6.0 metres).

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. Since 9am Thursday a further 95mm has been recorded. Snow melt is expected to maintain high flood levels during Friday.

Strong rises and localised flooding in creeks and low lying areas are likely in areas that receive heavy rainfall during Thursday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to remain high during Friday morning.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to remain high during Friday morning.

Huon River - Tahune to Judbury:
Moderate flooding is expected along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 5.52 metres and steady. The Huon River at Tahune Bridge is expected to remain above 5.50 metres Friday morning.

The Huon River at Judbury exceeded the Moderate Flood Level (6.0 metres) around midnight Thursday. The Huon River at Judbury is currently at 6.16 metres and rising. The Huon River at Judbury is expected to peak between 6.40 and 6.60

metres early Friday morning.

Huon River around Huonville:
Major flooding is expected along the Huon River around Huonville.

The Huon River at Huonville has exceeded the moderate flood level (3.80 metres) around 3AM Friday and is currently at 3.90 metres and rising. The Huon River at Huonville is expected to exceed the major flood level (4.20 m) early Friday morning. The river level is expected to peak between 4.20 and 4.40 metres Friday morning.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 08:00 am EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.95, Falling, 04:03 AM FRI 15/07/16
Huon River at Tahune Bridge, 5.53, Steady, 03:49 AM FRI 15/07/16
Huon River at Judbury, 6.16, Rising, 02:00 AM FRI 15/07/16
Huon River at Huonville, 3.90, Rising, 03:57 AM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

TOP PRIORITY: The Bureau and Emergency Services would appreciate this message being broadcast regularly.

Major Flood Warning for the Huon River

Issued at 7:44 am EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 7

Major flooding is occurring in the Huon River around Huonville. The river level is expected to peak around Huonville between 4.20 and 4.40 metres Friday morning.

River peaks are likely to be similar to those recorded in the February 1996 flood.

Strong river rises are occurring throughout the catchment, with the river level at Tahune Bridge currently exceeding the minor flood level and at Judbury

exceeding the moderate flood level (6.0 metres).

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. Since 9am Thursday a further 95mm has been recorded. Snow melt is expected to maintain high flood levels during Friday.

Strong rises and localised flooding in creeks and low lying areas are likely during Friday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to remain high during Friday morning.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to remain high during Friday morning.

Huon River - Tahune to Judbury:
Moderate flooding is occurring along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 5.52 metres and steady. The Huon River at Tahune Bridge is expected to remain above 5.50 metres Friday morning.

The Huon River at Judbury is currently peaking around 6.48 metres (Moderate Flood Level 6.0 metres). The Huon River at Judbury will remain above the moderate flood level (6.00 m) Friday morning.

Huon River around Huonville:
Major flooding is occurring along the Huon River around Huonville.

The Huon River at Huonville is currently at 4.25 metres and rising. The Huon River at Huonville will remain above the major flood level (4.20 m) Friday morning. The river level is expected to peak between 4.20 and 4.40 metres late Friday morning.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 11:00 am EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.60, Falling, 07:33 AM FRI 15/07/16
Huon River at Tahune Bridge, 5.45, Falling, 07:02 AM FRI 15/07/16
Huon River at Judbury, 6.48, Rising, 06:23 AM FRI 15/07/16
Huon River at Huonville, 4.25, Rising, 07:32 AM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

PRIORITY: The Bureau and Emergency Services would appreciate this message being broadcast regularly.

Major Flood Warning for the Huon River

Issued at 11:05 am EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 8

Major flooding continues in the Huon River around Huonville. The river level is expected to peak around Huonville between 4.20 and 4.40 metres Friday morning. High tides may maintain high river levels around Huonville during Friday afternoon.

River peaks are likely to be similar to those recorded in the February 1996 flood.

Strong river rises are occurring throughout the catchment, with the river level at Tahune Bridge currently exceeding the minor flood level and at Judbury exceeding the moderate flood level (6.0 metres).

