Manly Hydraulics Laboratory

NORTH COAST FLOOD SUMMARY
February/March 2022

Report MHL2880
June 2022

Prepared for:

Planning and Environment

Biodiversity and Conservation Division

Additional data provided by:

Australian Government Bureau of Meteorology

ballina shire council

Byron Shire Council

clarence VALLEY COUNCIL

TWEED SHIRE COUNCIL

lismore city council

North Byron Parklands

WaterNSW

Cover Photograph: Maclean water level station 02 March 2022

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Foreword

New South Wales (NSW) government's specialist advisor, Manly Hydraulics Laboratory (MHL) was commissioned by the Biodiversity and Conservation Division (DPE BCD) within the NSW Department of Planning and Environment to summarise the February/March 2022 flood event on the north coast of NSW. The areas of focus for this flood report includes the Tweed River, Brunswick River, Wilsons River, Richmond River and Clarence River. DPE BCD manages an extensive water monitoring network in the NSW coastal zone. MHL operates and maintains the coastal water monitoring network via an annual agreement with DPE BCD.

Additional flood data is provided by the Bureau of Meteorology (BoM), Ballina Shire Council, Byron Shire Council, Clarence Valley Council, Lismore City Council, North Byron Parklands, Tweed Shire Council and WaterNSW.

An electronic copy of this report can be downloaded at www.mhl.nsw.gov.au.

Please note that DPE BCD and WaterNSW quality controlled data is presented where possible. In some cases the data presented in this report have had preliminary data checks only and are not quality controlled to a specified error margin. Further data sourced from the BoM and local councils are not quality reviewed.

Quality controlled data for MHL maintained stations can be supplied through data request to MHL (data-request@mhl.nsw.gov.au) once post flood event status checks have been conducted. Water level values in this report are reported to 2 decimal places, which is not necessarily an indication of accuracy. Data are excluded from this report if preliminary checks show an issue or if advised by the data custodian. The water level data for DPE BCD and WaterNSW stations are presented as 15 minute time series data, while all other data is event based. Data received from the BoM have been adjusted from Australian Eastern Daylight Time (AEDT), such that all data in this report are presented in Australian Eastern Standard Time (AEST).

This report presents only a subset (selected stations per region) of all the stations managed by each of the agencies and councils mentioned. Each contributing organisation have checked and confirmed its own information within this report.

Executive summary

In February/March 2022, the north coast of NSW experienced a blocking high pressure system in the Tasman Sea resulting in a very humid environment along much of the coast. On the 27 and 28 February, the high pressure system in the Tasman Sea in conjunction with a slow-moving trough and upper atmospheric support, produced very heavy multi-day rainfall over the northern rivers of NSW. The catchments of the northern rivers already had wet soils, full rivers and water storages from the La Niña conditions being experienced. The town of Lismore experienced flooding on the 28 February where river levels exceeded the March 1974 highest peak on record, and the water overtopped the town levee.

Based on the NSW State Emergency Service (SES) flood height classifications, major floods were experienced in all river regions included in this report, namely Tweed River, Brunswick River, Wilsons River, Richmond River and Clarence River.

During the flood period, MHL staff monitored flood situations via telemetry tools and provided clients and the public with near real time access to the rainfall and water levels via customised client webpages and MHL's public webpage at www.mhl.nsw.gov.au, BoM website www.bom.gov.au/nsw/flood and NSW Government's Floods Near Me app http://floodsnearme.manly.hydraulics.works/, which displays latest recordings for water level recording stations. MHL deployed field teams to the flood-affected area to obtain flood status checks and to be available to address any system failures during the flood event. In addition, MHL's water information team relayed critical information to flood response managers during the event.

During the flood event, the BoM and State Emergency Service (SES) used water level and rainfall data, quantitative precipitation forecasts and radar information to generate predicted water levels at warning locations on the flood-affected rivers. The water level predictions were used by the BoM to issue flood watches, flood warnings and severe weather warnings for heavy rain and local flooding.

This report presents a select group of wave, water level and rainfall hydrometric data collected from 15 February to 11 March 2022 along the north coast of NSW. This report incorporates water level and rainfall data provided by the BoM, Ballina Shire Council, Byron Shire Council, Clarence Valley Council, Lismore City Council, North Byron Parklands, Tweed Shire Council and WaterNSW. Data presentation was undertaken by MHL for DPE BCD.

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1 Introduction

During the February/March 2022 flood event, very high rainfalls were experienced on the east coast of NSW particularly in the northern rivers region from the Tweed River to the Clarence River. The high rainfall was generated by a high pressure system in the Tasman Sea in conjunction with a slow-moving trough and upper atmospheric support. **Figure 1.1** to **Figure 1.4** display the mean sea level pressure (MSLP) maps and radar images showing the movement of the pressure systems over NSW from 25 February to 28 February 2022. The heaviest rain fell on 28 February, focused on the northern rivers region. Mullumbimby (Fairview Farm) 58040 recorded a total of 520.0mm on 28 February, which exceeded the previous record of 359.0mm on 2 February 2001 over a 124 year monitoring period. The town of Lismore experienced flooding on the 28 February where river levels exceeded the March 1974 highest peak on record, and the water overtopped the town levee. At Lismore Browns Creek the water level reached 14.35m AHD, which is almost 3.5m above the town levee and exceeds the 500 year ARI level by almost 1m.

Major flooding occurred on numerous rivers including Tweed, Brunswick, Wilsons, Richmond and Clarence Rivers. **Figure 1.5** shows the rainfall analysis map of NSW which presents the total rainfall recorded across NSW for February and March 2022, respectively.

Figure 1.6 to **Figure 1.8** present wind roses for Coolangatta (040717), Byron Bay (Cape Byron) (058216), Lismore Airport (058214), Evans Head RAAF Bombing Range (058212), Grafton Research Station (058077) automatic weather stations (AWS) for 15 February to 11 March 2022. At the Cape Byron automatic weather station the average of the maximum wind gust speeds over the peak of the event (27 February to 2 March 2022) was 62 km/h.

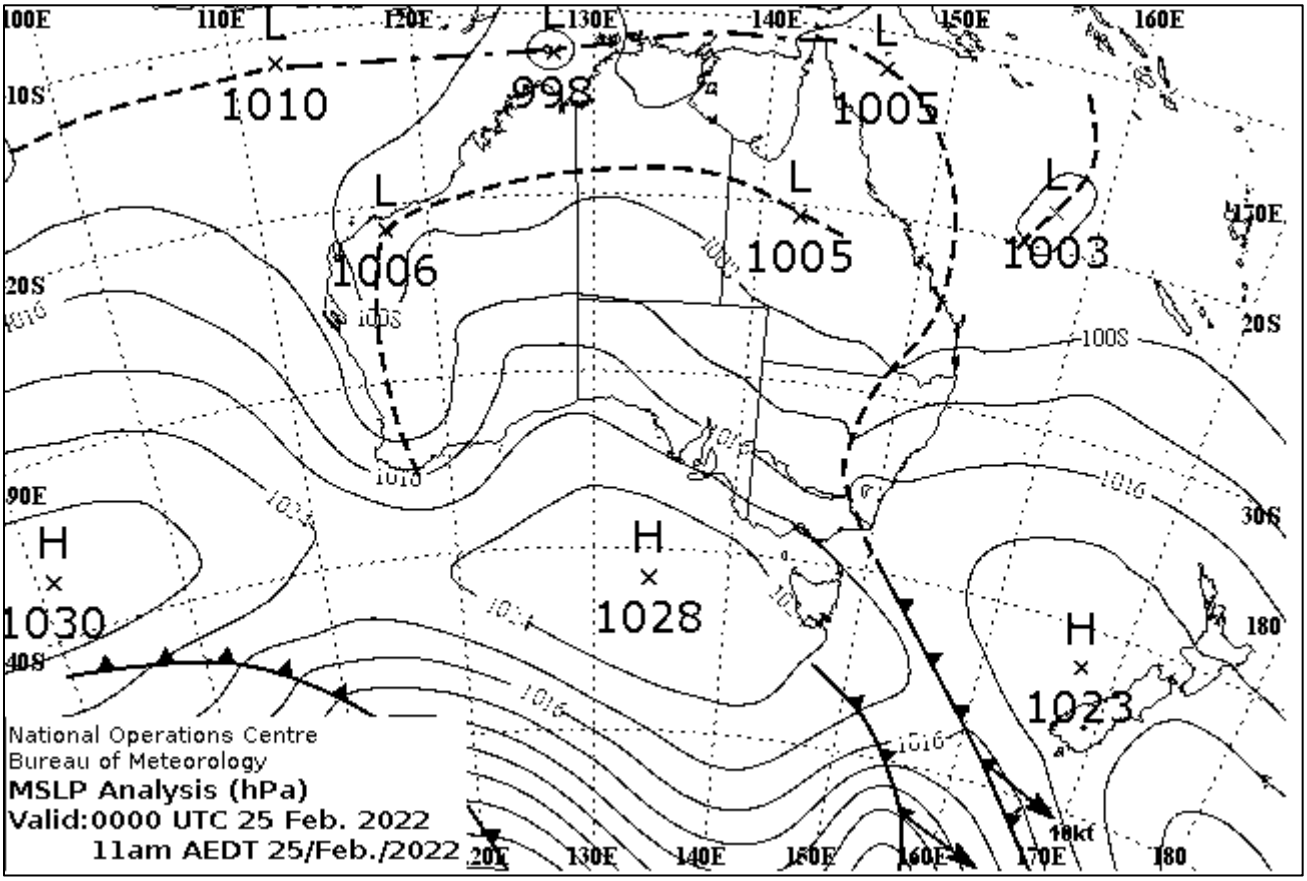
During the flood event, the monitoring networks of water level recorders and rainfall gauges operated by MHL, on behalf of DPE BCD, were used extensively by the BoM, the SES and the local councils to generate flood warnings, emergency response and delivery of flood related services. Wave, water level and rainfall data captured during the flood event are summarised in the subsequent sections of this report. Station performance during the event is summarised in Appendix A. Photographs taken during the event are presented in Appendix B.

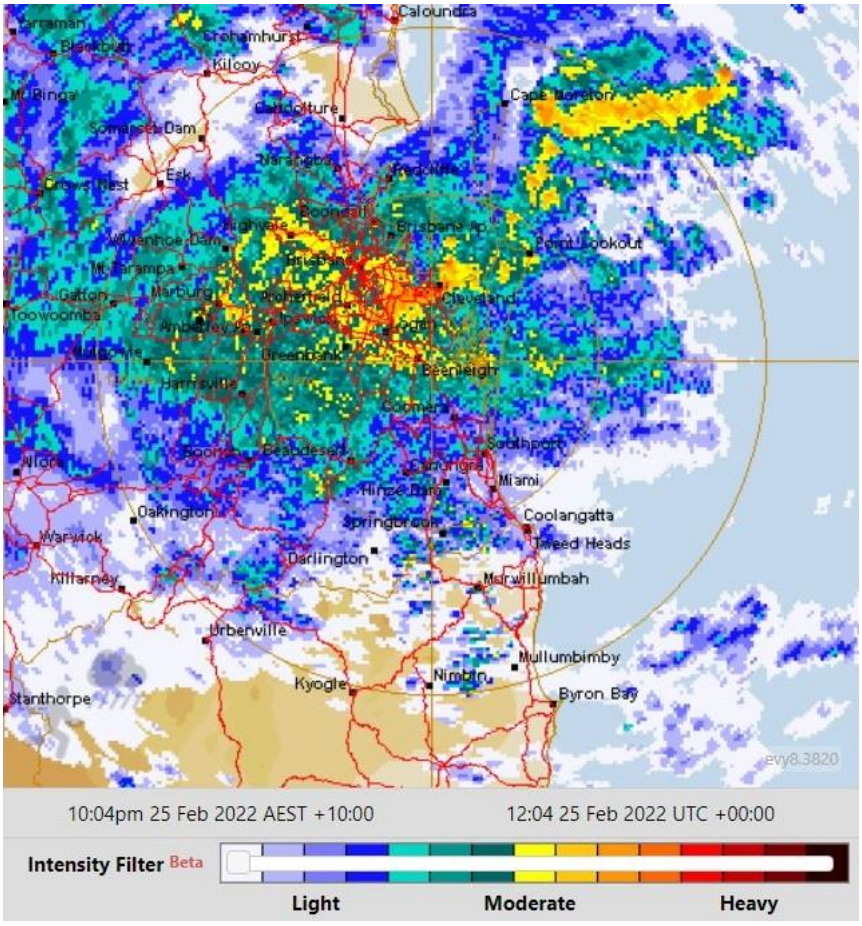
DPE BCD commissioned MHL to prepare this report to summarise the February/March 2022 flood event, which includes supplementary flood data provided from the BoM, Ballina Shire Council, Byron Shire Council, Clarence Valley Council, Lismore City Council, North Byron Parklands, Tweed Shire Council and WaterNSW.

Rainfall intensity frequency duration (IFD) curves have been generated using the Australian Rainfall and Runoff 2019 (ARR2019) format in millimetres per hour for durations up to and including 168 hours. In addition, IFD curves have been generated using the previous IFD format, Australian Rainfall and Runoff 1987 (ARR1987), with results in millimetres per hour for durations up to and including 72 hours (refer to Appendix C). This will allow this flood summary report to be comparable with past and future reports as agencies transition the IFD format to the ARR2019 version. It is noted that data from a number of rainfall stations are affected by a loss of resolution, possibly caused by interruptions to radio signals during the event, and for two stations only 24-hour totals could be provided and no IFD analysis is

undertaken. In cases where this loss of resolution has affected the intensity frequency duration curves, the short duration event values have been removed as they could be misinterpreted. Impacted stations are noted. In addition, missing or incomplete supplied data is also noted. For third party stations, including those supplied by the BoM, it is recommended that further quality assurance checks are undertaken prior to interpretation and use of this data for decision making. Please contact the BoM for short duration rainfall statistics.

Please refer to Appendix D for the conversion of WaterNSW's water level gauges from local gauge datum to Australian Height Datum (AHD) where available.





Source: Australian Bureau of Meteorology, 2022; radar image archived by theweatherchaser.com

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MEAN SEA LEVEL PRESSURE AND RADAR IMAGE
25 FEBURARY 2022

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Figure
1.1

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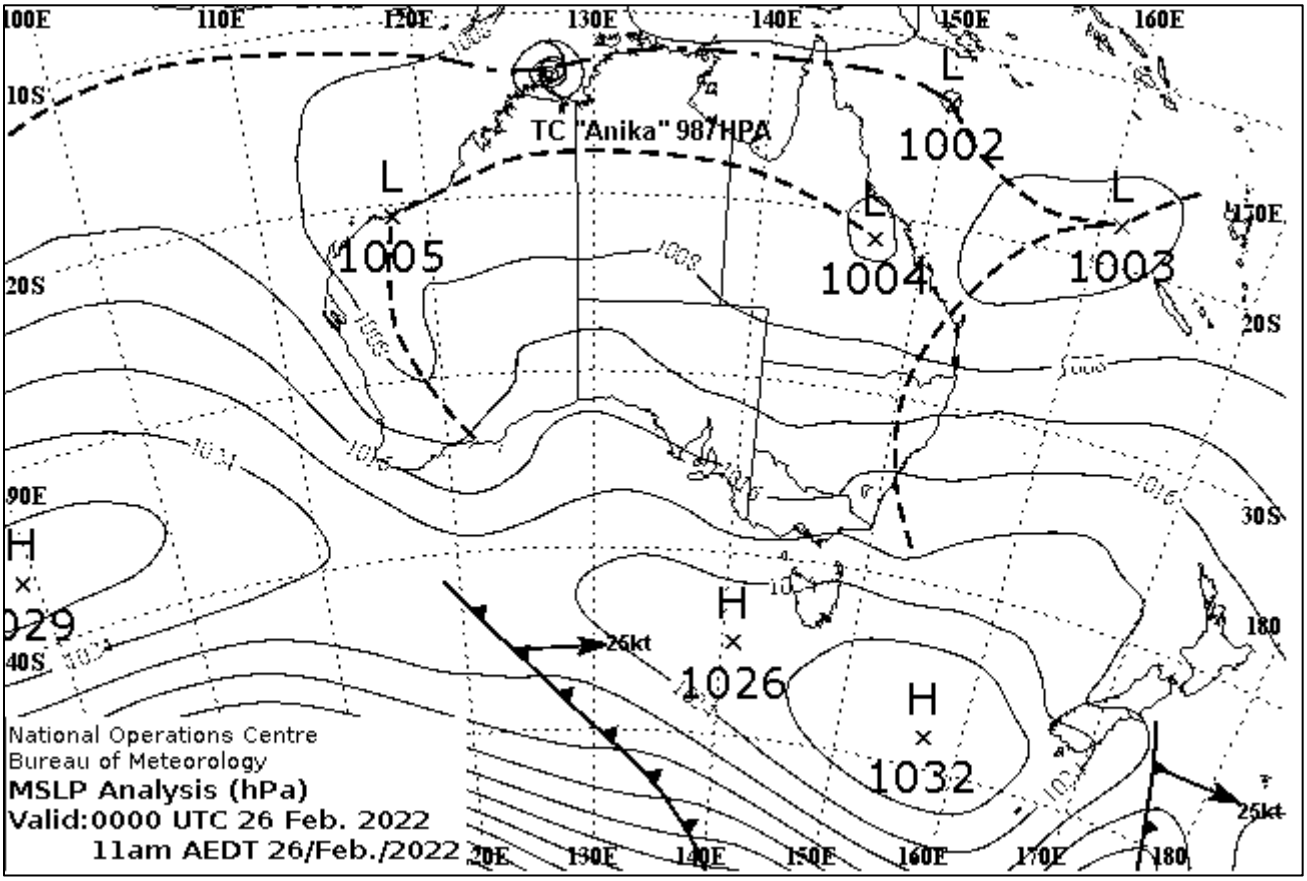

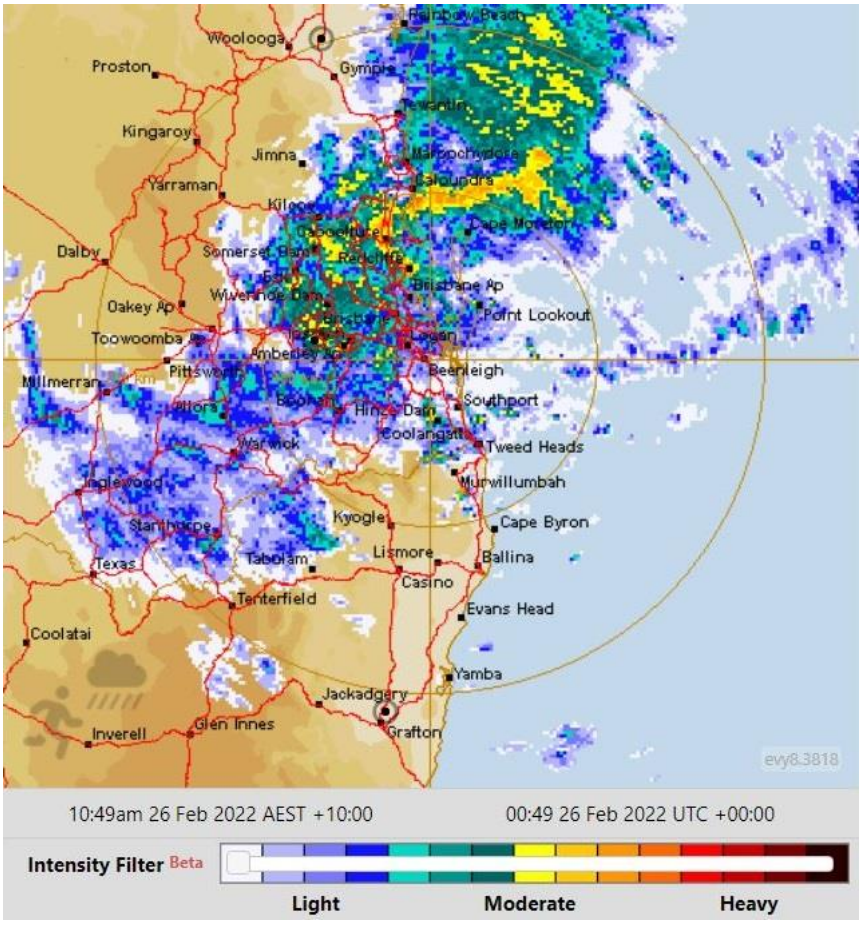

Source: Australian Bureau of Meteorology, 2022; radar image archived by theweatherchaser.com