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 24 hours to 9am Friday up to 102mm were recorded. Snow melt is expected to maintain high flood levels during Friday.

Strong rises and localised flooding in creeks and low lying areas are likely during Friday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to remain high during Friday morning.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to remain high during Friday morning.

Huon River - Tahune to Judbury:
Moderate flooding is occurring along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge is currently at 5.25 metres and falling. The Huon River at Tahune Bridge is expected to remain above the minor flood level (4.00 m) Friday afternoon.

The Huon River at Judbury peaked at 6.49 metres around 07:45 am Friday 15 July and is currently at 6.33 metres and falling. The Huon River at Judbury will remain above the moderate flood level (6.00 m) Friday morning.

Huon River around Huonville:
Major flooding is occurring along the Huon River around Huonville.

The Huon River at Huonville is currently at 4.30 metres and steady. The Huon

River at Huonville will remain above the major flood level (4.20 m) Friday morning. The river level is expected to peak between 4.20 and 4.40 metres late Friday morning. High tides may maintain high river levels around Huonville during Friday afternoon.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 02:00 pm EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.43, Rising, 10:58 AM FRI 15/07/16
Huon River at Tahune Bridge, 5.25, Steady, 10:49 AM FRI 15/07/16
Huon River at Judbury, 6.33, Falling, 10:00 AM FRI 15/07/16
Huon River at Huonville, 4.30, Steady, 10:57 AM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Major Flood Warning for the Huon River

Issued at 1:07 pm EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 9

Major flooding continues in the Huon River around Huonville, where the river peaked at 4.30 metres Friday morning and is now easing slowly. High tides may maintain high river levels around Huonville during Friday afternoon.

High flows continue throughout the catchment, with river levels now easing.

River peaks are similar to those recorded in the February 1996 flood.

In the 24 hours 9am Thursday up to 44mm of rainfall has been recorded in the Huon Catchment. In the 24 hours to 9am Friday up to 102mm were recorded. Snow melt is expected to maintain high flood levels during Friday.

Strong rises and localised flooding in creeks and low lying areas are likely during Friday.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to remain high during Friday afternoon.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to remain high during Friday afternoon.

Huon River - Tahune to Judbury:
Moderate flooding is occurring along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge peaked at 5.53 metres around 03:00 am Friday 15 July and is currently at 5.08 metres and falling. The Huon River at Tahune Bridge is expected to fall below the minor flood level (4.00 m) Friday evening.

The Huon River at Judbury peaked at 6.49 metres around 07:45 am Friday 15 July and is currently at 6.01 metres and falling. The Huon River at Judbury will fall below the moderate flood level (6.00 m) early Friday afternoon. The river level is expected to fall below the minor flood level (4.00 m) early Friday evening.

Huon River around Huonville:
Major flooding is occurring along the Huon River around Huonville.

The Huon River at Huonville peaked at 4.30 metres around 10:00 am Friday 15 July and is currently at 4.15 metres and falling. The Huon River at Huonville is expected to remain between 4.00 and 4.20 metres early Friday afternoon. High tides may maintain high river levels around Huonville during Friday afternoon.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 04:00 pm EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.13, Falling, 12:58 PM FRI 15/07/16
Huon River at Tahune Bridge, 5.08, Falling, 12:49 PM FRI 15/07/16
Huon River at Judbury, 6.01, Falling, 12:00 PM FRI 15/07/16
Huon River at Huonville, 4.15, Falling, 12:37 PM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Moderate Flood Warning for the Huon River

Issued at 3:57 pm EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 10

Moderate flooding continues in the Huon River around Huonville, where the river peaked at 4.30 metres Friday morning and is now easing slowly. High tide during Friday afternoon may maintain high river levels around Huonville. Minor flooding continues easing in the middle reaches of the Huon River around Judbury.

River peaks are similar to those recorded in the February 1996 flood.

In the 24 hours to 9am Thursday up to 44mm of rainfall was recorded in the Huon Catchment. In the 24 hours to 9am Friday up to 102mm of rainfall was recorded.

Strong and dangerous flows and localised flooding in creeks and low lying areas will remain a hazard into the weekend.

Huon River above Tahune:
Minor flooding is continuing in the Upper Huon River. River levels are expected to remain high during Friday afternoon.

Picton River:
Minor flooding is continuing in the Picton River. River levels are expected to remain high during Friday afternoon.

Huon River - Tahune to Judbury:
Minor flooding continues along the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge peaked at 5.53 metres around 03:00 am Friday 15 July and is currently at 3.70 metres and falling.

The Huon River at Judbury peaked at 6.49 metres around 07:45 am Friday 15 July and is currently at 4.48 metres and falling. The Huon River at Judbury is expected to fall below the minor flood level (4.00 m) Friday evening.

Huon River around Huonville:
Moderate flooding is occurring along the Huon River around Huonville after the river fell below the Major flood level (4.2 metres) during Friday afternoon.

The Huon River at Huonville peaked at 4.30 metres around 10:00 am Friday 15 July and is currently at 3.75 metres and falling. The Huon River at Huonville is expected to remain around 4.00 metres during Friday afternoon as high tide may impede river flow. The river will continue to ease after the high tide.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 07:00 pm EST on Friday 15 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 3.15, Falling, 03:38 PM FRI 15/07/16
Huon River at Tahune Bridge, 3.70, Falling, 03:42 PM FRI 15/07/16
Huon River at Judbury, 4.48, Falling, 03:48 PM Fri 15/07/16
Huon River at Huonville, 3.75, Falling, 03:42 PM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Minor Flood Warning for the Huon River

Issued at 7:03 pm EST on Friday 15 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 11

Minor flooding continues in the Huon River around Huonville, where the river peaked at 4.30 metres Friday morning and is now easing slowly. Levels throughout the upper reaches of the catchment including Judbury have fallen below the Minor flood level.

In Friday's flood event, river peaks were similar to those recorded in the February 1996 flood.

In the 24 hours to 9am Friday up to 102mm of rainfall was recorded. No significant rainfall has fallen since 9am.

Strong and dangerous flows and localised flooding in creeks and low lying areas will remain a hazard into the weekend.

Huon River above Tahune:
River levels in the Upper Huon River have fallen below the Minor flood level and are easing.

Picton River:
River levels have fallen below the Minor flood level in the Picton River.

Huon River - Tahune to Judbury:
River levels have fallen below the Minor flood level in the Huon River - Tahune to Judbury.

The Huon River at Tahune Bridge peaked at 5.53 metres around 03:00 am Friday 15 July and is currently at 2.92 metres and falling.

The Huon River at Judbury peaked at 6.49 metres around 07:45 am Friday 15 July and is currently at 3.22 metres and falling.

Huon River around Huonville:
Minor flooding is occurring along the Huon River around Huonville after the river fell below the Moderate flood level on Friday evening.

The Huon River at Huonville peaked at 4.30 metres around 10:00 am Friday 15 July and is currently at 3.00 metres and falling. The Huon River at Huonville is expected to fall below the minor flood level (3.00 m) Friday night.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
The next warning will be issued by 10:00 am EST on Saturday 16 July 2016.

Latest River Heights:
Picton River above Farmhouse Creek, 2.75, Falling, 06:53 PM FRI 15/07/16
Huon River at Tahune Bridge, 2.93, Falling, 06:52 PM FRI 15/07/16
Huon River at Judbury, 3.22, Falling, 06:58 PM Fri 15/07/16
Huon River at Huonville, 3.00, Falling, 06:57 PM FRI 15/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

IDT20616
Australian Government Bureau of Meteorology, Tasmania

Final Flood Warning for the Huon River

Issued at 9:51 am EST on Saturday 16 July 2016
By Bureau of Meteorology, Hobart

Flood Warning Number: 12

Flooding has eased in the Huon River around Huonville, where the river peaked at 4.30 metres Friday morning. Levels throughout the Huon River catchment have fallen below the Minor flood level.