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MEAN SEA LEVEL PRESSURE AND RADAR IMAGE
26 FEBURARY 2022

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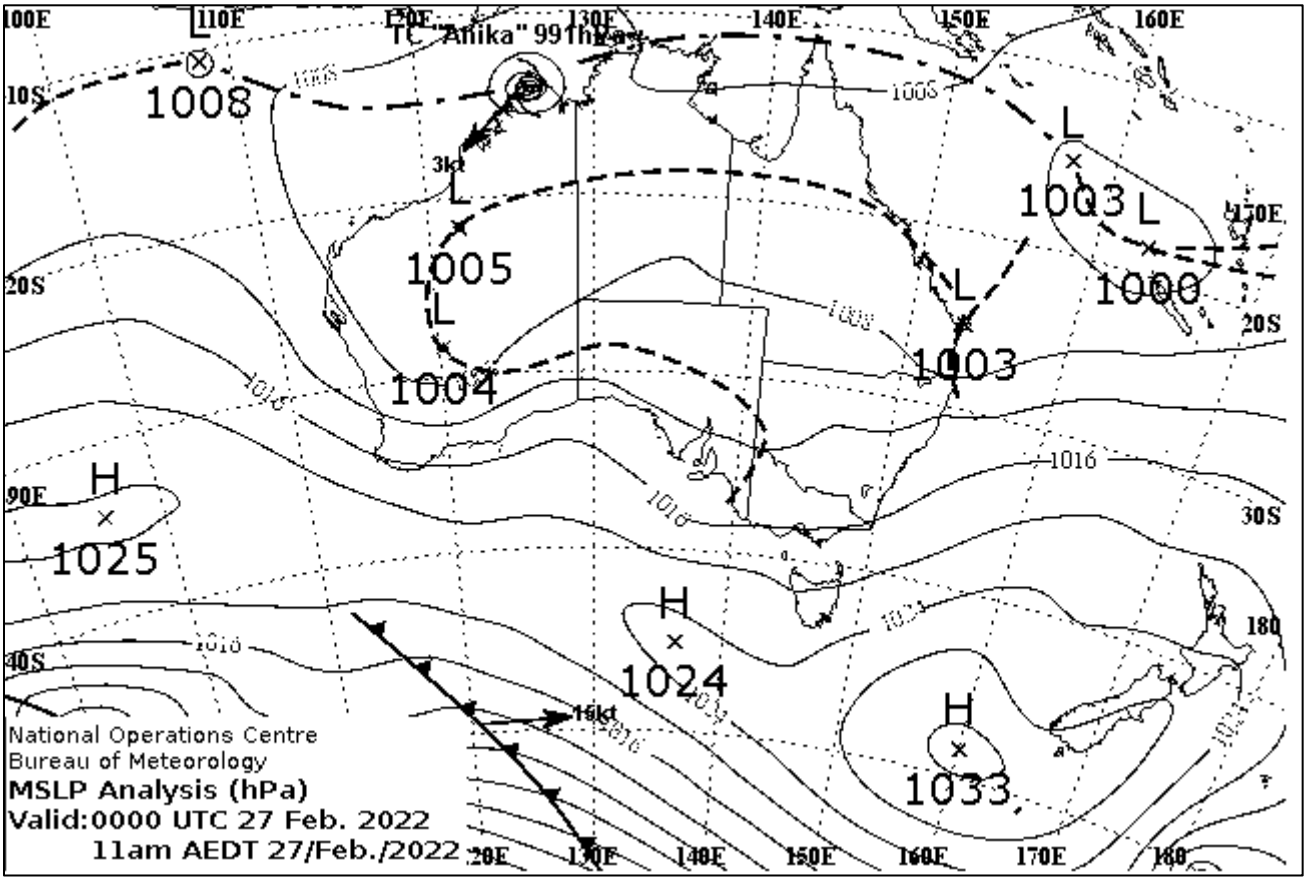
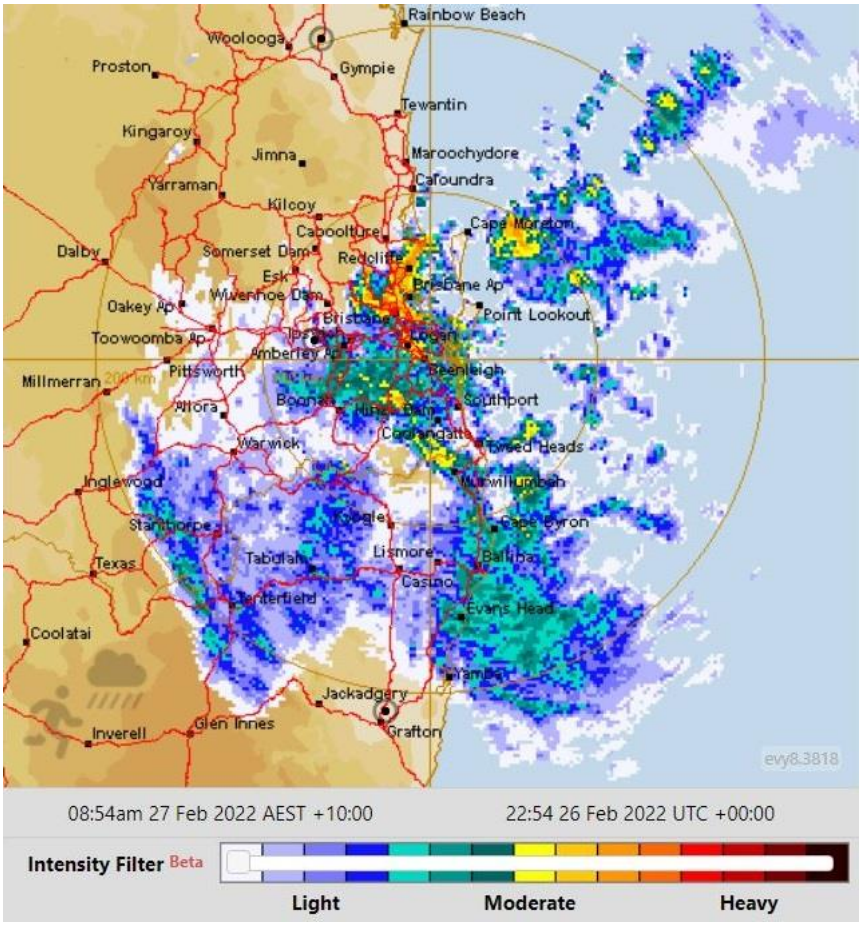
Figure
1.2

Figures_MHL2880.pptx





Source: Australian Bureau of Meteorology, 2022; radar image archived by theweatherchaser.com

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MEAN SEA LEVEL PRESSURE AND RADAR IMAGE
27 FEBURARY 2022

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Figure
1.3

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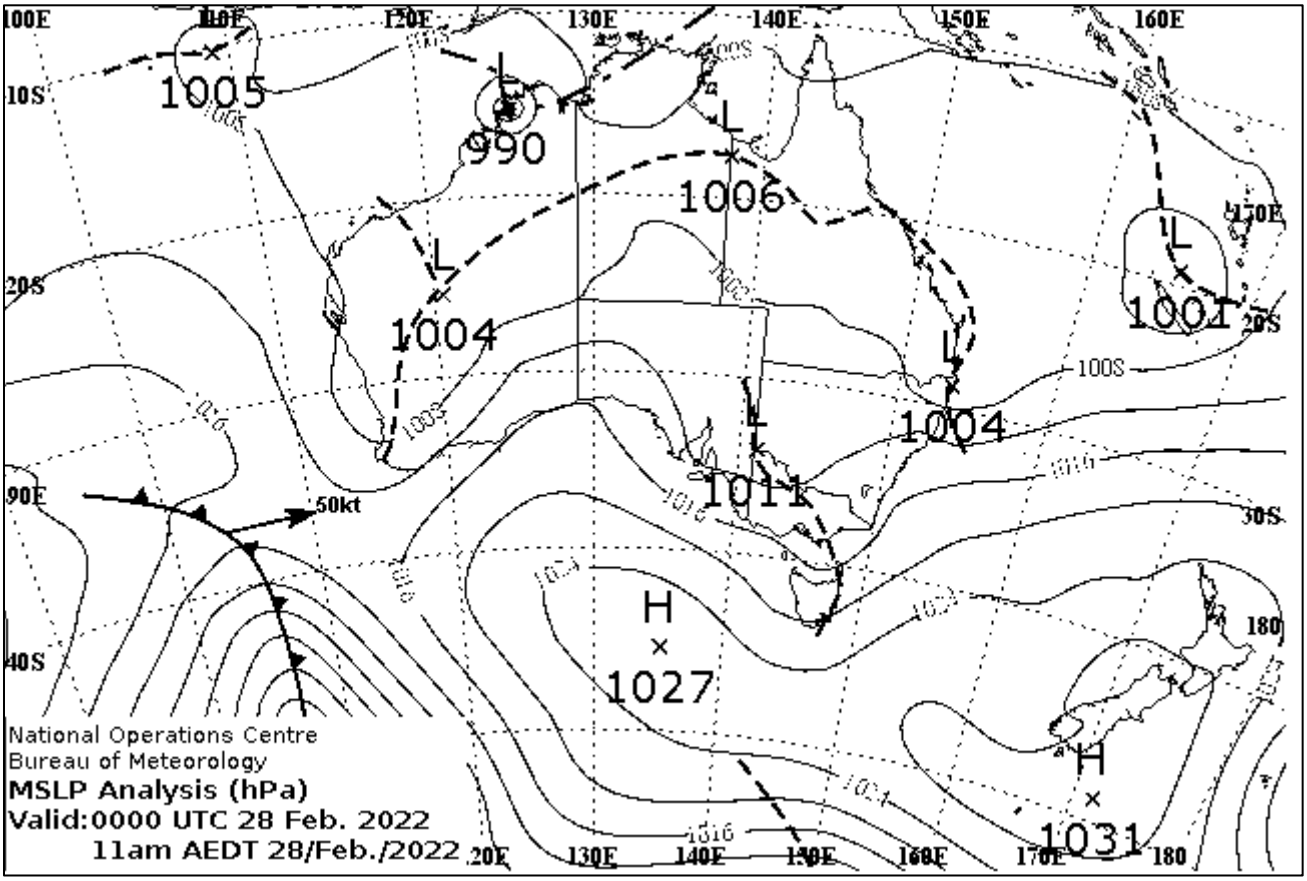

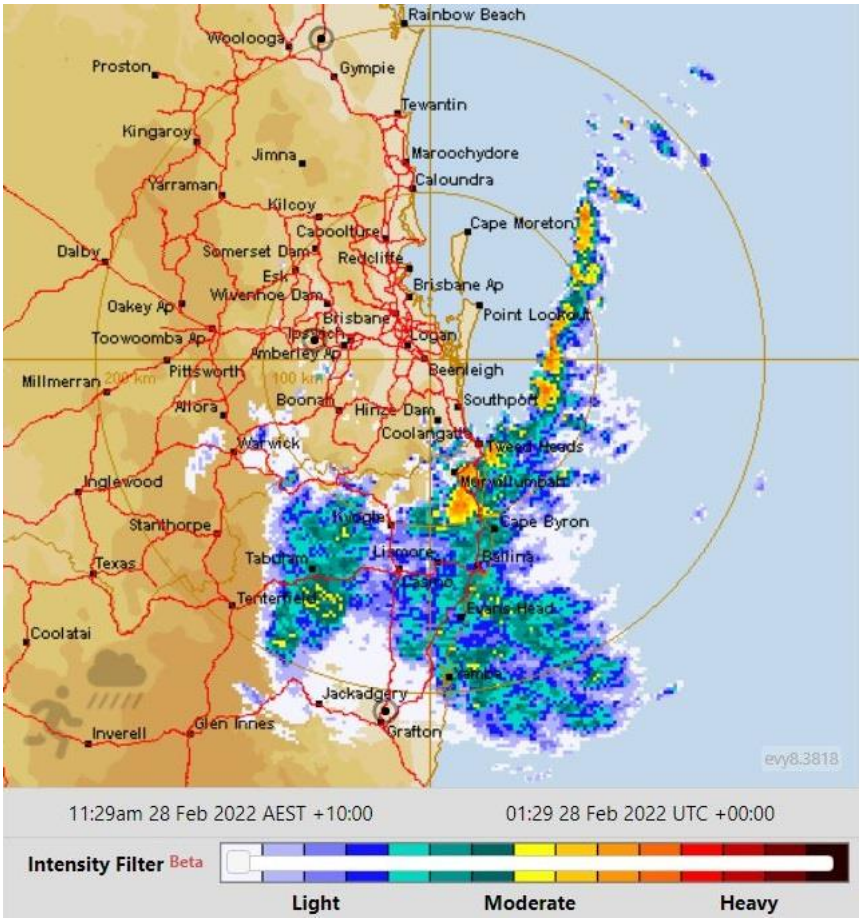

Source: Australian Bureau of Meteorology, 2022; radar image archived by theweatherchaser.com

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MEAN SEA LEVEL PRESSURE AND RADAR IMAGE
28 FEBURARY 2022

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1.4

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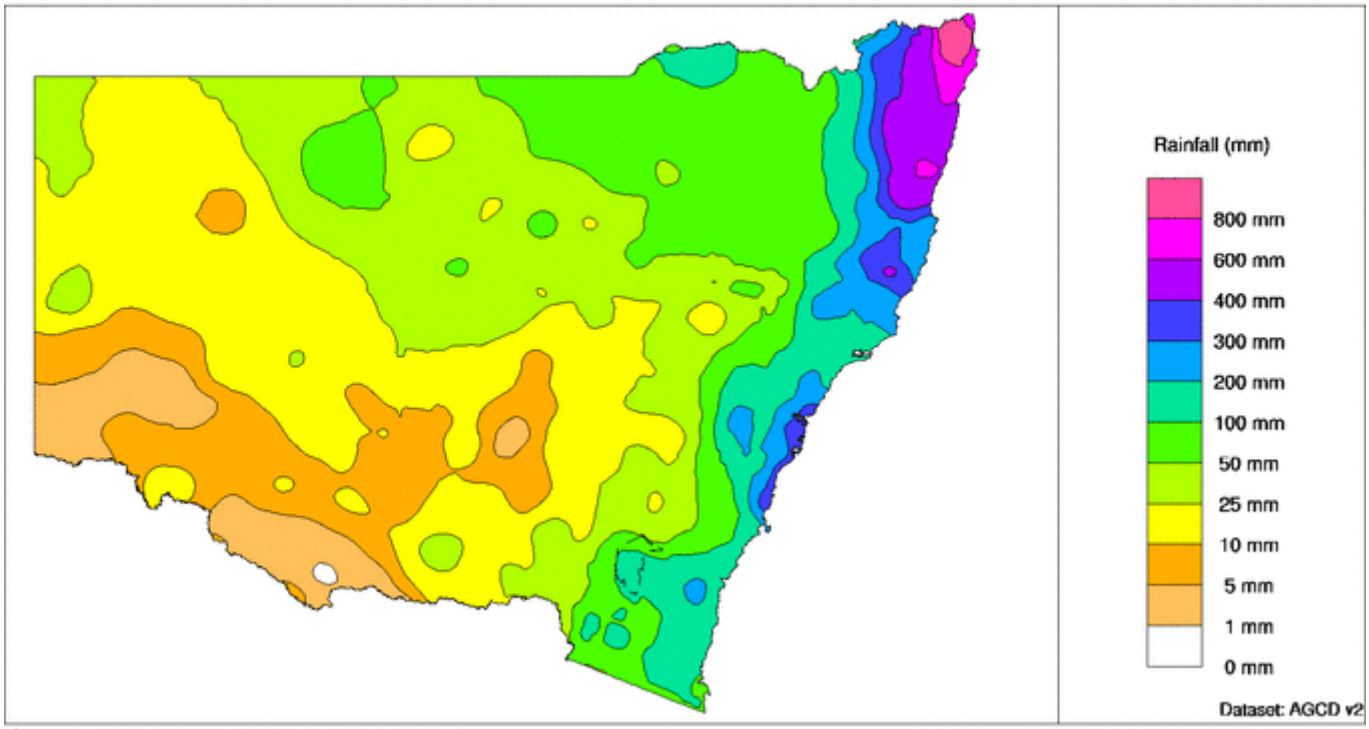
New South Wales total rainfall (mm) February 2022

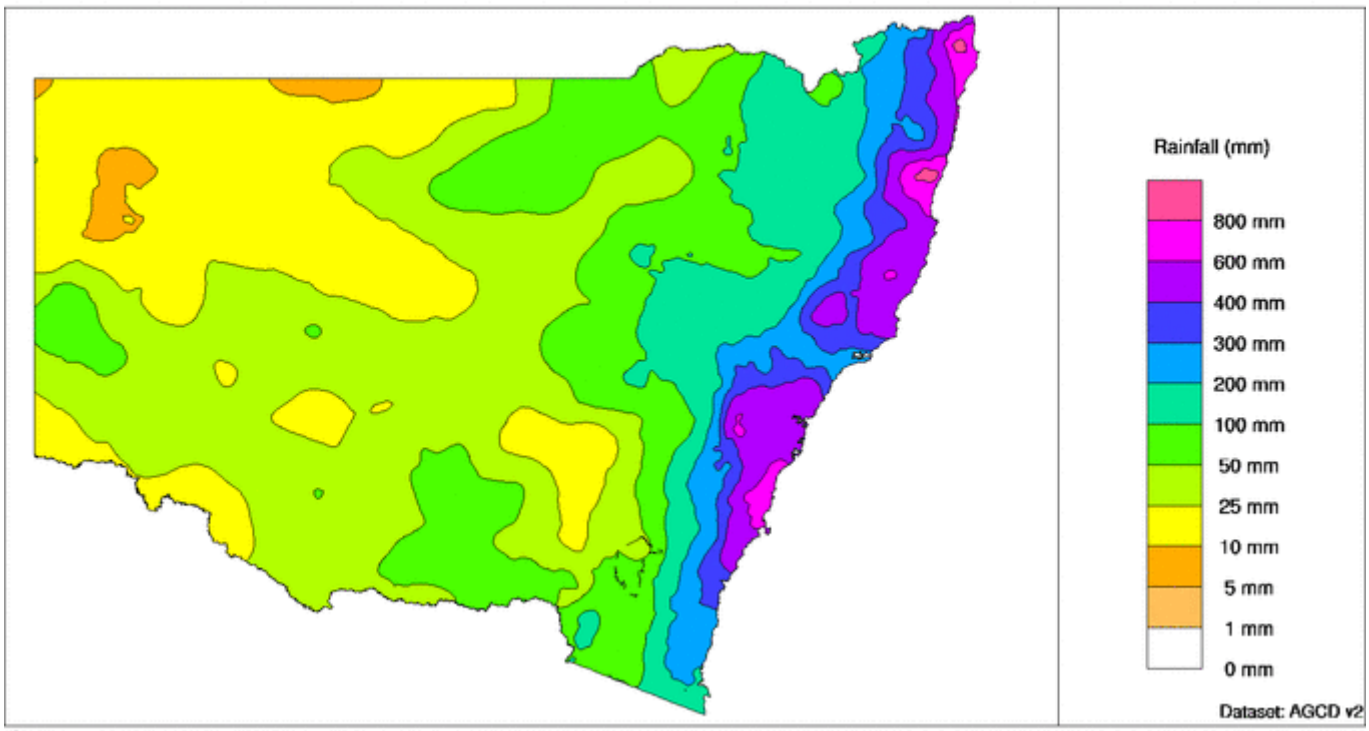
Australian Gridded Climate Data



Issued: 21/03/2022

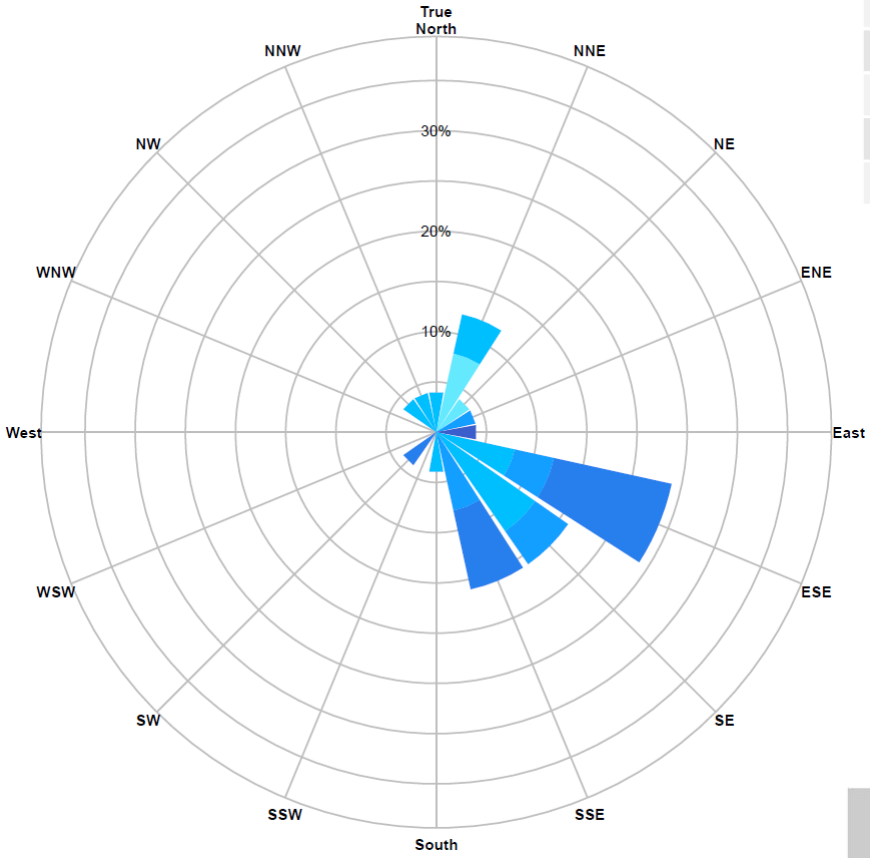
New South Wales total rainfall (mm) March 2022

Australian Gridded Climate Data

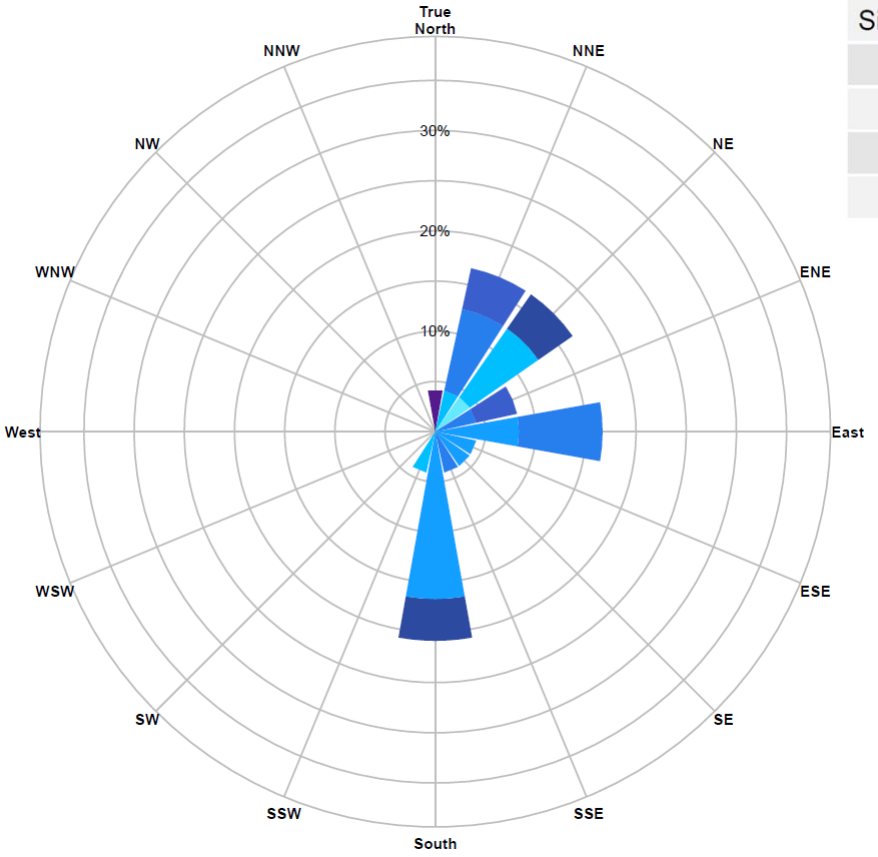


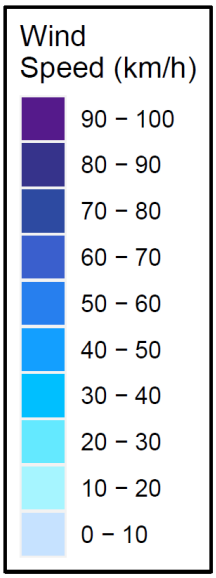
Issued: 01/04/2022

Wind Speed vs. Direction Rose	
Site:	Coolangatta
Start:	15 February 2022
Finish:	11 March 2022
Record Length (days):	24
N° of Records:	25



Wind Speed vs. Direction Rose	
Site:	Byron Bay (Cape Byron AWS)
Start:	15 February 2022
Finish:	11 March 2022
Record Length (days):	24
N° of Records:	24





Source: Wind data collected by the Australian Bureau of Meteorology, 2022

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WIND ROSE FROM COOLANGATTA AND BYRON BAY (CAPE BYRON AWS) 15 FEBRUARY – 11 MARCH 2022