In the 24 hours to 9am Saturday no significant rainfall was recorded in the catchment.

Huon River above Tahune:
River levels in the Upper Huon River have fallen below the Minor flood level.

Picton River:

River levels in the Picton River have fallen below the Minor flood level.

Huon River - Tahune to Judbury:
River levels have fallen below the Minor flood level in the Huon River - Tahune to Judbury.

Huon River around Huonville:
River levels in the Huon River at Huonville have fallen below the Minor flood level.

The Huon River at Huonville peaked at 4.30 metres around 10:00 am Friday 15 July and is currently at 1.75 metres and falling.

Flood Safety Advice:
FloodSafe advice is available at www.ses.tas.gov.au
Road closure information is available at www.police.tas.gov.au

For emergency assistance call the SES on telephone number 132 500.
For life threatening situations, call 000 immediately.

Next issue:
This is a final warning, no further warnings will be issued for this event.

Latest River Heights:
Picton River above Farmhouse Creek, 2.03, Falling, 09:33 AM SAT 16/07/16
Huon River at Tahune Bridge, 1.63, Steady, 09:49 AM SAT 16/07/16
Huon River at Judbury, 2.09, Falling, 08:00 AM SAT 16/07/16
Huon River at Huonville, 1.75, Falling, 09:27 AM SAT 16/07/16

This advice is also available by dialling 1300 659 216. Warning, rainfall and river information are available at www.bom.gov.au/tas/flood. The latest weather forecast is available at www.bom.gov.au/tas/forecasts.

Appendix 2: Glossary of Terms

A2.1 General

Annual Exceedance Probability (AEP): the probability of an event occurring or being exceeded within a given year based on long term averages, usually expressed as a percentage.

Annual Recurrence Interval: the average period between occurrences equalling or exceeding a given event. Also referred to as the *Return Period*.

Australian Government Crisis Coordination Centre: an all-hazards, 24/7 facility that provides whole-of-government situational awareness to inform national decision-making during a crisis. The Centre also coordinates physical Australian Government assistance during disasters and emergencies and manages the National Security Hotline, a vital component of Australia's national counter-terrorism efforts.

Bureau Flood Warning Centre: an operational area set aside in each capital city to fulfil the Bureau's role in the Total Flood Warning System specifically flood forecasting and warning.

Bureau National Operations Centre: The principal role of the National Operations Centre is to augment regional flood forecasting teams during major floods and to provide operational system support. The National Operations Centre is also responsible for leading new initiatives to enhance the quality of operations and services.

Catchment Directive: A catchment directive provides guidance specific to a catchment to help develop forecasting and warning products.

Department of Primary Industries, Parks, Water and Environment (DPIPWE): responsible for the sustainable management and protection of Tasmania's natural and cultural assets for the benefit of Tasmanian communities and the economy.

Exceedances per Year (EY): number of times that an event is likely to occur or be exceeded within a year.

Flood warning: A written product to provide advice on impending flooding so people can take action to minimise its negative impact. This will involve some people taking action on their own behalf and others doing so as part of agency responsibilities.

Flood Warning Consultative Committee (FWCC): The Tasmanian Flood Warning Consultative Committee was formed in 1988. The Committee's role is to coordinate the development and operations of the State's flood forecasting and warning services. It is an advisory body and reports to the Bureau and participating State and local government agencies twice each year. The membership includes:

- Bureau of Meteorology (Chair/Secretariat)
- State Emergency Services
- Tasmanian Farmers and Graziers Association
- Hydro Tasmania
- Department of Primary Industries, Parks, Water and Environment (DPIPWE)
- Launceston City Council
- Northern Midlands Council
- Huon Valley Council
- Central Coast Council
- Kentish Council

- Local Government Association of Tasmania

Flood Warning Network: rainfall and river height stations which are used for flood warning and forecasting operations. The stations are owned and operated by various agencies.

Flood watch: A written product that alerts when the combination of forecast rainfall and catchment conditions indicates the flooding is likely.

National Crisis Coordination Centre: The Australian Government Crisis Coordination Centre has been designed to connect relevant Australian Government, State and Territory agencies to centralise Australian Government actions during complex national crises, to develop a single, timely and consistent picture or understanding of a crisis, its implications and the national capacity to respond.

National Flood Warning Arrangements: The National Arrangements outline the general roles and responsibilities of each level of Government in providing and supporting an effective flood warning service and includes separate chapters describing the specific arrangements and agency roles that apply in each jurisdiction.

Probability: The chance of an event occurring based on statistical analysis of historical records, usually expressed as a percentage.

Protective behaviour: generating appropriate and timely actions and behaviours from the agencies involved and from the threatened community.

Rainfall Intensity: The rainfall rate, typically measured in millimetres per hour (mm/hr). For the Intensity-Frequency-Durations (IFDs) this is now expressed in terms of depth in millimetres for a specified duration. This varies spatially and temporally throughout a storm event.

Rainfall or River Alert: An automatic River and Rainfall Alert service is provided by the Bureau through an agreement with the State Emergency Service, as outlined in the Service Level Specification. Once the trigger river level or rainfall accumulation threshold is reached, an alert is issued. For river alerts, the alert is re-issued after 24 hours if the river level remains above the alert level. Rainfall alerts are re-issued if total rainfall accumulated in the previous 24-hours is still exceeding alert level.

Service Level Specification (SLS): A document that outlines the Service Level Specification for Flood Forecasting and Warning Services provided by the Commonwealth of Australia through the Bureau of Meteorology for the State of Tasmania in consultation with the Tasmanian Flood Warning Consultative Committee.

Severe Thunderstorm: A thunderstorm is characterised by sudden electrical discharges, each manifested by a flash of light (lightning) and a sharp rumbling sound. Thunderstorms are associated with convective clouds (cumulonimbus) and are usually accompanied by precipitation. Thunderstorms are often short-lived and impact on only a small area. Severe thunderstorms may last for an hour or more and can have a more widespread impact.

A severe thunderstorm will also have one or more of the following phenomena:

- Tornado
- Wind gust of 90 km/h (49 knots) or more
- Hailstones with diameter of 2 cm or larger
- Very heavy rain sufficient to cause flash flooding

Weather warnings: Weather warnings are messages sent out by the Bureau to warn the community of potentially hazardous or dangerous weather conditions. Such warnings include but are not limited to: road weather alerts, severe thunderstorm warnings, severe weather warnings for heavy rain, strong or gale force

winds, marine wind warnings, warnings for sheep graziers and frost warnings. More information on weather terms is given in the Bureau's glossary.

A2.2 The components of the Total Flood Warning System

Based on the Manual 21 Australian Emergency Manual Series, Australian Government 2009 (see the Manual for more details).

Communication: disseminating warning information in a timely fashion to people and organisations likely to be affected by the flood (see Chapter 6).

Interpretation: identifying in advance the impacts of the predicted flood levels on communities at risk (see Chapter 4).

Message construction: devising the content of the message which will warn people of impending flooding (see Chapter 5).

Monitoring and prediction: detecting environmental conditions that lead to flooding, and predicting river levels during the flood (see Chapter 3),

Review: examining the various aspects of the system with a view to improving its performance (see Chapter 7).

A2.3 Flood classifications

The classification of minor, moderate and major flood levels at key river height stations is based upon the effect of flooding for some distance upstream and downstream of that station. These levels are determined using the following descriptive categories of flooding, historical data or relevant local information.

The process for establishing flood class levels involves determining local flood effects, review and endorsement by relevant stakeholders and passing recommendations to the Bureau for inclusion in forecast and warning procedures. The process for establishment of flood class levels specific to each State and Territory is documented in the National Arrangements.

- **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.

- **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.

- **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.