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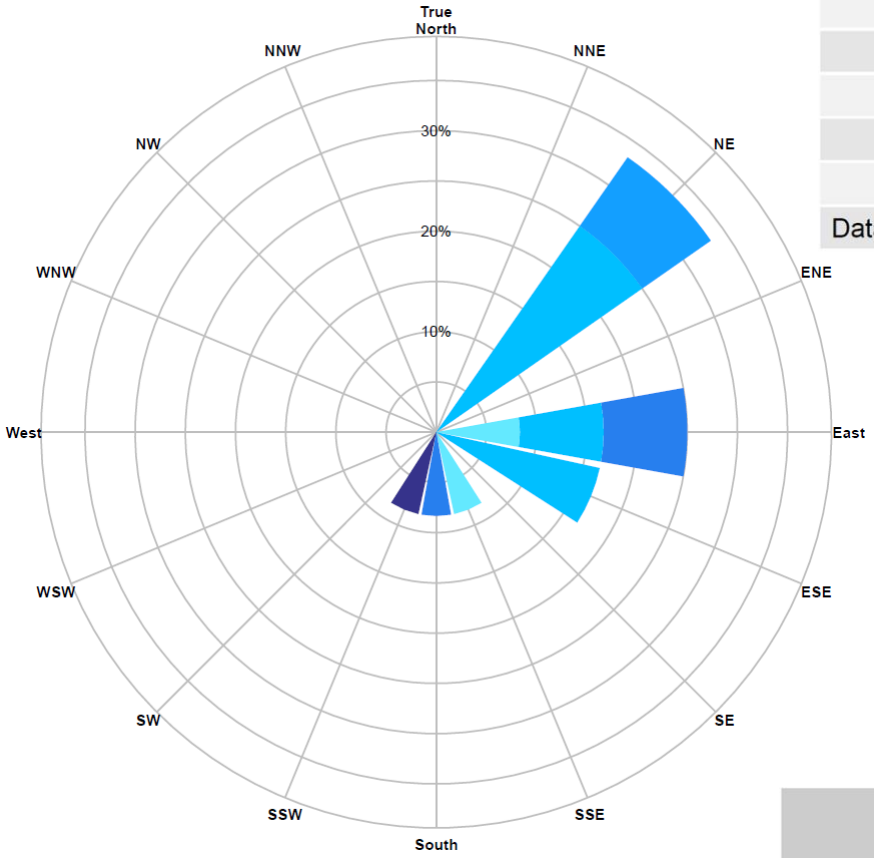
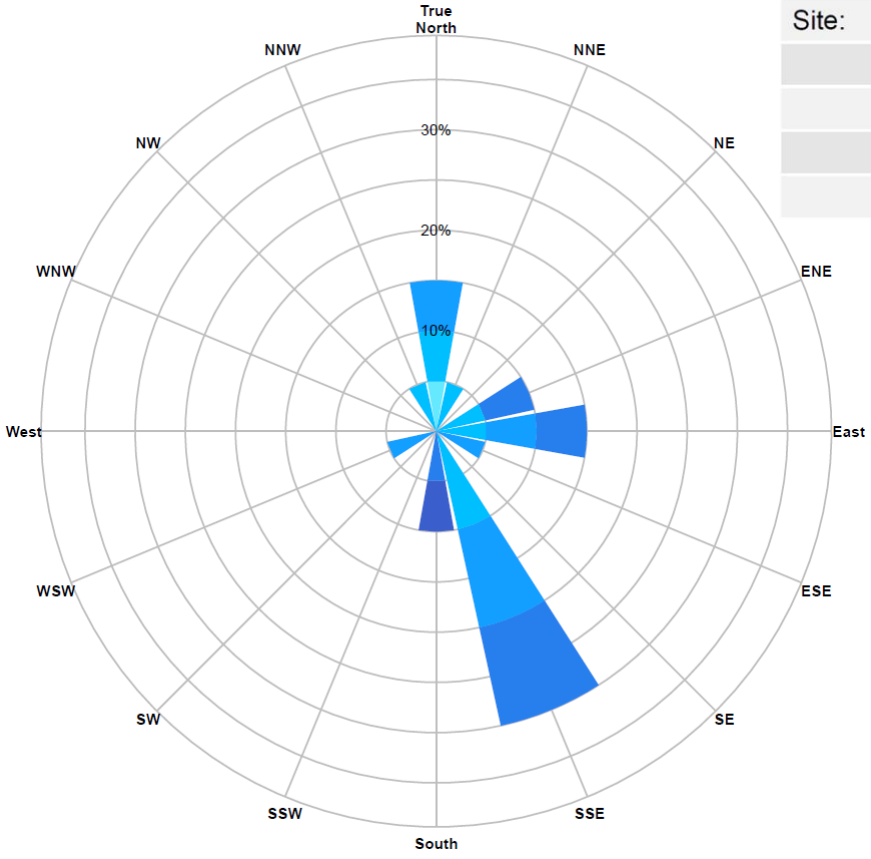
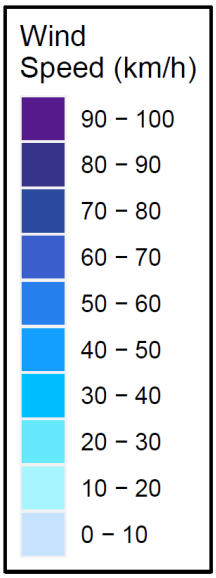
Wind Speed vs. Direction Rose
Site: Lismore Airport AWS
Start: 15 February 2022
Finish: 26 February 2022
Record Length (days): 11
N° of Records: 12
Data Gaps: 27 February – 11 March 2022



Wind Speed vs. Direction Rose
Site: Evans Head RAAF Bombing Range AWS
Start: 15 February 2022
Finish: 11 March 2022
Record Length (days): 24
N° of Records: 20





Source: Wind data collected by the Australian Bureau of Meteorology, 2022

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WIND ROSE FROM LISMORE AIRPORT AWS AND EVANS HEAD RAAF BOMBING RANGE AWS 15 FEBRUARY – 11 MARCH 2022

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1.7

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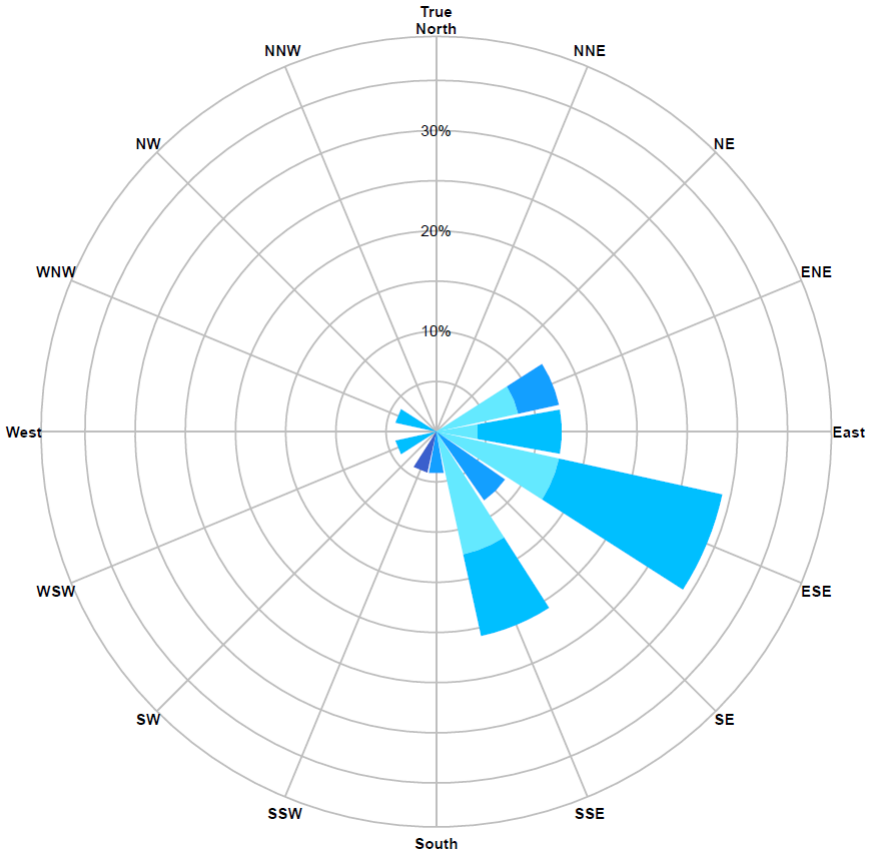
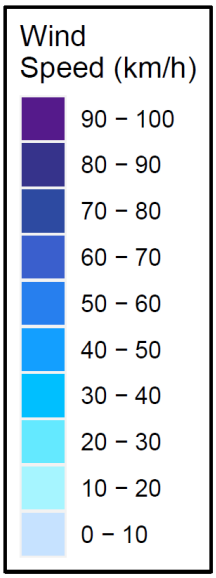
Wind Speed vs. Direction Rose
Site: Grafton Research Station
Start: 15 February 2022
Finish: 11 March 2022
Record Length (days): 24
N° of Records: 24





Source: Wind data collected by the Australian Bureau of Meteorology, 2022

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WIND ROSE FROM GRAFTON RESEARCH STATION
15 FEBRUARY – 11 MARCH 2022

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Figure
1.8

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2 Offshore wave data

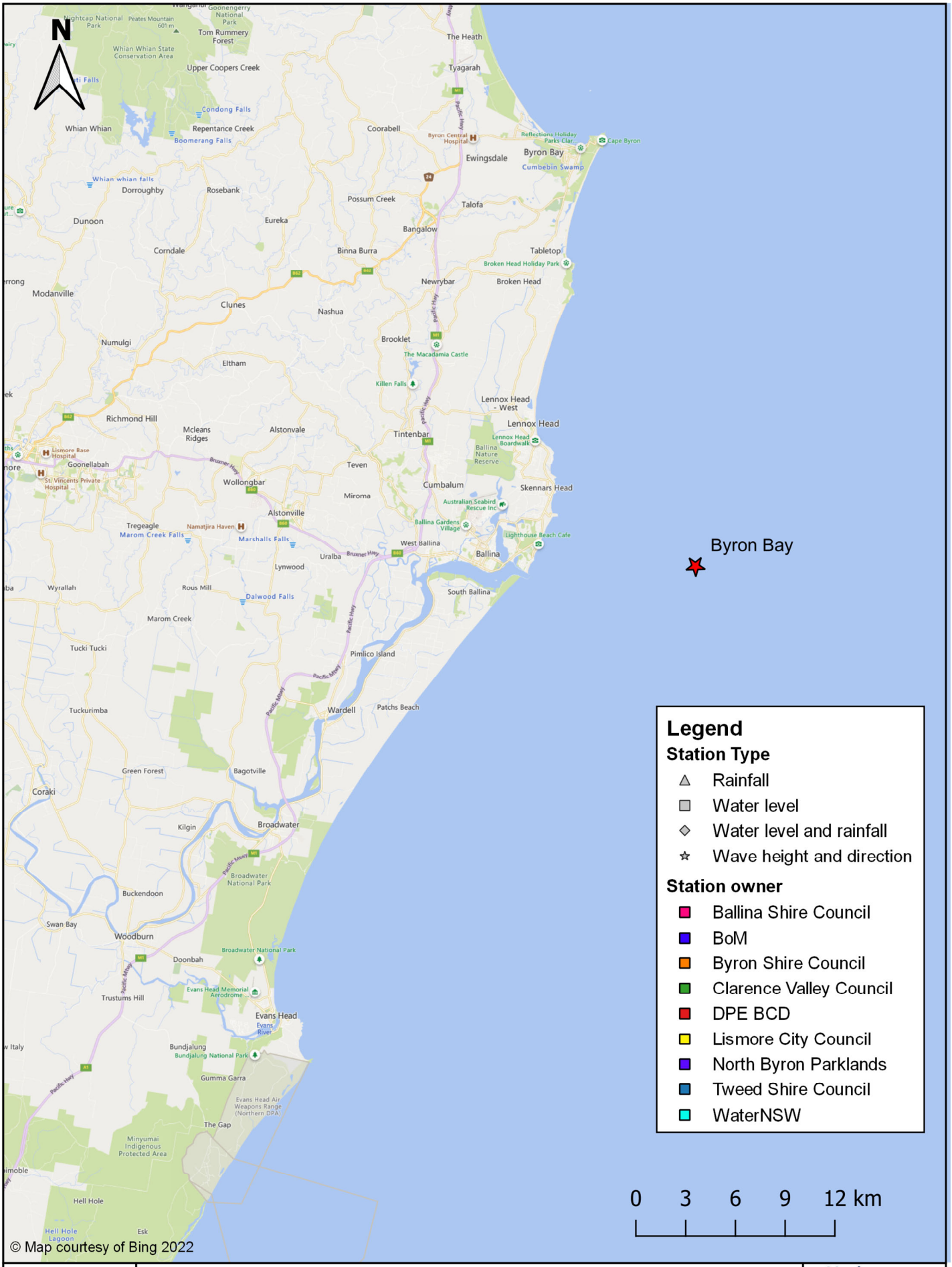
The NSW Waverider buoy network monitors ocean wave conditions along the NSW coast. It is a network of seven Waverider stations operated by MHL on behalf of DPE BCD. Wave data have been collected since 1974 when the first Waverider buoy was deployed by MHL off Port Kembla. Meteorological conditions during the February/March 2022 flood event also generated moderate storm wave activity along the NSW north coast.

A summary of the ocean wave conditions recorded by the Byron Bay Waverider buoy during the February/March 2022 flood event is presented in **Table 2.1**. The location of the Byron Bay Waverider buoy is shown in **Figure 2.1**. Time series plots of wave height, direction and period during the flood event are presented in **Figure 2.2**.

Table 2.1 Ocean wave storm summary 15 February to 11 March 2022

Wave conditions	Byron Bay Waverider buoy
Peak significant wave height (m)	4.77
Date and time of peak significant wave height (hrs AEST)	28/02/2022 02:00
Peak maximum wave height (m)	9.50
Spectral peak wave period at storm peak (secs)	10.3
Wave direction at storm peak (ºTN)	110
Storm duration for Hsig greater than 3m (hrs)	28
Storm duration for Hsig greater than 4m (hrs)	9
Average Recurrence Interval for storm peak Hsig (years)	< 1.0

Based on over 40 years of wave data recorded at the Byron Bay Waverider buoy station, the Average Recurrence Interval (ARI) for the 4.77 m storm peak Significant Wave Height (H_{sig}) is less than one year.



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WAVE STATIONS

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Figure
2.1

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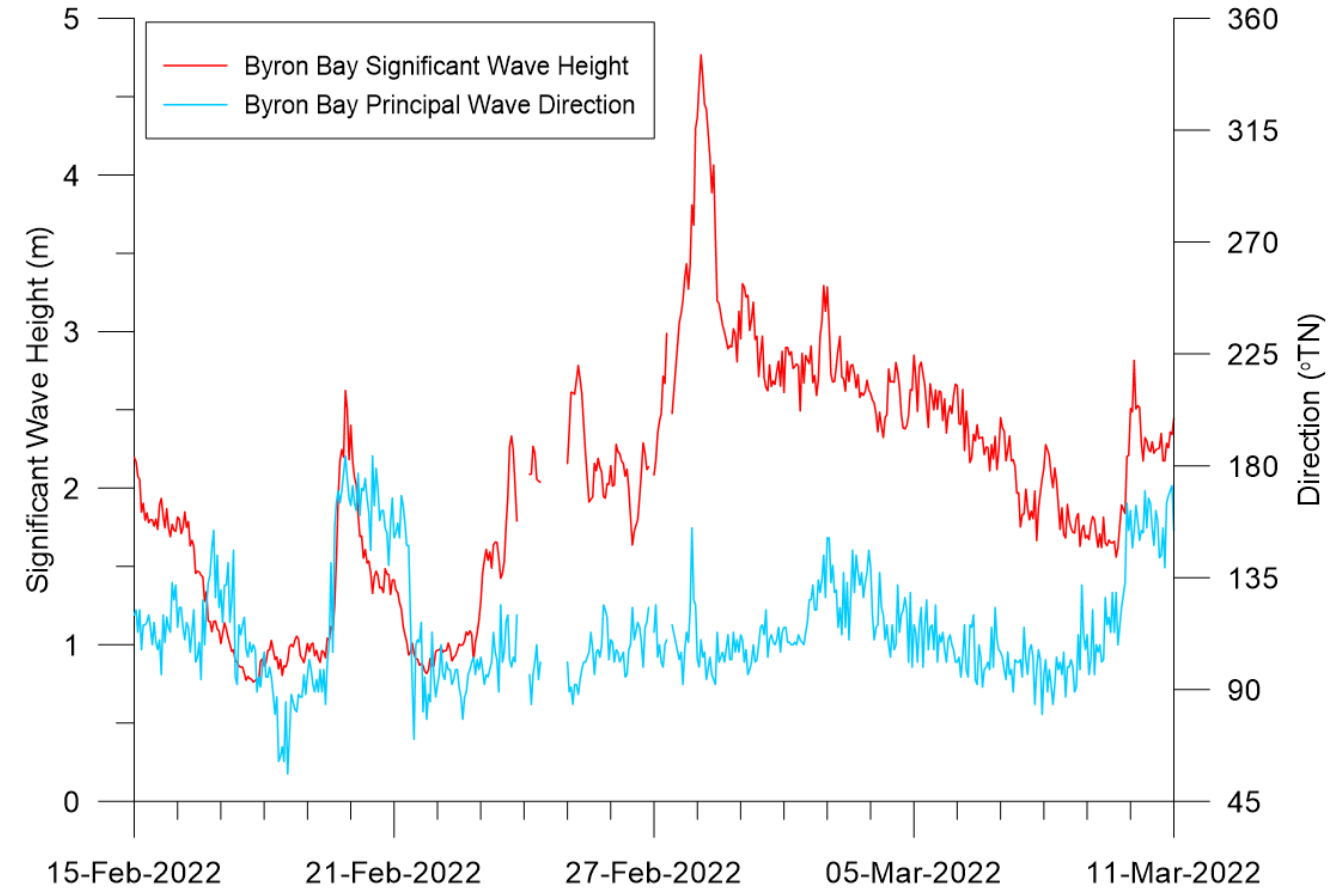

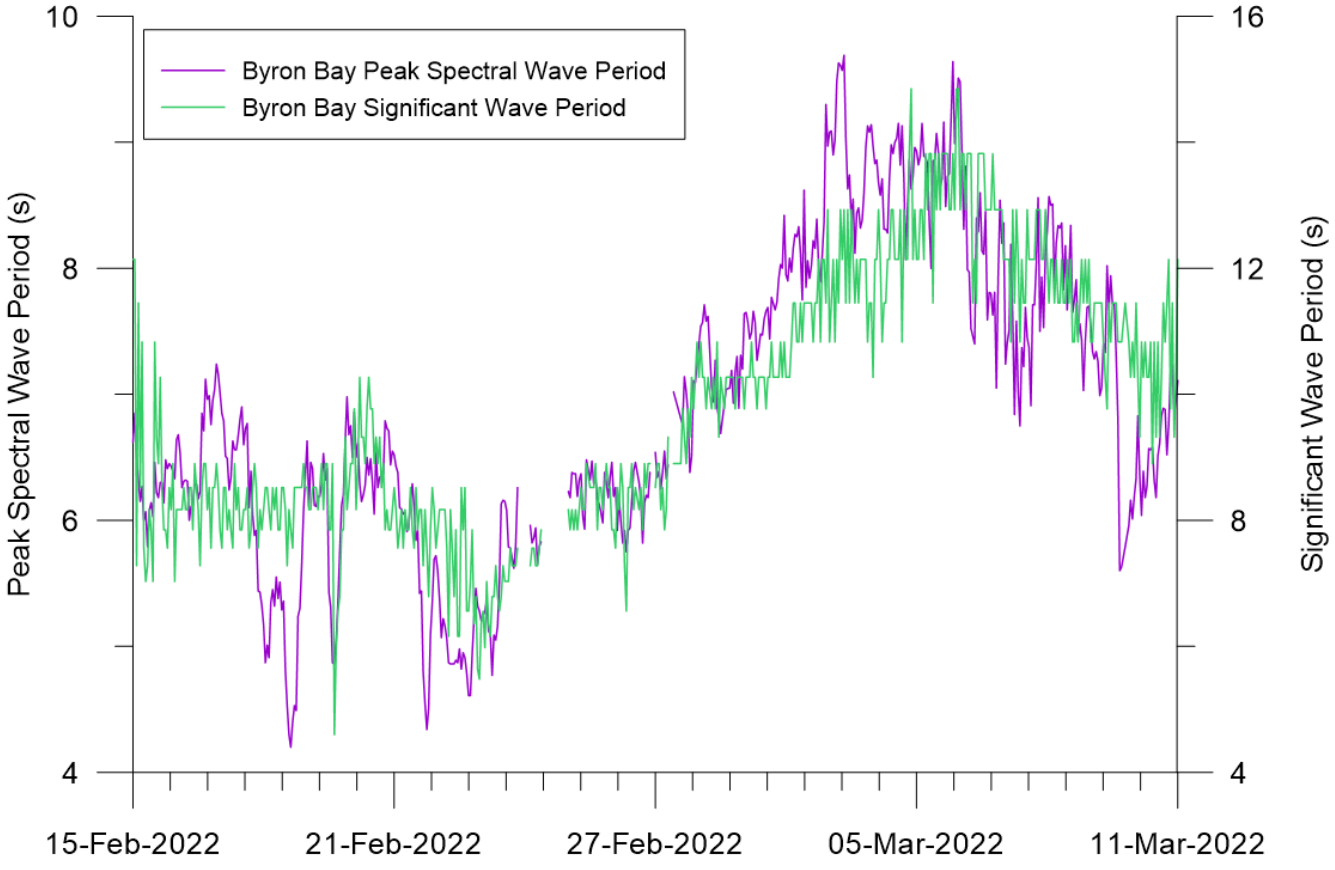

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BYRON BAY WAVERIDER BUOY
WAVE HEIGHT, DIRECTION AND PERIOD
15 FEBRUARY – 11 MARCH 2022

Manly Hydraulics Laboratory

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Figure
2.2

Figures_MHL2880.pptx

3 Water level and rainfall data

3.1 Water level and rainfall overview

A number of hydrometric stations are maintained by agencies in the NSW coastal region including MHL on behalf of DPE BCD, BoM, Ballina Shire Council, Byron Shire Council, Clarence Valley Council, Lismore City Council, North Byron Parklands, Tweed Shire Council and WaterNSW. In this report, there are 157 stations presented and **Table 3.1** provides the number of stations operated by each agency. A full list of stations for which data is presented in this summary report is provided in Appendix A. The station counts shown in **Table 3.1** are only a subset and does not present all the stations managed by the various agencies and local councils.

Table 3.1 Water level, rainfall and wave station summary

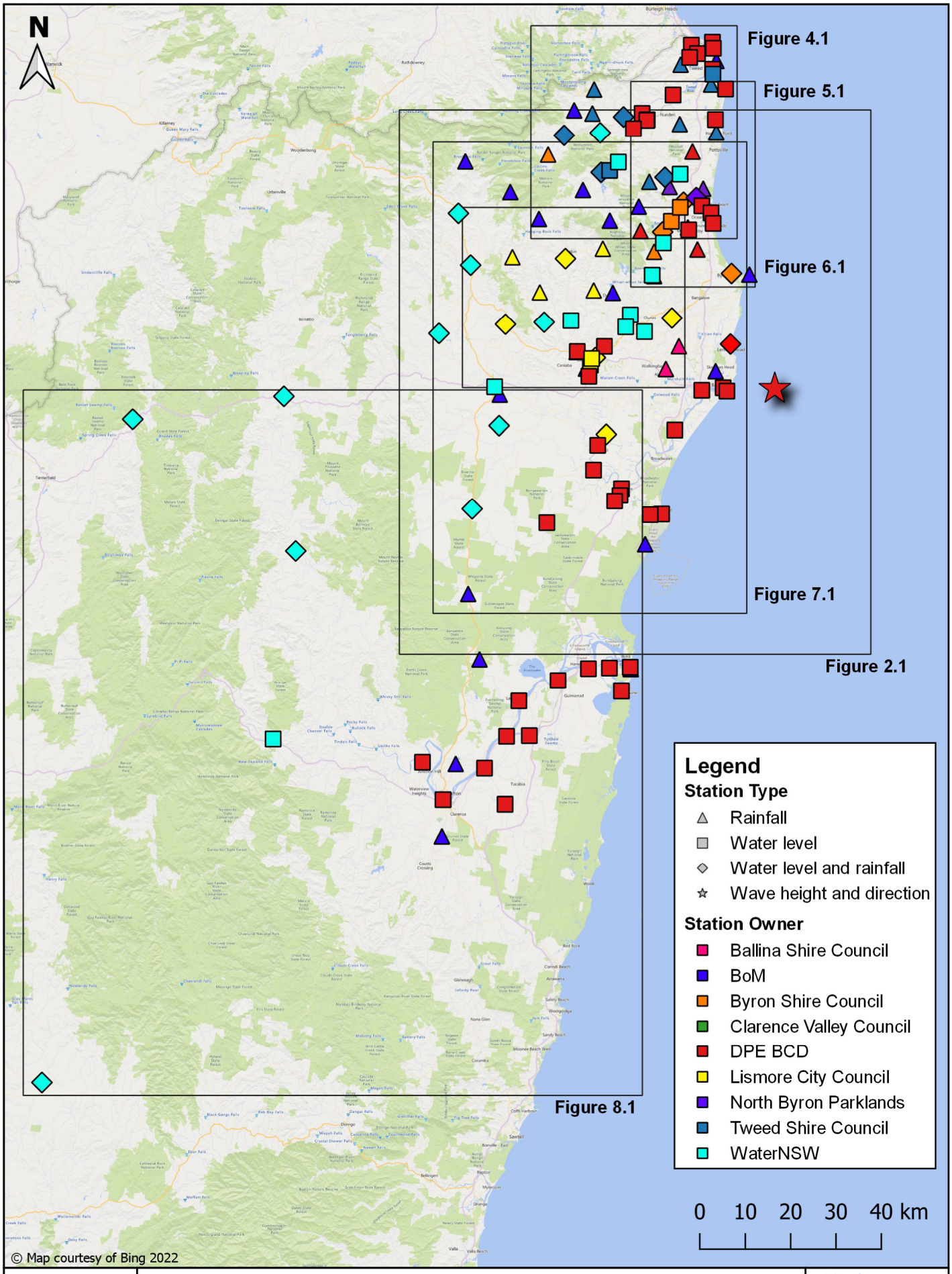
Agency^	Station type		
	Water level	Rainfall	Wave
Ballina Shire Council	0	2	0
BoM	0	20	0
Byron Shire Council	4	5	0
Clarence Valley Council	0	1	0
DPE BCD	46	5	1
Lismore City Council	7	11	0
North Byron Parklands	1	3	0
Tweed Shire Council	6	12	0
WaterNSW	22	11	0

^Please note this table does not represent all hydrometric stations owned by the various agencies, only a subset selected for presentation in this report.

3.2 River region overview

An overview of water level and rainfall stations in the NSW coast is provided in **Figure 3.1** in the maps at the start of each section. The river regions are grouped as follows:

- **Figure 4.1** – Tweed River region
- **Figure 5.1** – Brunswick River region
- **Figure 6.1** – Wilsons River region
- **Figure 7.1** – Richmond River region
- **Figure 8.1** – Clarence River region



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OVERALL VIEW OF STATIONS

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Figure
3.1

Figures_MHL2880.qgs

4 Tweed River region

4.1 Tweed River region – water level

The peak observed water levels for the Tweed River region are listed in **Table 4.1**. **Table 4.2** lists the SES flood classifications for Chinderah, Tumbulgum and North Murwillumbah (BoM, 2013). The locations of water level stations within the Tweed River region are shown in **Figure 4.1**. The water level data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 4.2** to **Figure 4.11**.

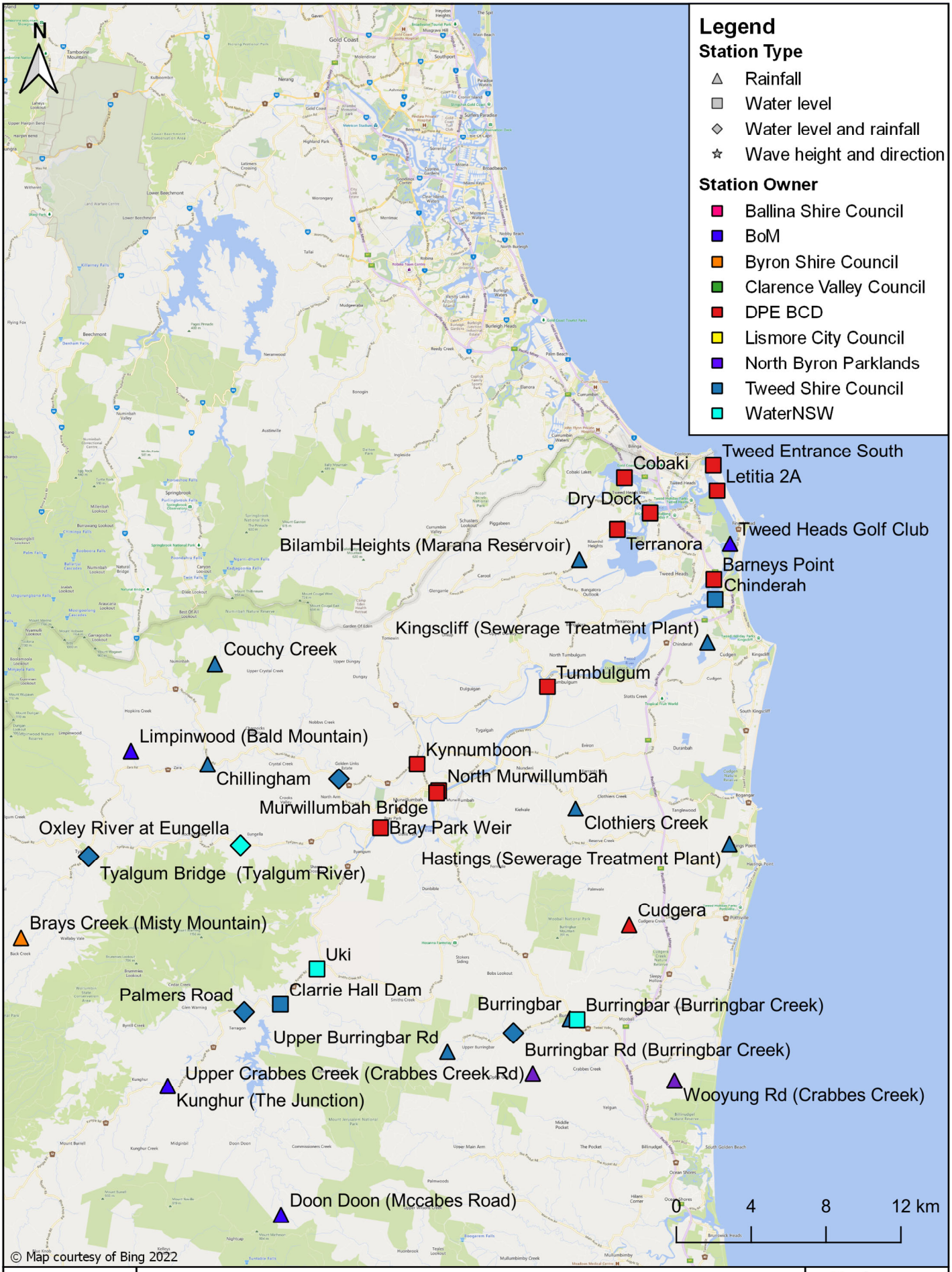
Table 4.1 Tweed River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Tweed Entrance South	201472	DPE BCD	AHD	1.47	01/03/2022 07:15
Cobaki	201448	DPE BCD	AHD	1.95	28/02/2022 11:15
Letitia 2A	201429	DPE BCD	AHD	1.56	01/03/2022 07:45
Dry Dock	201428	DPE BCD	AHD	1.74	28/02/2022 11:15
Terranora	201447	DPE BCD	AHD	1.94	28/02/2022 11:30
Barneys Point	201426	DPE BCD	AHD	2.91	28/02/2022 22:30
Chinderah	558010	Tweed Shire Council	AHD	3.00	28/02/2022 23:16
Tumbulgum	201432	DPE BCD	AHD	4.78	28/02/2022 21:00
Kynnumboon	201422	DPE BCD	AHD	5.14	28/02/2022 18:30
Boat Harbour (Rous River)	58204	Tweed Shire Council	Local	6.71	28/02/2022 09:53
North Murwillumbah	201420	DPE BCD	AHD	6.51	28/02/2022 13:45
Murwillumbah Bridge	201465	DPE BCD	AHD	6.23	28/02/2022 14:00
Bray Park Weir	201455	DPE BCD	AHD	9.26	28/02/2022 12:30
Oxley River at Eungella	201001	WaterNSW	Local	7.83	28/02/2022 10:15
Tyalgum Bridge (Tyalgum River)	558088	Tweed Shire Council	Local	7.07	28/02/2022 10:39
Uki	201900	WaterNSW	Local	13.45	28/02/2022 11:45
Palmers Road	558018	Tweed Shire Council	Local	9.34	28/02/2022 11:41
Burringbar (Burringbar Creek)	558103	WaterNSW	Local	6.47	28/02/2022 14:00
Burringbar Road (Burringbar Creek)*	558106	Tweed Shire Council	Local	-	-

*Flood peak not captured due to station failure during the flood event.

Table 4.2 SES flood classification for Tweed River region stations

Station name	Station number		Flood classification			Flood peak (m)	Datum	Flood event classification
	Bureau number	AWRC number	Minor	Moderate	Major			
			Water level (m)					
Chinderah	558010	201426	1.3	1.7	2.0	3.00	AHD	Major
Tumbulgum	558014	201432	1.4	1.8	2.5	4.78	AHD	Major
North Murwillumbah	58186	201420	3.0	4.0	4.8	6.51	AHD	Major



NSW GOVERNMENT

TWEED RIVER STATIONS

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Report MHL2880
Figure
4.1

Figures_MHL2880.qgs

4.2 Tweed River region – rainfall

The water level and rainfall data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 4.2** to **Figure 4.16**. 24-hour rainfall totals up until 9:00 a.m. are displayed in **Table 4.3** to **Table 4.7** for the period 15 February to 11 March 2022. The rainfall intensities are displayed graphically in **Figure 4.17** to **Figure 4.36**, in ARR2019 format. Appendix C provides ARR1987 format.

Table 4.3 Tweed River region daily rainfall totals

Date	Tweed Heads Golf Club	Bilambil Heights (Marana Reservoir)	Kingscliff (Sewerage Treatment Plant)	Couchy Creek	Limpinwood (Bald Mountain)
	58056 (mm)	558085 (mm)	558090 (mm)	558079 (mm)	558032 (mm)
	BoM	Tweed Shire Council	Tweed Shire Council	Tweed Shire Council	BoM
15/02/2022	30.0	0.0	0.0	0.0	1.0
16/02/2022	2.2	2.0	3.0	5.0	6.0
17/02/2022	0.0	0.0	0.0	2.0	1.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	1.2	20.0	1.0	2.0	1.0
20/02/2022	6.0	18.0	13.0	13.0	24.0
21/02/2022	1.8	1.0	0.0	4.0	2.0
22/02/2022	4.2	0.0	0.0	4.0	7.0
23/02/2022	33.2	50.0	24.0	79.0	83.0
24/02/2022	81.2	84.0	62.0	95.0	117.0
25/02/2022	6.4	11.0	3.0	146.0	72.0
26/02/2022	8.2	6.0	7.0	55.0	28.0
27/02/2022	134.2	143.0	149.0	198.0	177.0
28/02/2022	212.0	347.0	242.0	449.0	378.0
01/03/2022	101.4	93.0	96.0	77.0	103.0
02/03/2022	2.2	1.0	1.0	4.0	1.0
03/03/2022	1.4	8.0	5.0	8.0	8.0
04/03/2022	2.4	0.0	1.0	1.0	2.0
05/03/2022	8.2	1.0	9.0	4.0	6.0
06/03/2022	0.0	0.0	0.0	0.0	0.0
07/03/2022	27.6	5.0	14.0	14.0	9.0
08/03/2022	0.8	0.0	0.0	0.0	1.0
09/03/2022	0.0	0.0	0.0	0.0	0.0
10/03/2022	0.4	1.0	0.0	7.0	2.0
11/03/2022	12.4	1.0	2.0	5.0	3.0

Table 4.4 Tweed River region daily rainfall totals (cont.)

Date	Chillingham	Boat Harbour (Rous River)	Clothiers Creek	Hastings (Sewerage Treatment Plant)	Oxley River at Eungella
	58011 (mm)	58204 (mm)	558082 (mm)	558091 (mm)	201001 (mm)
	Tweed Shire Council	Tweed Shire Council	Tweed Shire Council	Tweed Shire Council	WaterNSW
15/02/2022	0.0	0.0	8.0	31.0	0.0
16/02/2022	9.0	3.0	3.0	1.0	8.0
17/02/2022	0.0	1.0	0.0	0.0	0.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	4.0	8.0	3.0	2.0	8.0
20/02/2022	34.0	27.0	19.0	7.0	24.5
21/02/2022	4.0	1.0	0.0	0.0	2.5
22/02/2022	1.0	0.0	1.0	9.0	1.0
23/02/2022	61.0	41.0	23.0	24.0	39.0
24/02/2022	147.0	160.0	79.0	56.0	155.0
25/02/2022	46.0	21.0	15.0	9.0	38.5
26/02/2022	17.0	14.0	3.0	1.0	12.0
27/02/2022	170.0	196.0	167.0	114.0	137.5
28/02/2022	430.0	499.0	423.0	123.0	379.0
01/03/2022	90.0	129.0	162.0	95.0	91.5
02/03/2022	6.0	6.0	2.0	3.0	6.0
03/03/2022	6.0	15.0	5.0	9.0	12.0
04/03/2022	1.0	1.0	1.0	0.0	0.5
05/03/2022	3.0	17.0	0.0	0.0	6.0
06/03/2022	2.0	0.0	0.0	0.0	0.5
07/03/2022	8.0	14.0	14.0	8.0	4.0
08/03/2022	0.0	0.0	0.0	0.0	0.0
09/03/2022	0.0	0.0	0.0	0.0	0.5
10/03/2022	4.0	0.0	1.0	1.0	0.0
11/03/2022	4.0	2.0	0.0	10.0	1.5

Table 4.5 Tweed River region daily rainfall totals (cont.)

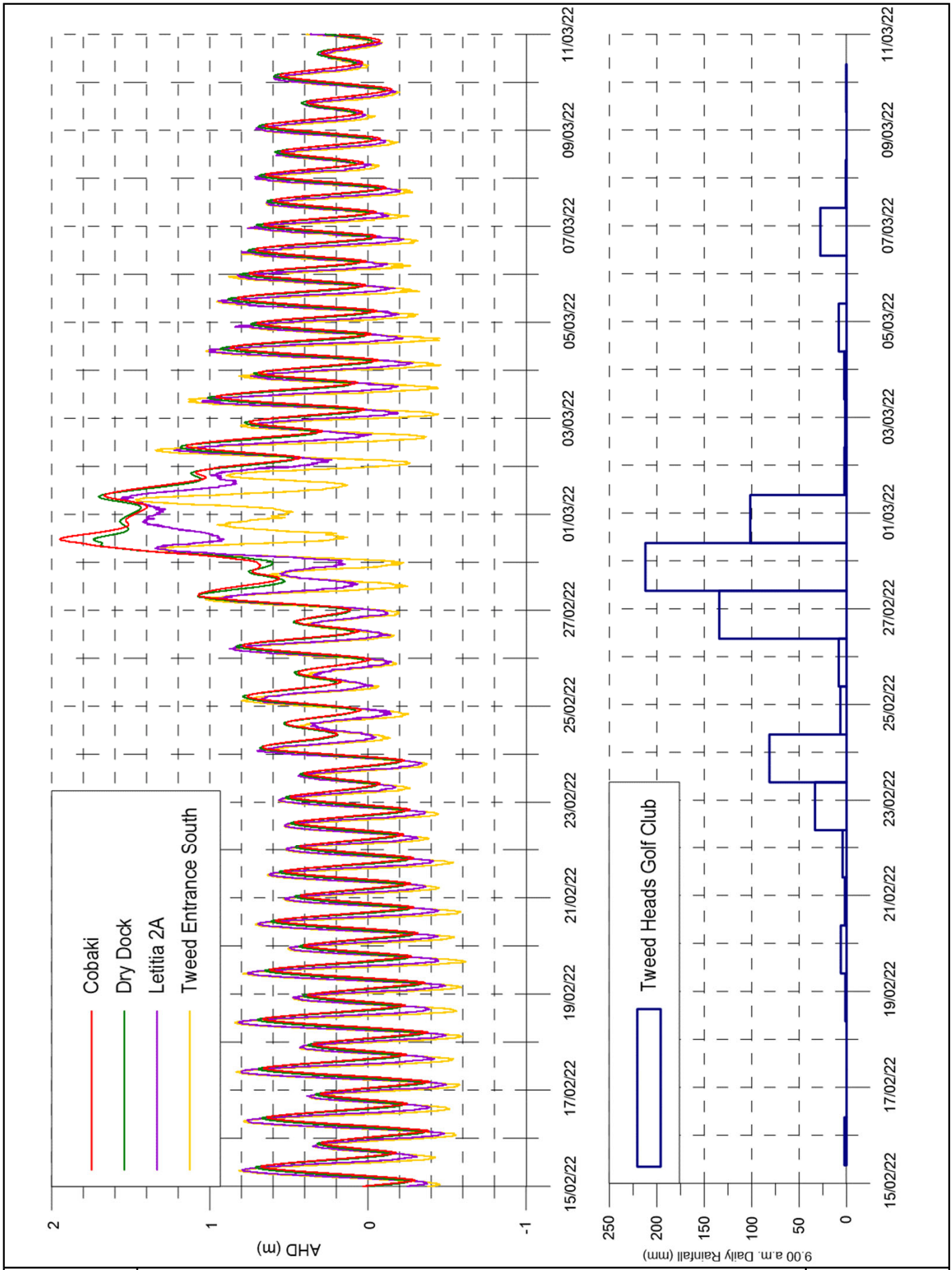
Date	Tyalgum Bridge (Tyalgum River)	Cudgera	Brays Creek (Misty Mountain)	Palmers Road	Burringbar
	558088 (mm)	558046 (mm)	58005 (mm)	558018 (mm)	558083 (mm)
	Tweed Shire Council	DPE BCD	Byron Shire Council	Tweed Shire Council	Tweed Shire Council
15/02/2022	0.0	14.0	0.0	0.0	0.0
16/02/2022	8.0	3.0	2.0	3.0	11.0
17/02/2022	1.0	0.0	2.0	0.0	0.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	3.0	2.0	5.0	5.0	4.0
20/02/2022	2.0	14.0	12.0	1.0	24.0
21/02/2022	1.0	0.0	11.0	26.0	0.0
22/02/2022	1.0	1.5	1.0	0.0	1.0
23/02/2022	48.0	26.0	32.0	44.0	29.0
24/02/2022	110.0	98.5	125.0	139.0	117.0
25/02/2022	56.0	18.5	55.0	69.0	18.0
26/02/2022	14.0	1.0	27.0	20.0	3.0
27/02/2022	126.0	132.0	123.0	127.0	147.0
28/02/2022	365.0	380.0	308.0	611.0	399.0
01/03/2022	87.0	227.5	72.0	204.0	287.0
02/03/2022	0.0	5.0	0.0	0.0	187.0
03/03/2022	9.0	9.5	12.0	11.0	20.0
04/03/2022	1.0	0.5	1.0	0.0	0.0
05/03/2022	2.0	0.5	10.0	2.0	8.0
06/03/2022	0.0	0.0	1.0	0.0	5.0
07/03/2022	2.0	11.5	1.0	2.0	1.0
08/03/2022	1.0	0.0	0.0	0.0	0.0
09/03/2022	0.0	0.0	0.0	0.0	0.0
10/03/2022	0.0	1.5	0.0	1.0	5.0
11/03/2022	4.0	3.5	5.0	3.0	1.0

Table 4.6 Tweed River region daily rainfall totals (cont.)

Date	Burringbar Road (Burringbar Creek) 558106 (mm) Tweed Shire Council	Upper Burringbar Road 558107 (mm) Tweed Shire Council	Upper Crabbes Creek (Crabbes Creek Road) 558094 (mm) North Byron Parklands
15/02/2022	11.0	9.0	12.0
16/02/2022	7.0	5.0	6.5
17/02/2022	0.0	1.0	0.5
18/02/2022	0.0	0.0	0.0
19/02/2022	5.0	9.0	3.5
20/02/2022	7.0	11.0	6.5
21/02/2022	0.0	1.0	0.0
22/02/2022	1.0	0.0	3.0
23/02/2022	26.0	27.0	22.0
24/02/2022	137.0	173.0	159.5
25/02/2022	26.0	34.0	40.0
26/02/2022	10.0	15.0	6.0
27/02/2022	150.0	143.0	150.5
28/02/2022	336.0	543.0	522.0
01/03/2022	---	362.0	315.0
02/03/2022	---	4.0	7.0
03/03/2022	---	18.0	15.5
04/03/2022	---	0.0	0.5
05/03/2022	---	2.0	2.5
06/03/2022	---	1.0	0.5
07/03/2022	---	4.0	3.0
08/03/2022	---	0.0	0.0
09/03/2022	---	0.0	0.0
10/03/2022	---	7.0	4.5
11/03/2022	---	6.0	7.0

Table 4.7 Tweed River region daily rainfall totals (cont.)

Date	Wooyung Road (Crabbes Creek) 558095 (mm) North Byron Parklands	Kunghur (The Junction) 58129 (mm) BoM	Doon Doon (McCabes Road) 58019 (mm) BoM
15/02/2022	10.0	4.0	0.0
16/02/2022	7.0	2.0	2.0
17/02/2022	0.0	1.0	1.0
18/02/2022	0.0	0.0	0.0
19/02/2022	2.0	6.0	38.0
20/02/2022	9.5	8.0	9.0
21/02/2022	0.0	4.0	0.0
22/02/2022	6.5	0.0	0.0
23/02/2022	16.5	34.0	25.0
24/02/2022	107.5	148.0	181.0
25/02/2022	9.0	63.0	83.0
26/02/2022	1.5	19.0	63.0
27/02/2022	128.5	132.0	135.0
28/02/2022	36.0	562.0	712.0
01/03/2022	---	213.0	320.0
02/03/2022	318.0	1.0	2.0
03/03/2022	11.0	16.0	25.0
04/03/2022	1.0	1.0	0.0
05/03/2022	6.5	6.0	1.0
06/03/2022	2.0	0.0	0.0
07/03/2022	7.5	2.0	6.0
08/03/2022	0.0	0.0	0.0
09/03/2022	0.0	0.0	0.0
10/03/2022	6.0	4.0	16.0
11/03/2022	7.5	1.0	3.0



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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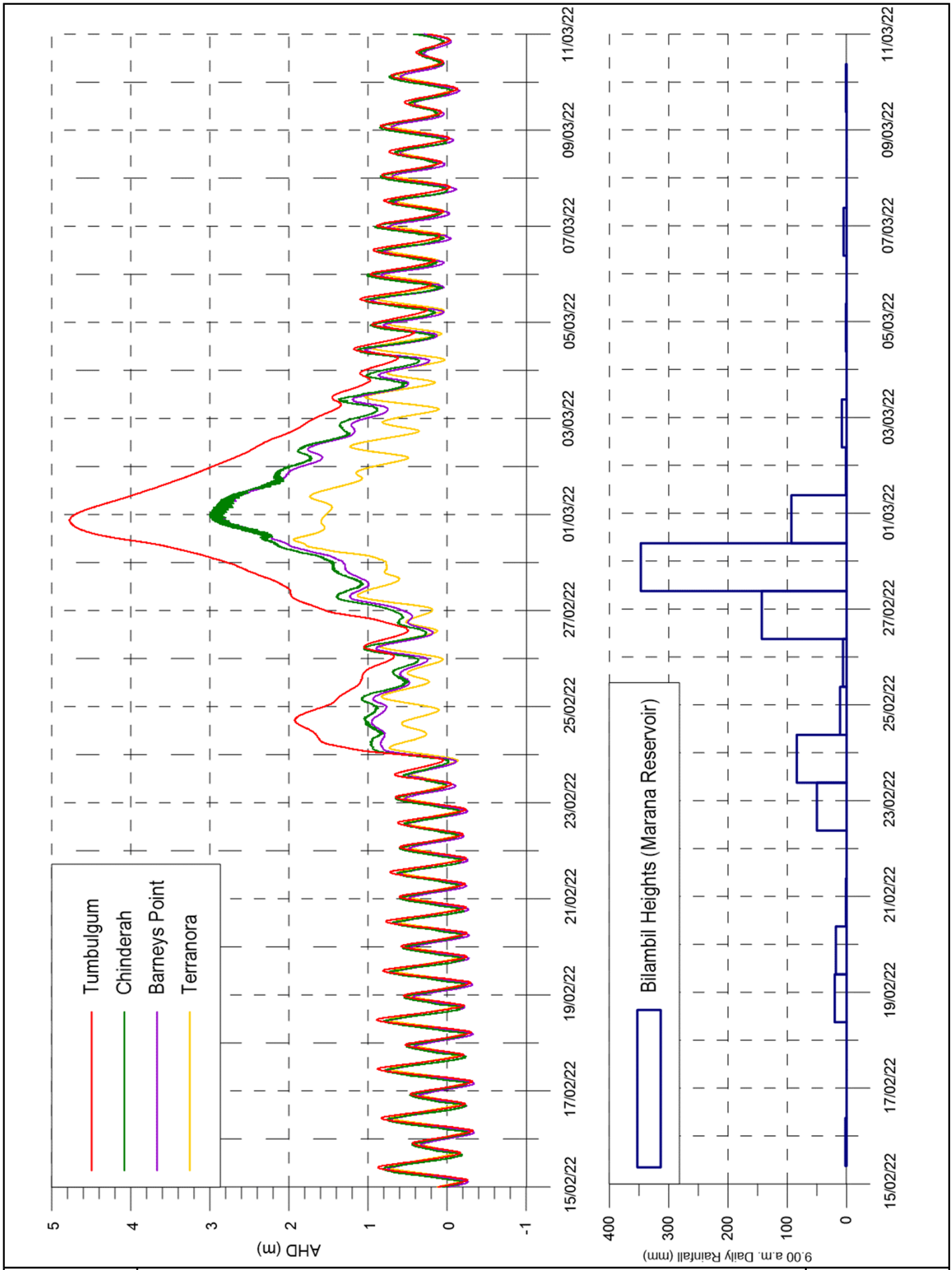
Figure
4.2

4.2.GRF



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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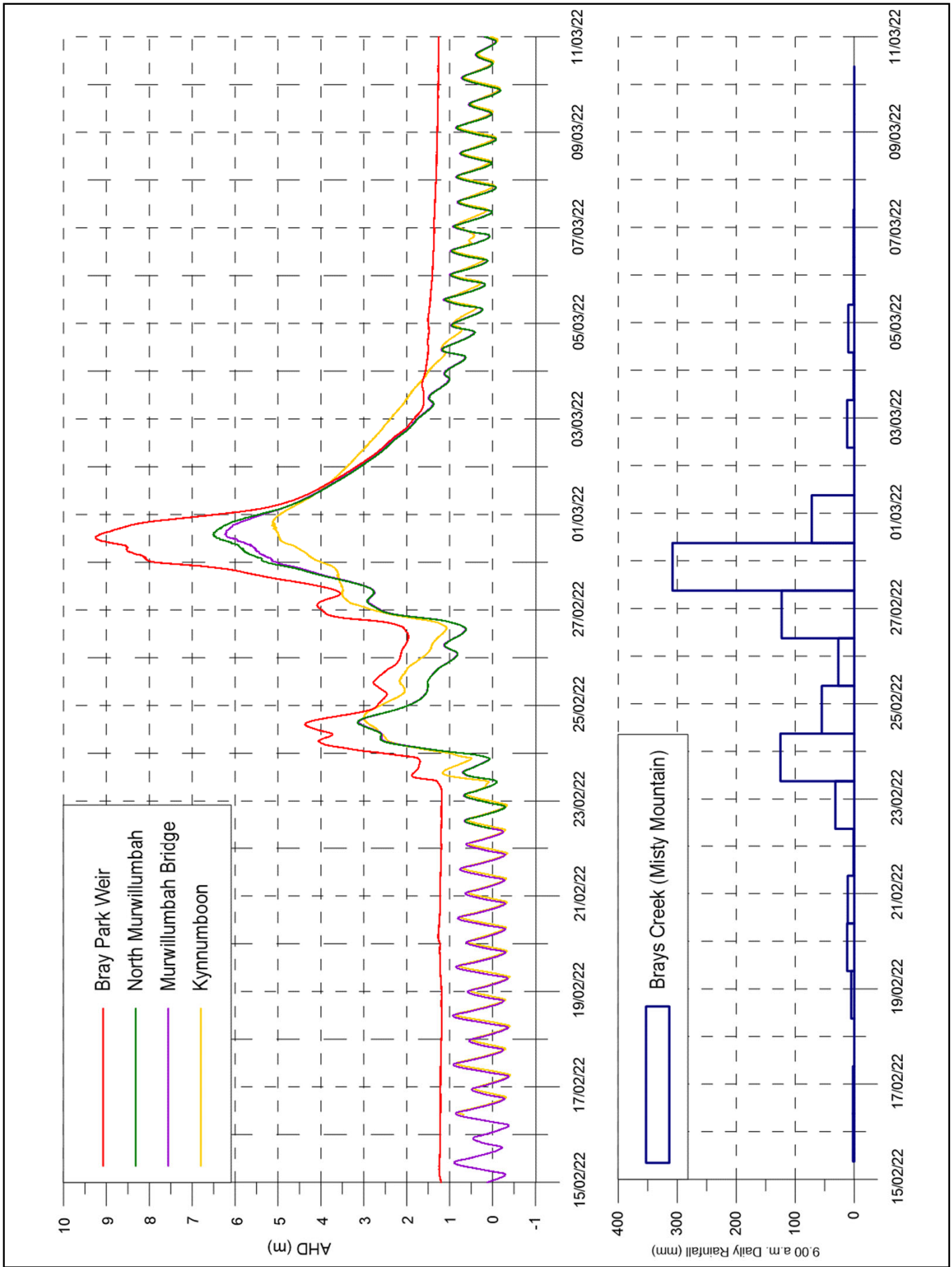
Figure
4.3

4.3.GRF



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15 FEBURARY – 11 MARCH 2022

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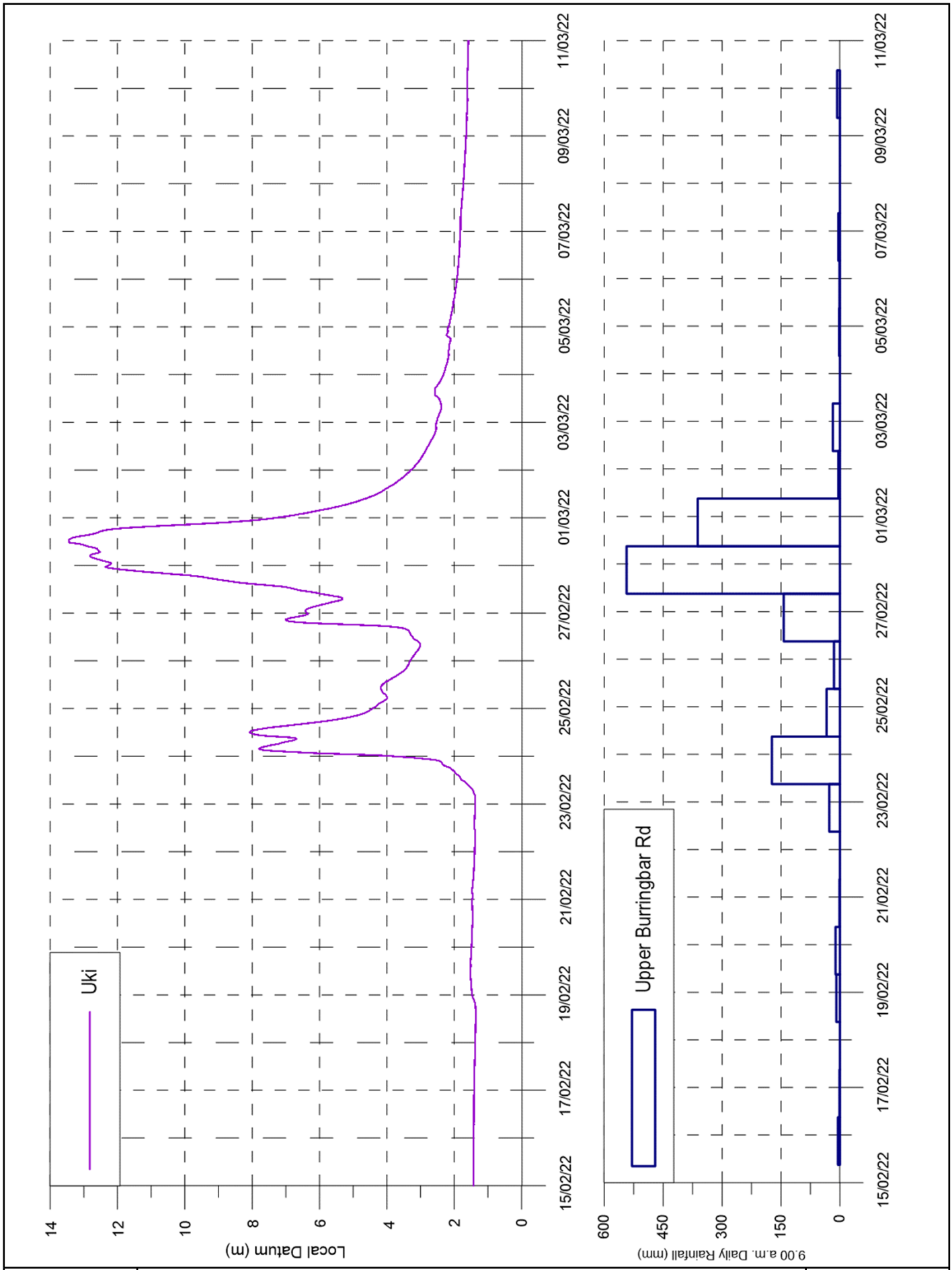
Figure
4.4

4.4.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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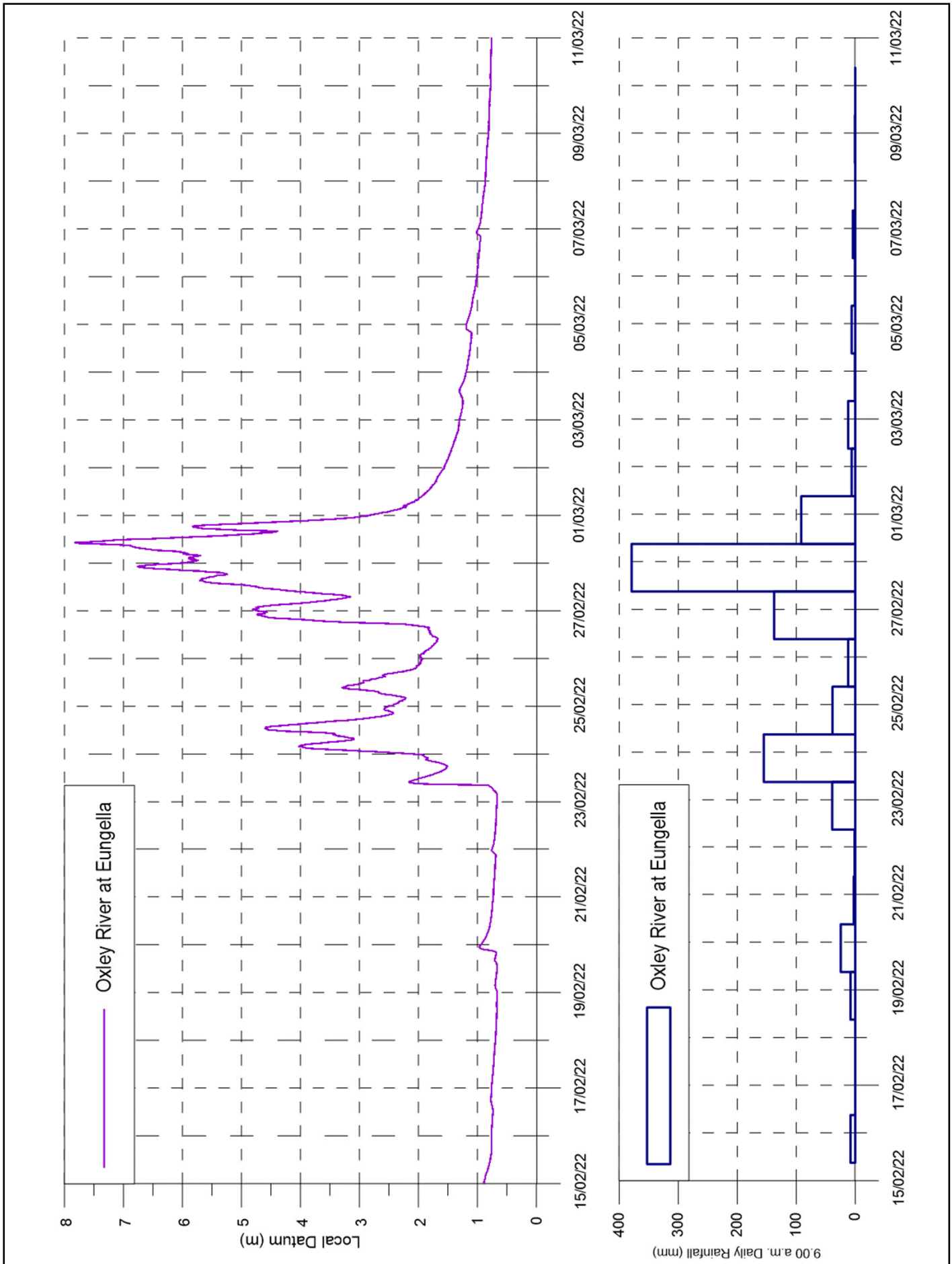
Figure
4.5

4.5.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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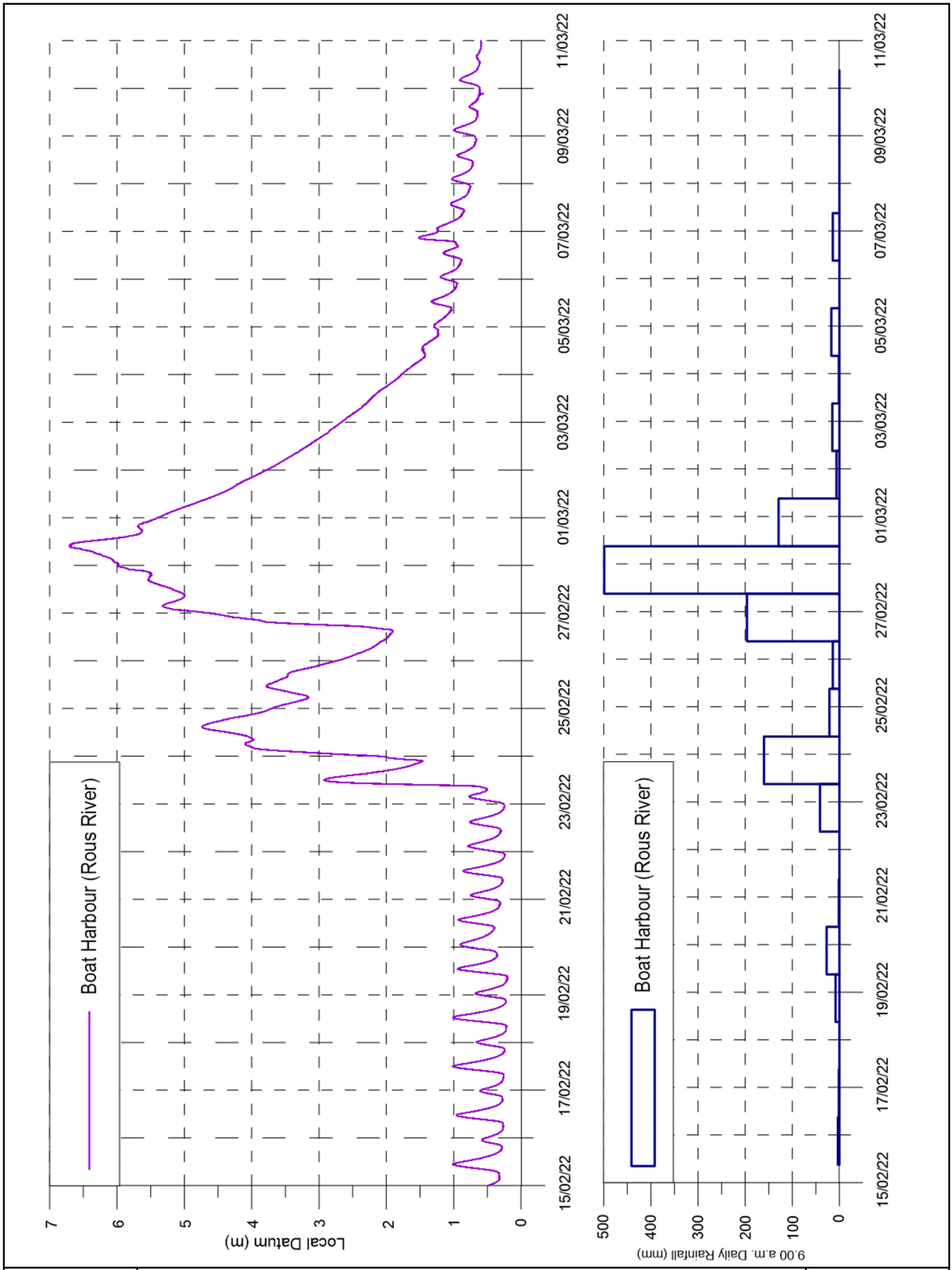
Figure
4.6

4.6.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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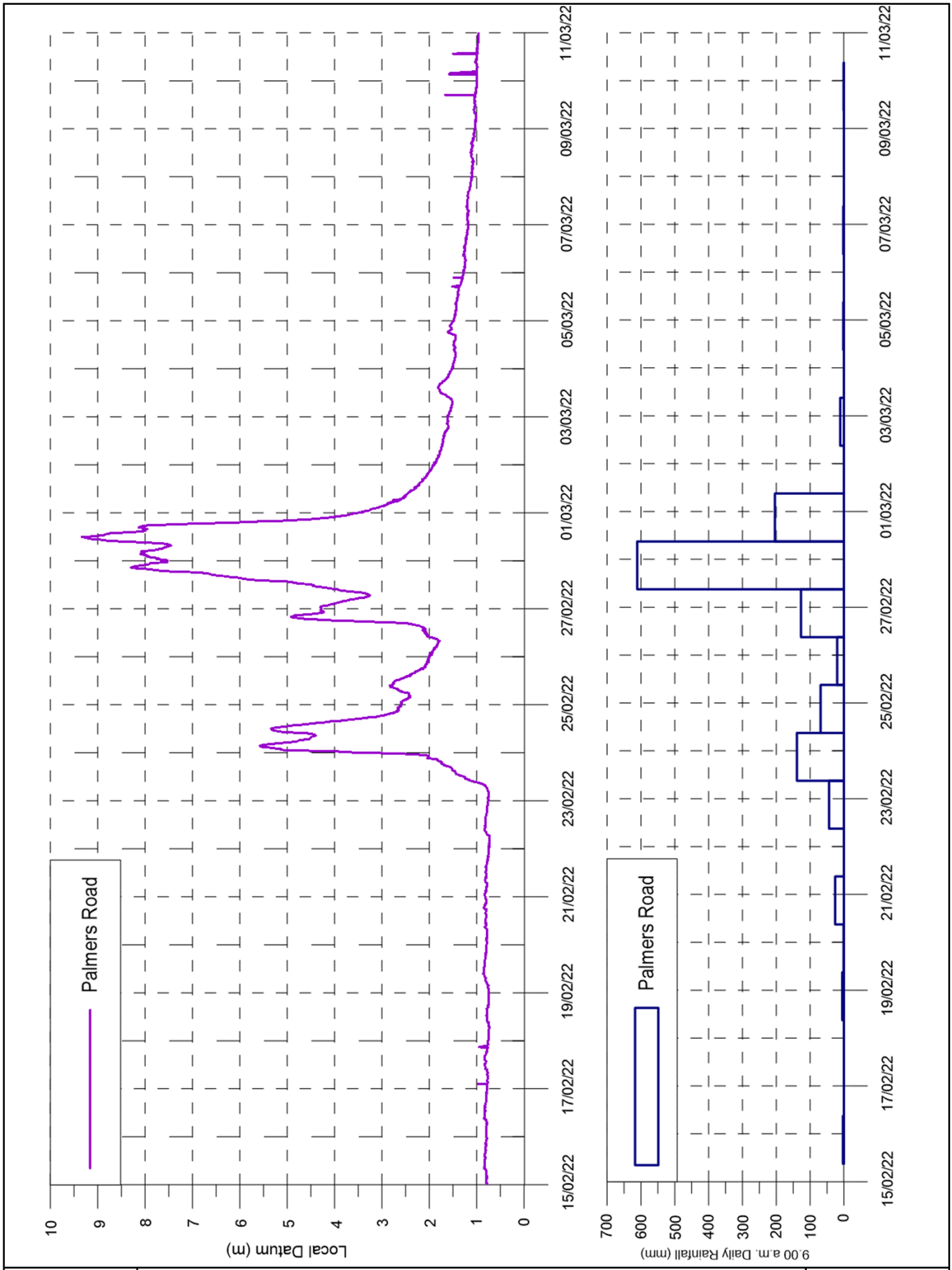
Figure
4.7

4.7.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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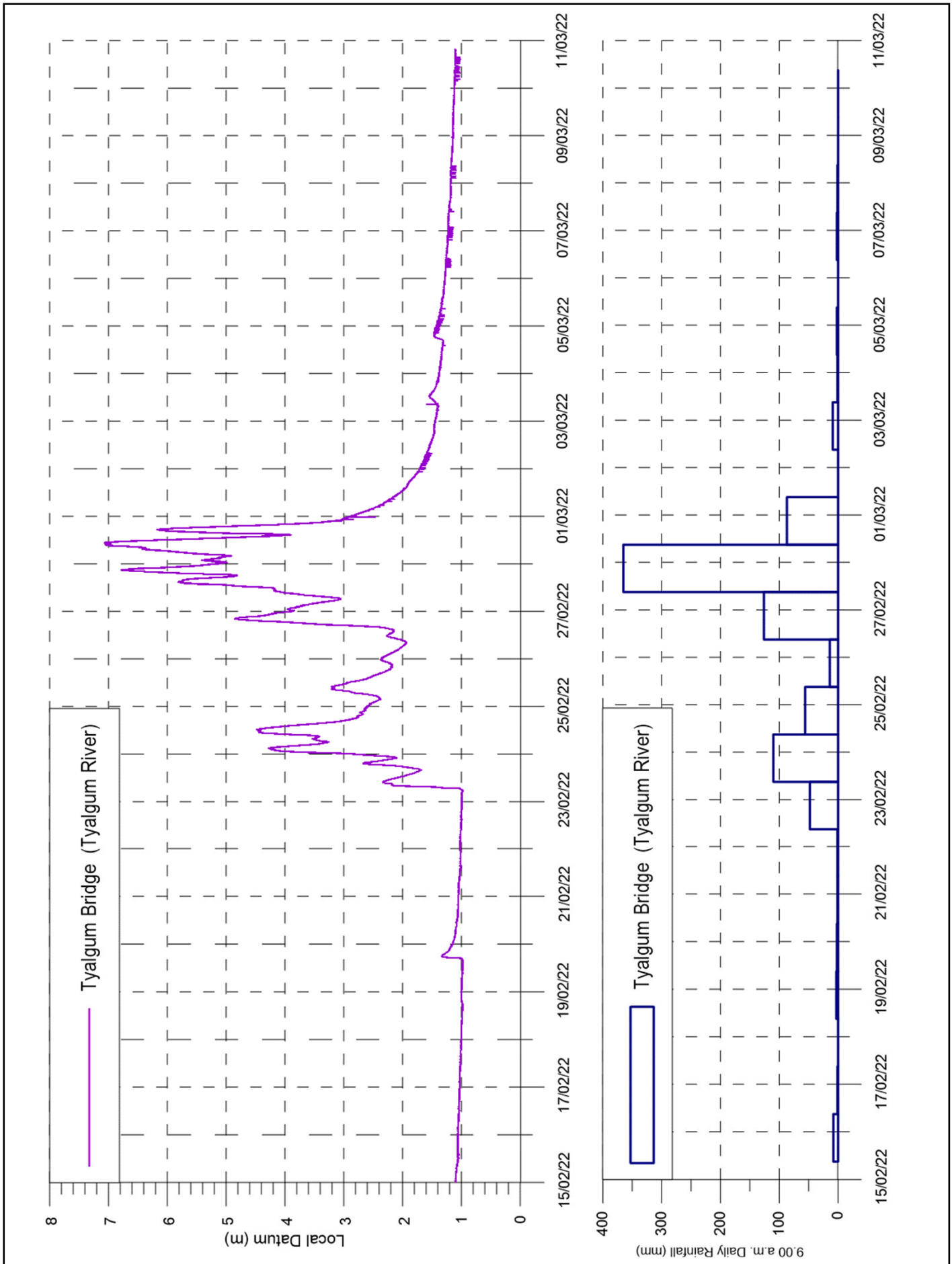
Figure
4.8

4.8.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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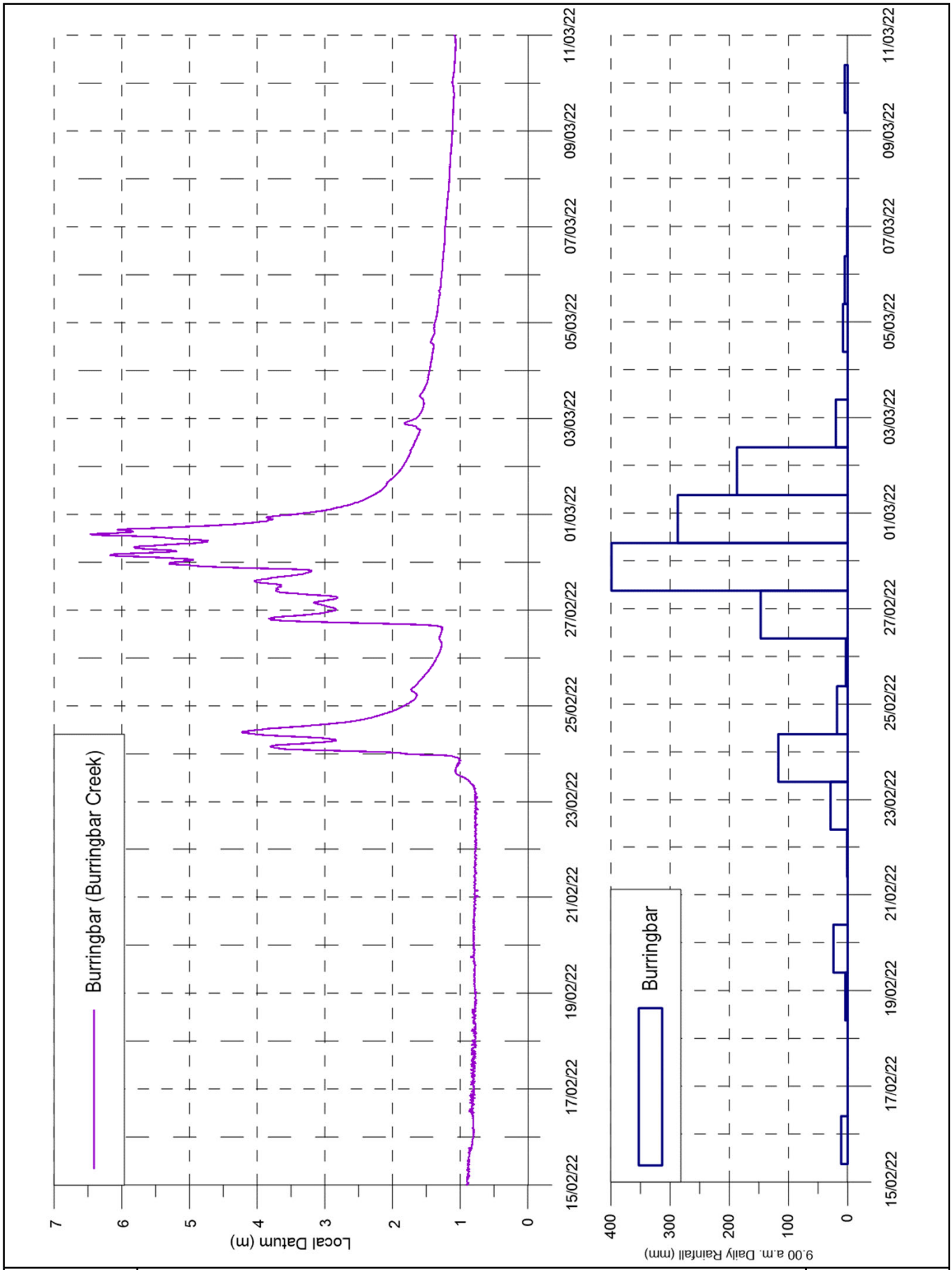
Figure
4.9

4.9.GRF



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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Figure
4.10

4.10.GRF

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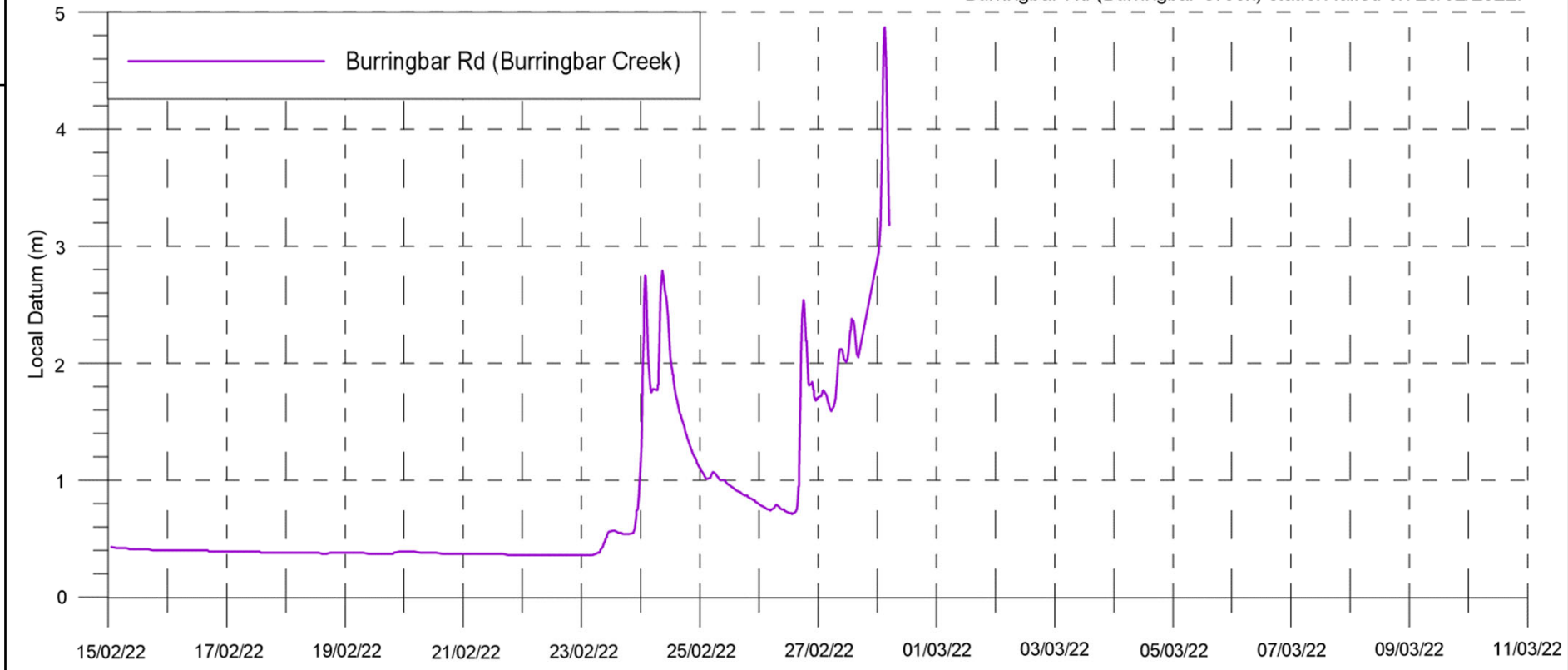
TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022



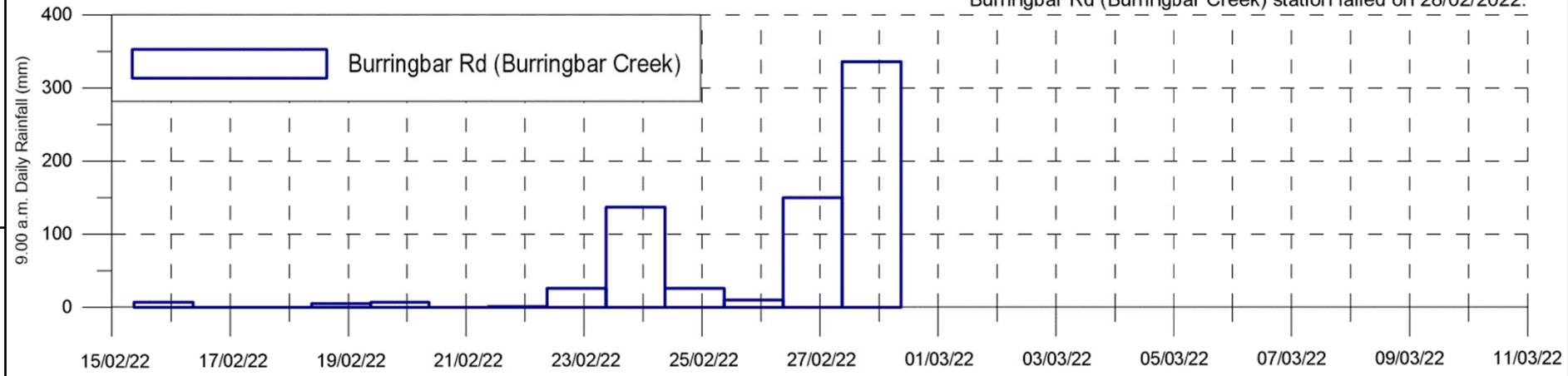


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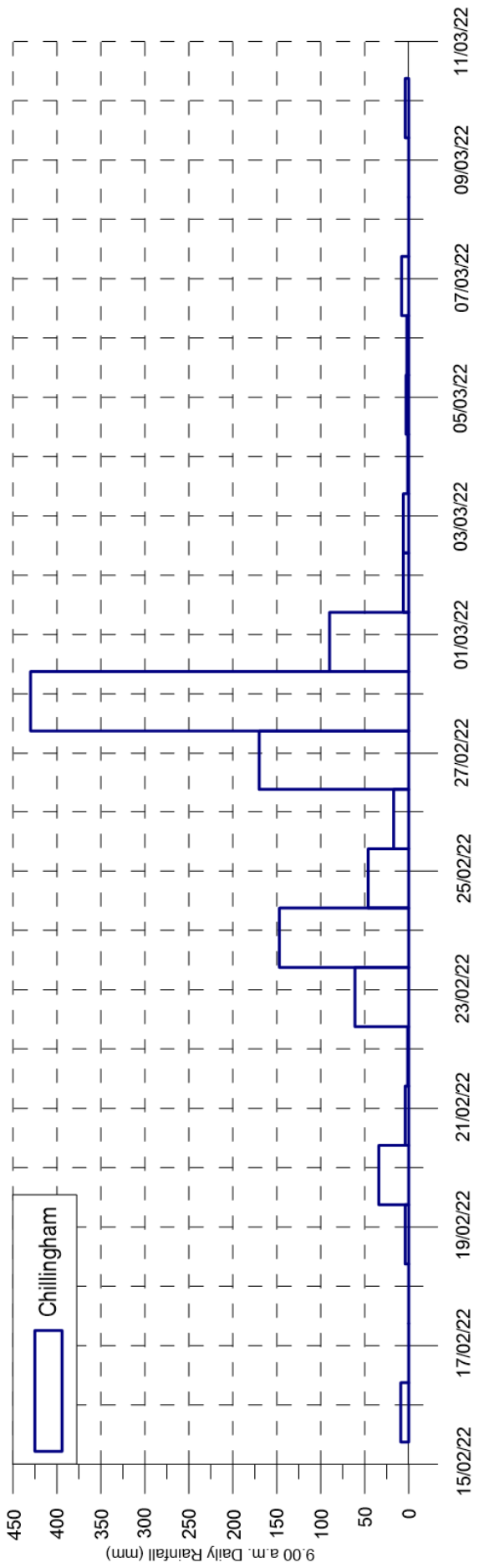
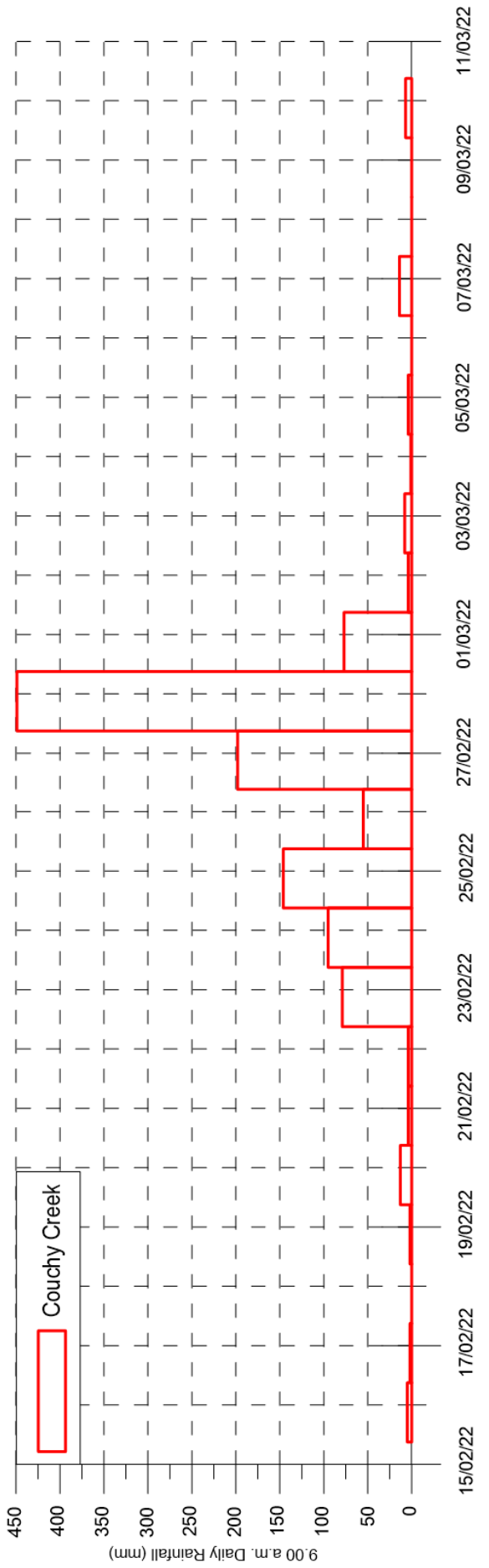
Figure
4.11

4.11.GRF





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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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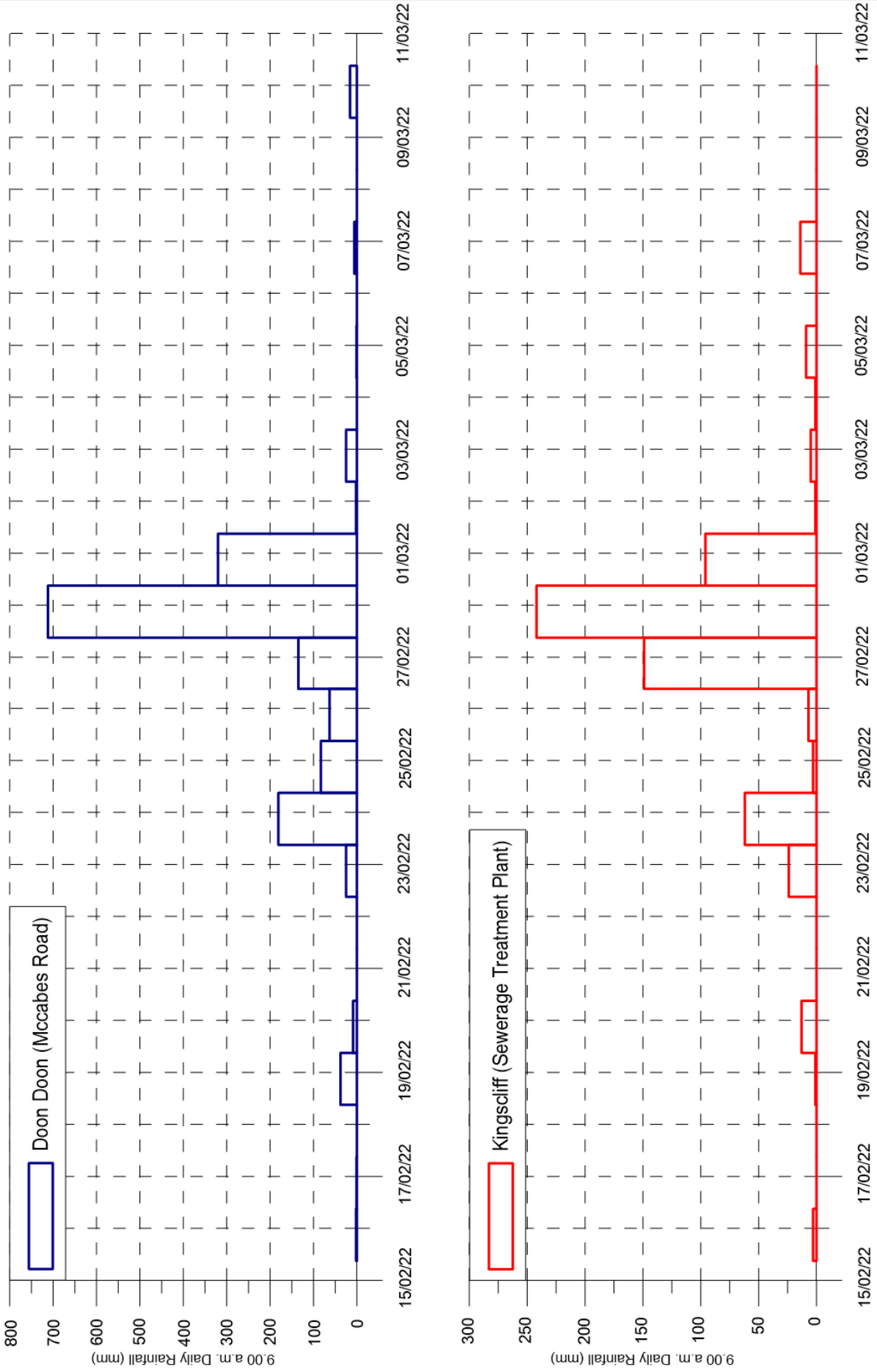
Figure
4.12

4.12.GRF



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WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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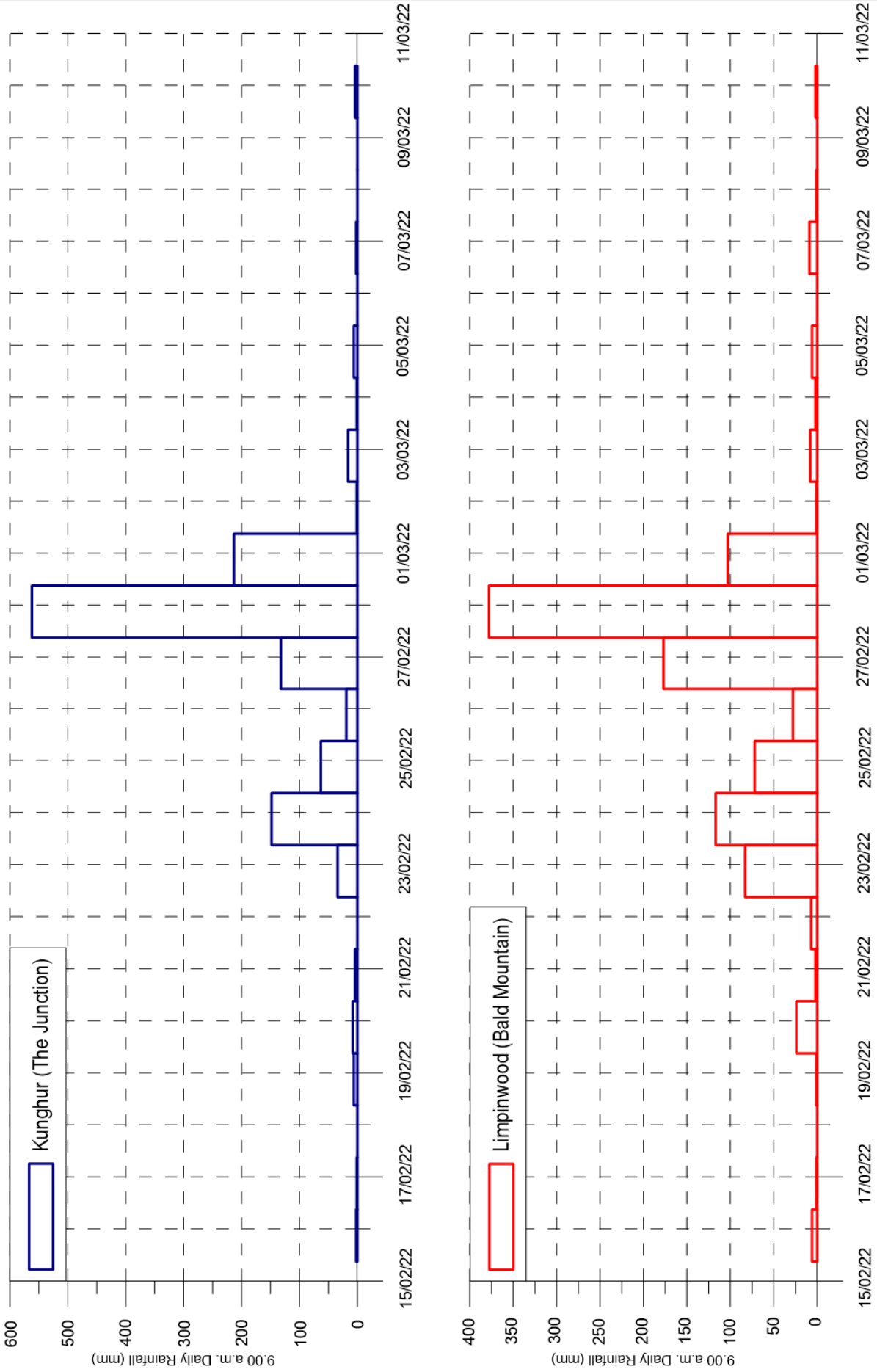
Figure
4.13

4.13.GRF



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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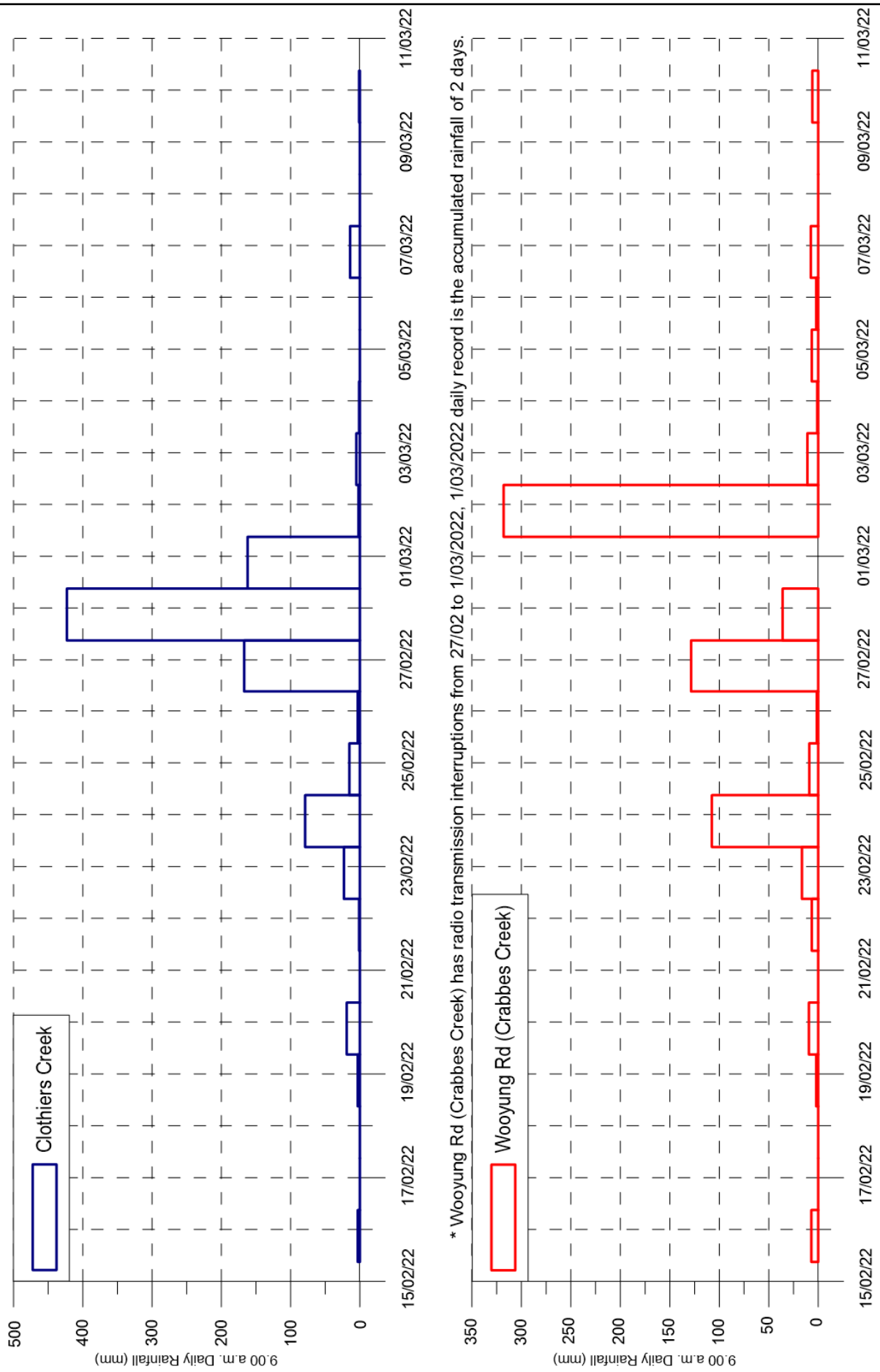
Figure
4.14

4.14.GRF



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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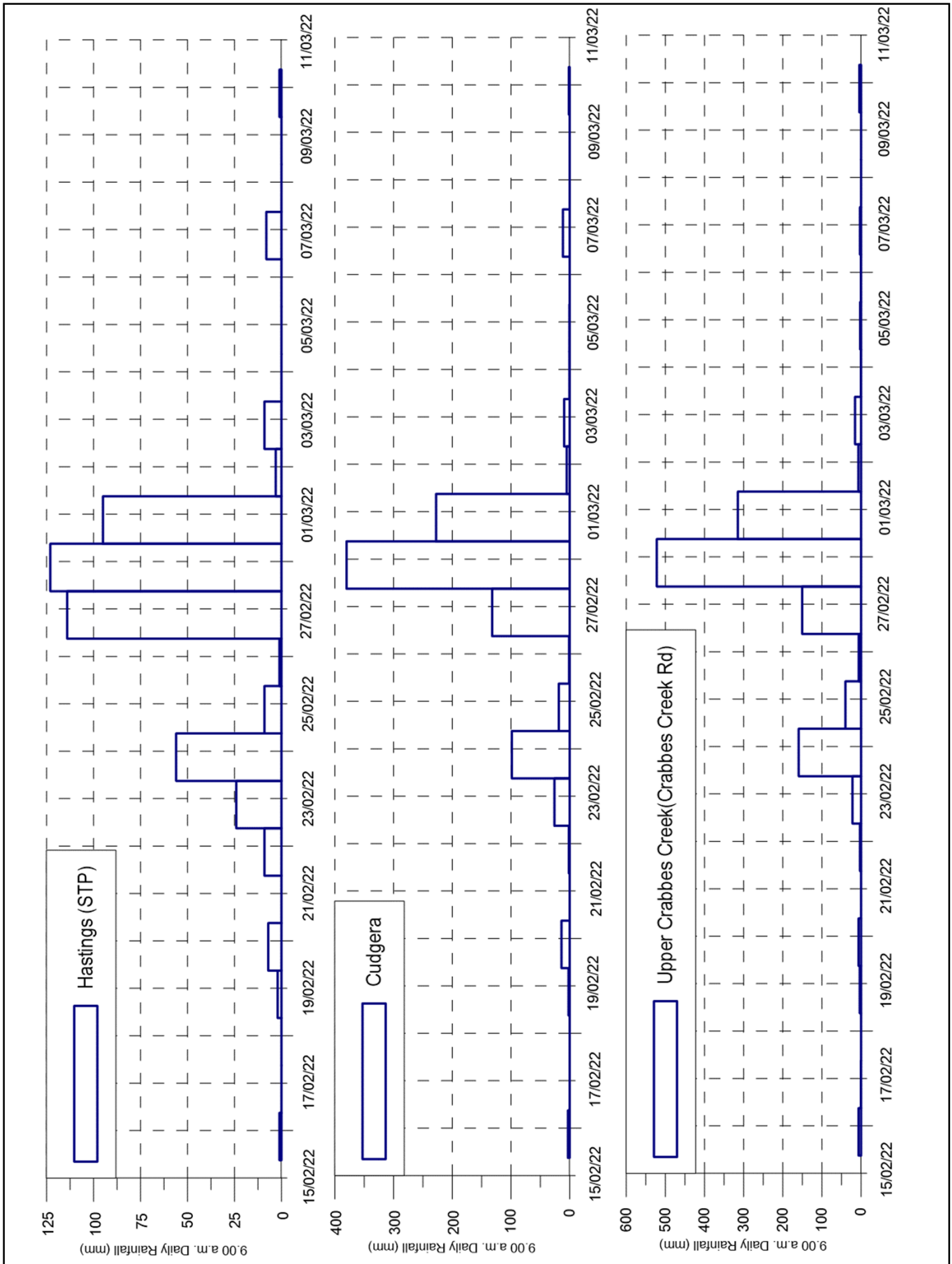
Report MHL2880
Figure
4.15

4.15.GRF



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TWEED RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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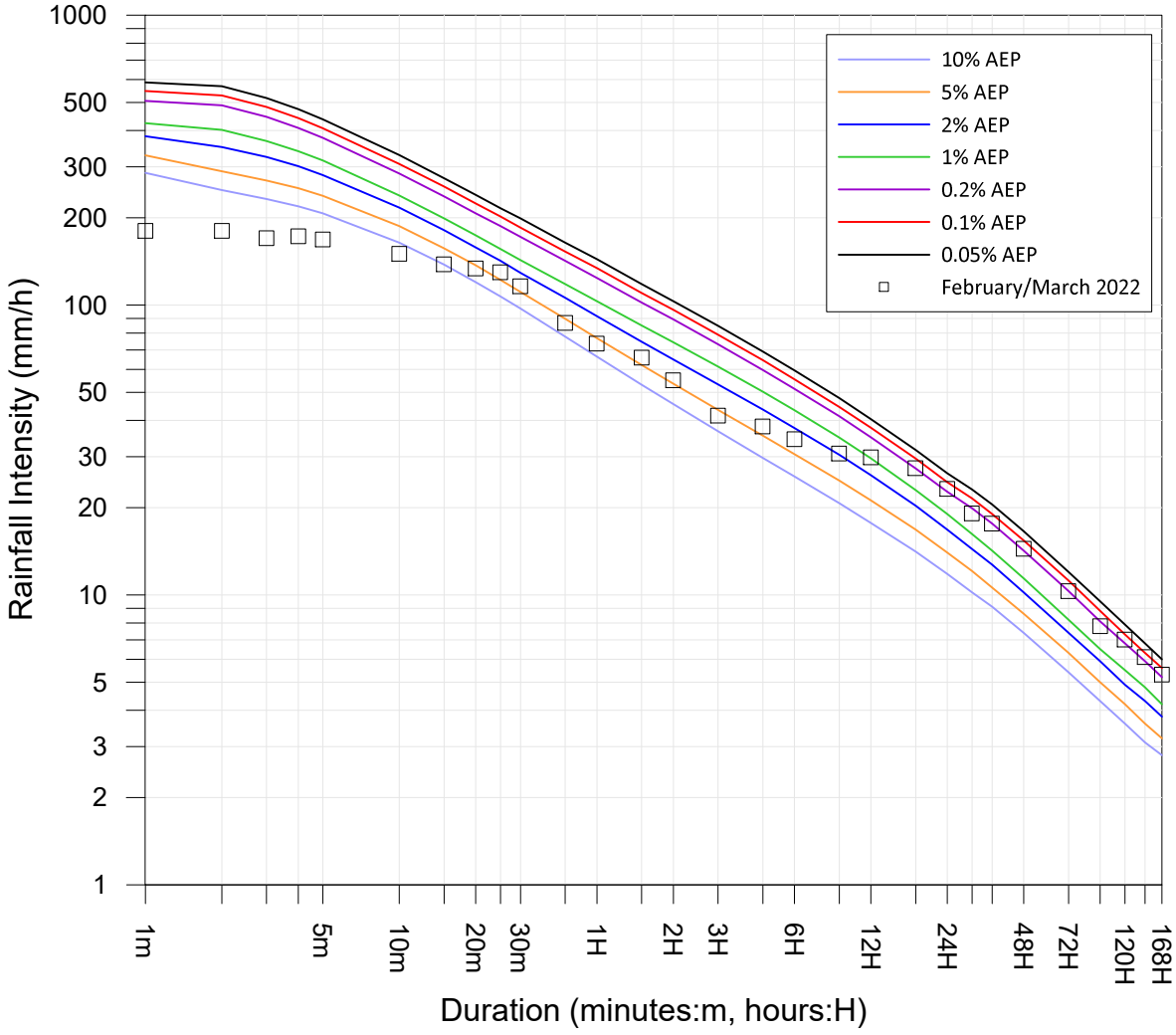
Report MHL2880
Figure
4.16

4.16.GRF

Site Owner: DPE BCD
Latitude: -28.392 Longitude:153.5053

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	180	01:25 28 Feb 2022
2m	180	01:23 28 Feb 2022
3m	170	01:25 28 Feb 2022
4m	172.5	01:25 28 Feb 2022
5m	168	01:26 28 Feb 2022
10m	150	01:29 28 Feb 2022
15m	138	01:34 28 Feb 2022
20m	133.5	01:39 28 Feb 2022
25m	129.6	01:41 28 Feb 2022
30m	116	01:45 28 Feb 2022
45m	86.7	02:00 28 Feb 2022
1H	73.5	02:15 28 Feb 2022
1.5H	65.7	02:42 28 Feb 2022
2H	55	02:51 28 Feb 2022
3H	41.5	03:03 28 Feb 2022
5H	38.1	05:23 28 Feb 2022
6H	34.4	06:52 28 Feb 2022
9H	30.7	06:51 28 Feb 2022
12H	29.8	13:15 28 Feb 2022
18H	27.3	15:41 28 Feb 2022
24H	23.2	19:57 28 Feb 2022
30H	19.1	22:53 28 Feb 2022
36H	17.6	16:56 28 Feb 2022
48H	14.4	21:26 28 Feb 2022
72H	10.3	13:17 01 Mar 2022
96H	7.8	23:05 28 Feb 2022
120H	7	20:39 28 Feb 2022
144H	6.1	00:20 01 Mar 2022
168H	5.3	00:20 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CUDGERA (558046)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

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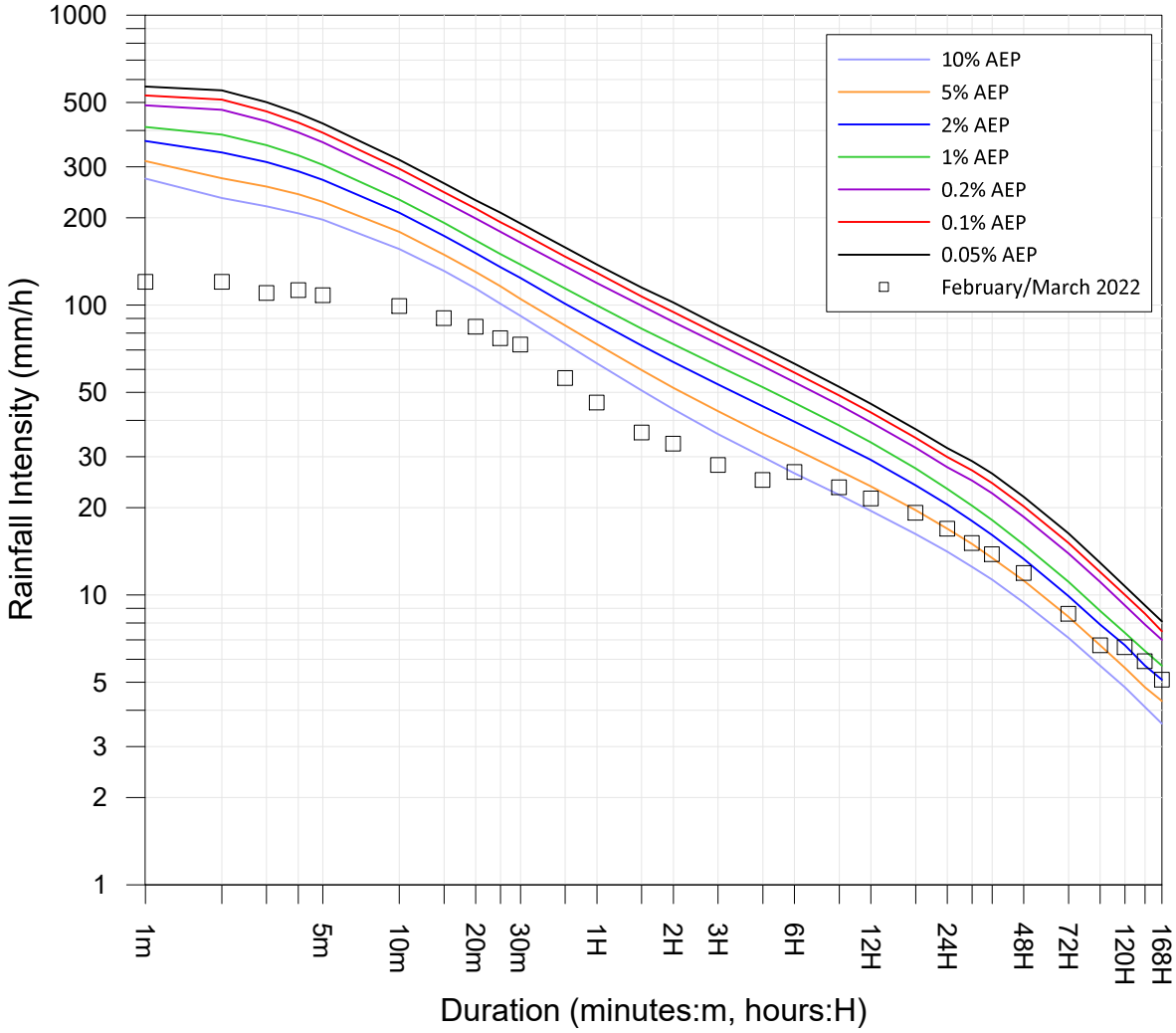
Report MHL2880
Figure
4.17

IFD_558046_Figure 4.17.pdf

Site Owner: WaterNSW
Latitude: -28.3537 Longitude:153.293

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	120	09:00 28 Feb 2022
2m	120	09:00 28 Feb 2022
3m	110	09:00 28 Feb 2022
4m	112.5	09:00 28 Feb 2022
5m	108	09:00 28 Feb 2022
10m	99	09:03 28 Feb 2022
15m	90	09:05 28 Feb 2022
20m	84	09:05 28 Feb 2022
25m	76.8	09:07 28 Feb 2022
30m	73	09:05 28 Feb 2022
45m	56	09:13 28 Feb 2022
1H	46	09:30 28 Feb 2022
1.5H	36.3	09:23 28 Feb 2022
2H	33.2	09:05 28 Feb 2022
3H	28	10:51 28 Feb 2022
5H	24.9	09:34 28 Feb 2022
6H	26.5	09:05 28 Feb 2022
9H	23.5	09:05 28 Feb 2022
12H	21.5	10:51 28 Feb 2022
18H	19.2	11:28 28 Feb 2022
24H	16.9	10:51 28 Feb 2022
30H	15.1	11:18 28 Feb 2022
36H	13.8	16:46 28 Feb 2022
48H	11.9	16:36 28 Feb 2022
72H	8.6	02:54 01 Mar 2022
96H	6.7	02:20 01 Mar 2022
120H	6.6	20:46 28 Feb 2022
144H	5.9	04:33 01 Mar 2022
168H	5.1	04:33 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

OXLEY RIVER AT EUNGELLA (201001)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

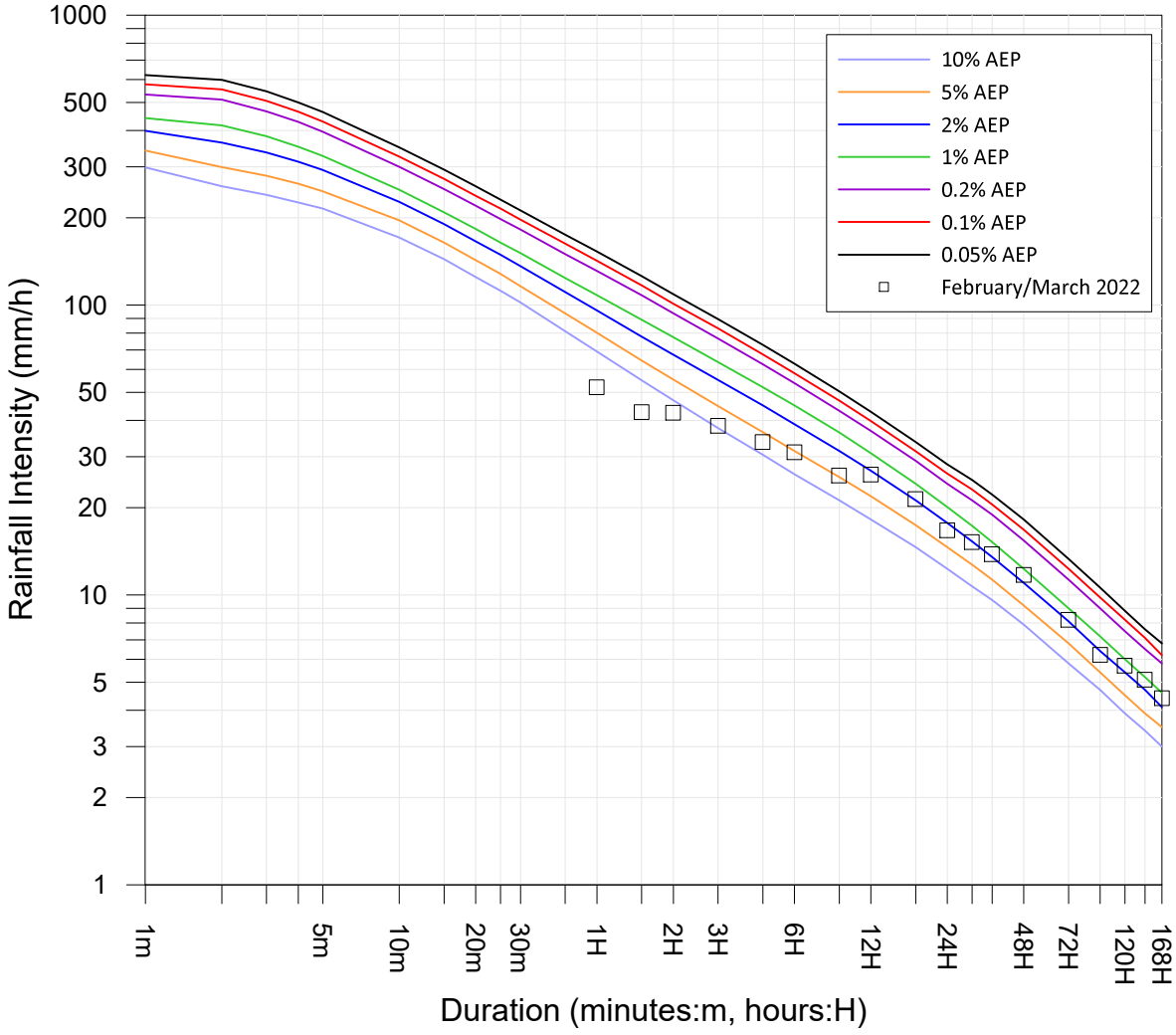
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.18

IFD_201001_Figure 4.18.pdf

Site Owner: Tweed Shire Council
Latitude: -28.216 Longitude:153.478

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	52	10:51 28 Feb 2022
1.5H	42.7	09:57 28 Feb 2022
2H	42.5	10:17 28 Feb 2022
3H	38.3	10:21 28 Feb 2022
5H	33.6	11:01 28 Feb 2022
6H	31	10:18 28 Feb 2022
9H	25.8	10:17 28 Feb 2022
12H	26	10:57 28 Feb 2022
18H	21.4	12:46 28 Feb 2022
24H	16.7	18:46 28 Feb 2022
30H	15.2	11:14 28 Feb 2022
36H	13.8	11:26 28 Feb 2022
48H	11.7	13:11 28 Feb 2022
72H	8.2	22:43 28 Feb 2022
96H	6.2	01:38 01 Mar 2022
120H	5.7	18:31 28 Feb 2022
144H	5.1	04:24 01 Mar 2022
168H	4.4	20:41 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BILAMBIL HEIGHTS (MARANA RESERVOIR) (558085) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

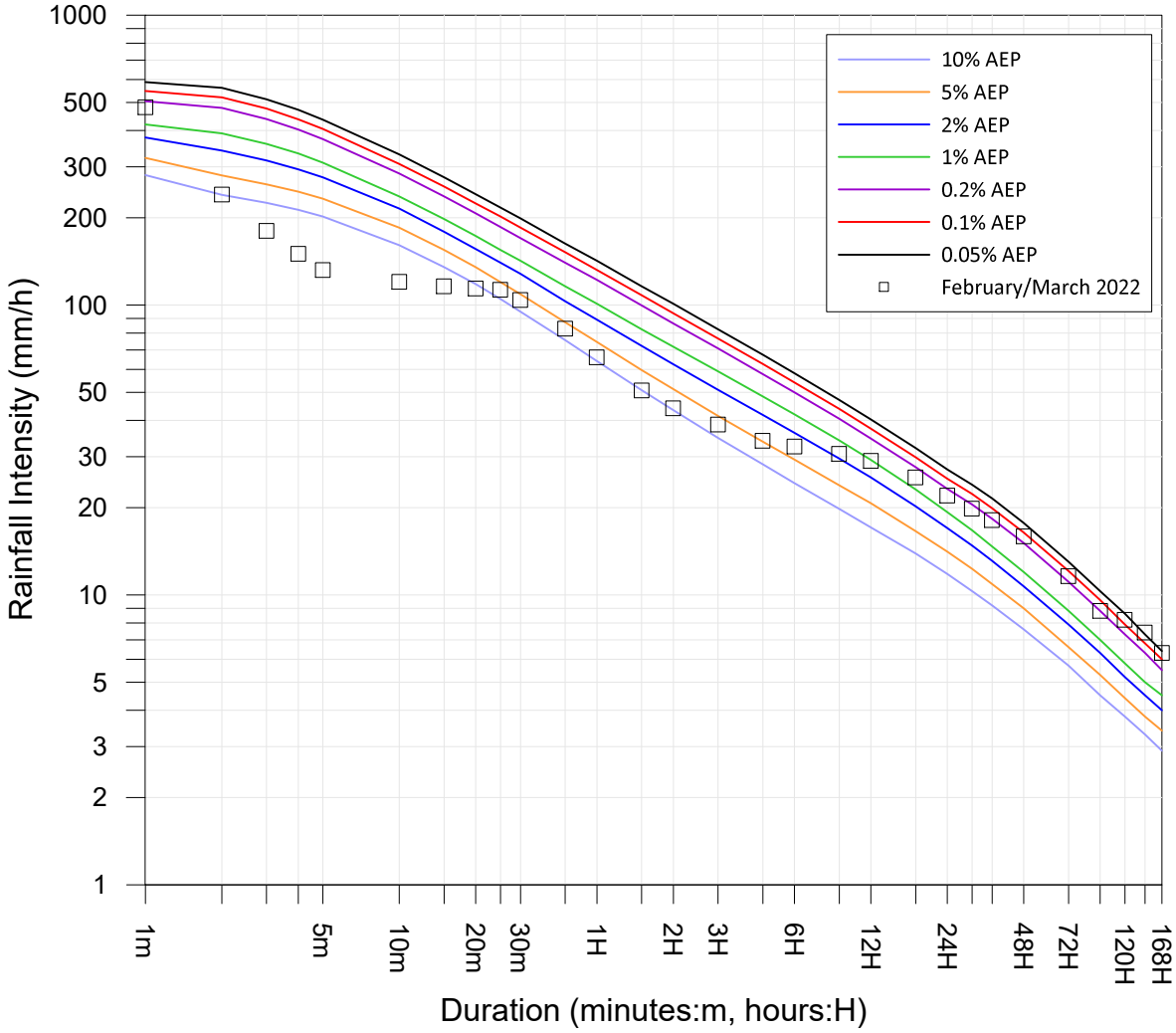
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.19

IFD_558085_Figure 4.19.pdf

Site Owner: Tweed Shire Council
Latitude: -28.3217 Longitude:153.3467

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	480	10:36 28 Feb 2022
2m	240	10:37 28 Feb 2022
3m	180	10:38 28 Feb 2022
4m	150	10:39 28 Feb 2022
5m	132	10:40 28 Feb 2022
10m	120	08:40 28 Feb 2022
15m	116	08:45 28 Feb 2022
20m	114	08:41 28 Feb 2022
25m	112.8	08:45 28 Feb 2022
30m	104	08:47 28 Feb 2022
45m	82.7	08:57 28 Feb 2022
1H	66	09:13 28 Feb 2022
1.5H	50.7	09:20 28 Feb 2022
2H	44	08:56 28 Feb 2022
3H	38.7	10:50 28 Feb 2022
5H	34	09:22 28 Feb 2022
6H	32.5	08:57 28 Feb 2022
9H	30.6	08:58 28 Feb 2022
12H	29	08:59 28 Feb 2022
18H	25.4	10:56 28 Feb 2022
24H	22	10:46 28 Feb 2022
30H	19.8	15:57 28 Feb 2022
36H	18.1	16:45 28 Feb 2022
48H	15.9	16:20 28 Feb 2022
72H	11.6	03:12 01 Mar 2022
96H	8.8	00:13 01 Mar 2022
120H	8.2	20:47 28 Feb 2022
144H	7.4	04:14 01 Mar 2022
168H	6.3	20:48 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BOAT HARBOUR (ROUS RIVER) (58204)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

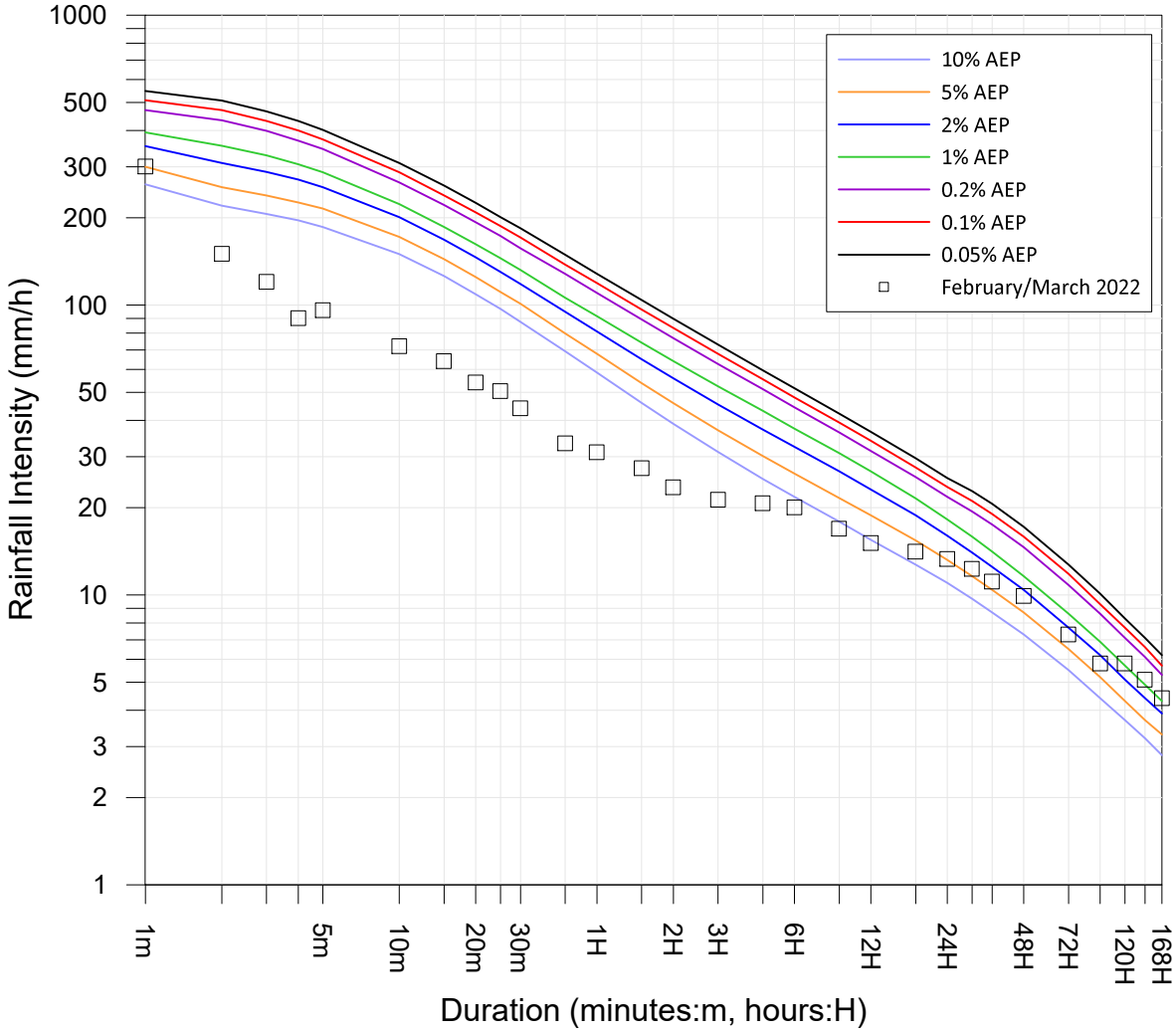
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.20

IFD_58204_Figure 4.20.pdf

Site Owner: Byron Shire Council
Latitude: -28.3981 Longitude:153.1731

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	10:32 28 Feb 2022
2m	150	10:33 28 Feb 2022
3m	120	16:12 23 Feb 2022
4m	90	08:10 28 Feb 2022
5m	96	16:14 23 Feb 2022
10m	72	16:19 23 Feb 2022
15m	64	16:20 23 Feb 2022
20m	54	16:24 23 Feb 2022
25m	50.4	16:20 23 Feb 2022
30m	44	08:36 28 Feb 2022
45m	33.3	08:51 28 Feb 2022
1H	31	08:40 28 Feb 2022
1.5H	27.3	05:00 28 Feb 2022
2H	23.5	08:39 28 Feb 2022
3H	21.3	09:17 28 Feb 2022
5H	20.7	08:36 28 Feb 2022
6H	20	09:30 28 Feb 2022
9H	16.9	09:21 28 Feb 2022
12H	15.1	10:38 28 Feb 2022
18H	14.1	10:32 28 Feb 2022
24H	13.3	10:36 28 Feb 2022
30H	12.3	16:23 28 Feb 2022
36H	11.1	17:19 28 Feb 2022
48H	9.9	15:43 28 Feb 2022
72H	7.3	18:53 28 Feb 2022
96H	5.8	18:43 28 Feb 2022
120H	5.8	15:55 28 Feb 2022
144H	5.1	01:14 01 Mar 2022
168H	4.4	03:20 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BRAYS CREEK (MISTY MOUNTAIN) (58005)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

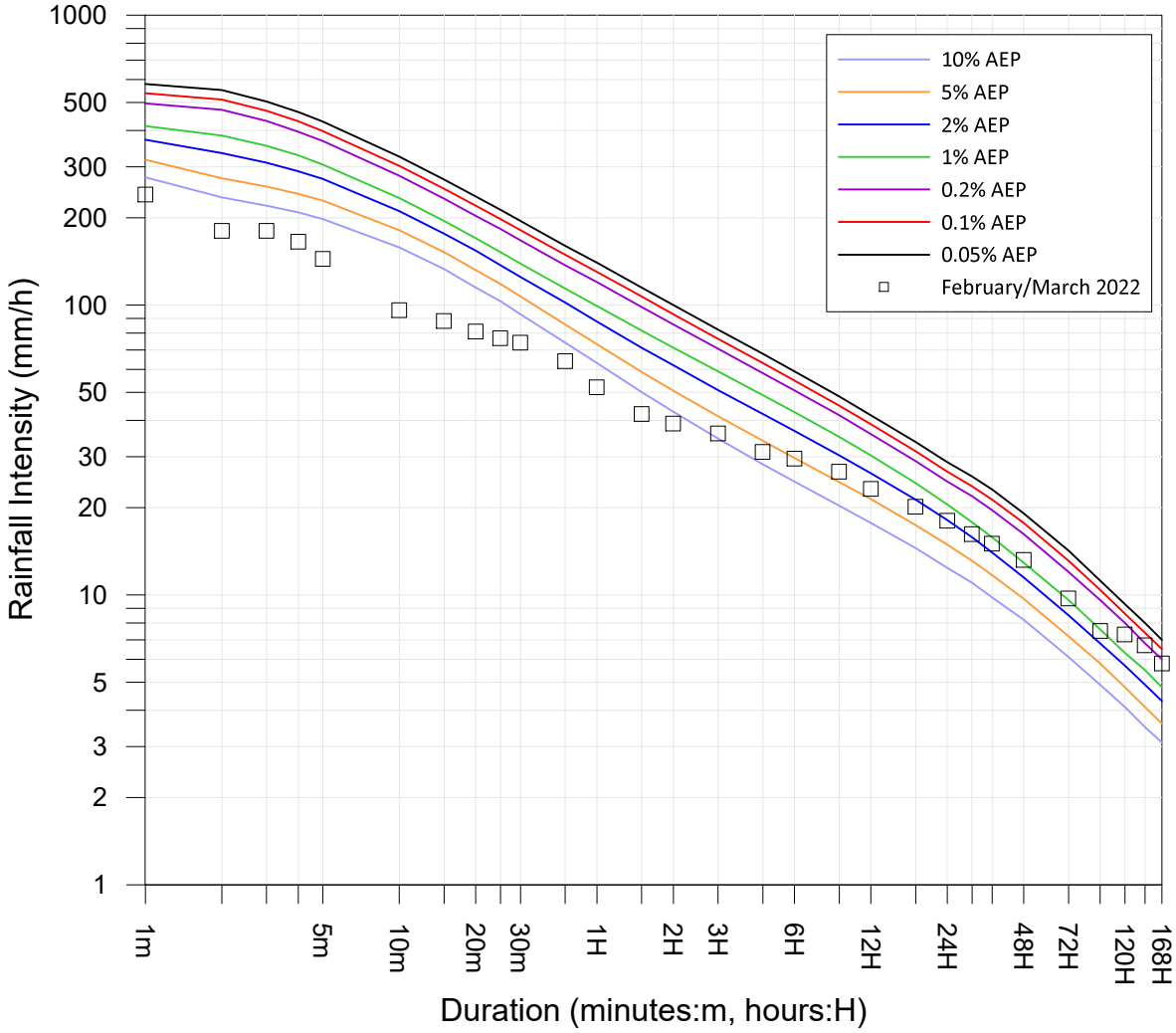
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.21

IFD_58005_Figure 4.21.pdf

Site Owner: Tweed Shire Council
Latitude: -28.3146 Longitude:153.275

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	240	08:52 28 Feb 2022
2m	180	08:53 28 Feb 2022
3m	180	08:54 28 Feb 2022
4m	165	08:55 28 Feb 2022
5m	144	08:56 28 Feb 2022
10m	96	09:01 24 Feb 2022
15m	88	08:57 24 Feb 2022
20m	81	09:02 24 Feb 2022
25m	76.8	09:07 24 Feb 2022
30m	74	09:01 24 Feb 2022
45m	64	09:14 24 Feb 2022
1H	52	09:25 24 Feb 2022
1.5H	42	06:38 28 Feb 2022
2H	39	07:58 28 Feb 2022
3H	36	08:08 28 Feb 2022
5H	31.1	08:07 28 Feb 2022
6H	29.5	08:58 28 Feb 2022
9H	26.6	08:59 28 Feb 2022
12H	23.2	08:59 28 Feb 2022
18H	20.1	10:11 28 Feb 2022
24H	18	08:58 28 Feb 2022
30H	16.2	16:51 28 Feb 2022
36H	15	17:26 28 Feb 2022
48H	13.2	16:30 28 Feb 2022
72H	9.7	00:28 01 Mar 2022
96H	7.5	22:32 28 Feb 2022
120H	7.3	20:54 28 Feb 2022
144H	6.7	01:10 01 Mar 2022
168H	5.8	01:10 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CHILLINGHAM (58011)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

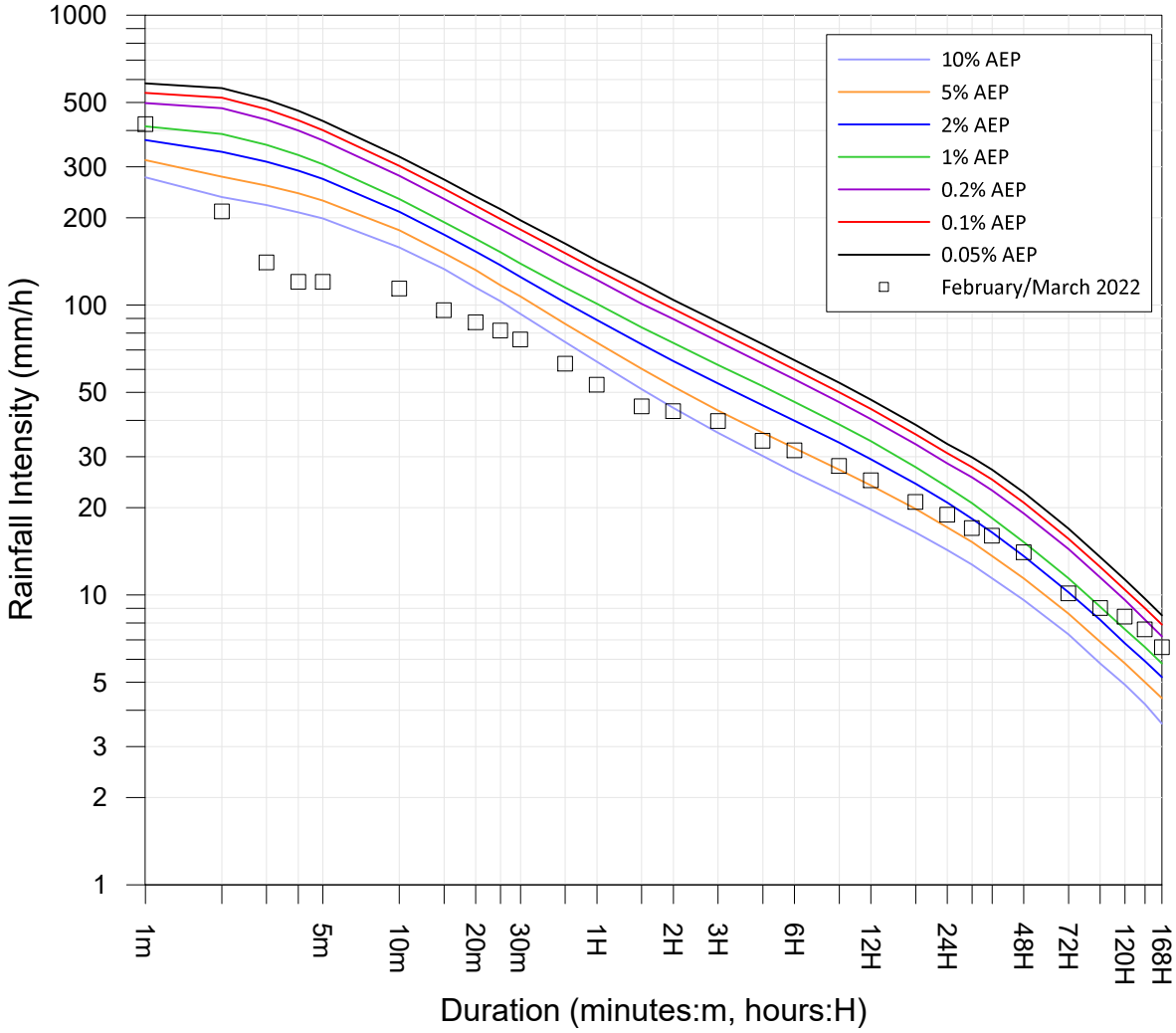
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.22

IFD_58011_Figure 4.22.pdf

Site Owner: Tweed Shire Council
Latitude: -28.2662 Longitude:153.279

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	420	00:04 28 Feb 2022
2m	210	00:05 28 Feb 2022
3m	140	07:34 28 Feb 2022
4m	120	07:36 28 Feb 2022
5m	120	07:36 28 Feb 2022
10m	114	07:36 28 Feb 2022
15m	96	07:35 28 Feb 2022
20m	87	07:40 28 Feb 2022
25m	81.6	07:45 28 Feb 2022
30m	76	07:39 28 Feb 2022
45m	62.7	07:54 28 Feb 2022
1H	53	07:58 28 Feb 2022
1.5H	44.7	07:39 28 Feb 2022
2H	43	07:53 28 Feb 2022
3H	39.7	07:53 28 Feb 2022
5H	34	07:48 28 Feb 2022
6H	31.5	07:56 28 Feb 2022
9H	27.8	09:03 28 Feb 2022
12H	24.8	07:45 28 Feb 2022
18H	20.9	09:29 28 Feb 2022
24H	18.9	08:26 28 Feb 2022
30H	17	10:16 28 Feb 2022
36H	16	08:38 28 Feb 2022
48H	14	14:50 28 Feb 2022
72H	10.1	03:17 01 Mar 2022
96H	9	08:33 28 Feb 2022
120H	8.4	21:41 28 Feb 2022
144H	7.6	00:28 01 Mar 2022
168H	6.6	19:08 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

COUCHY CREEK (558079)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

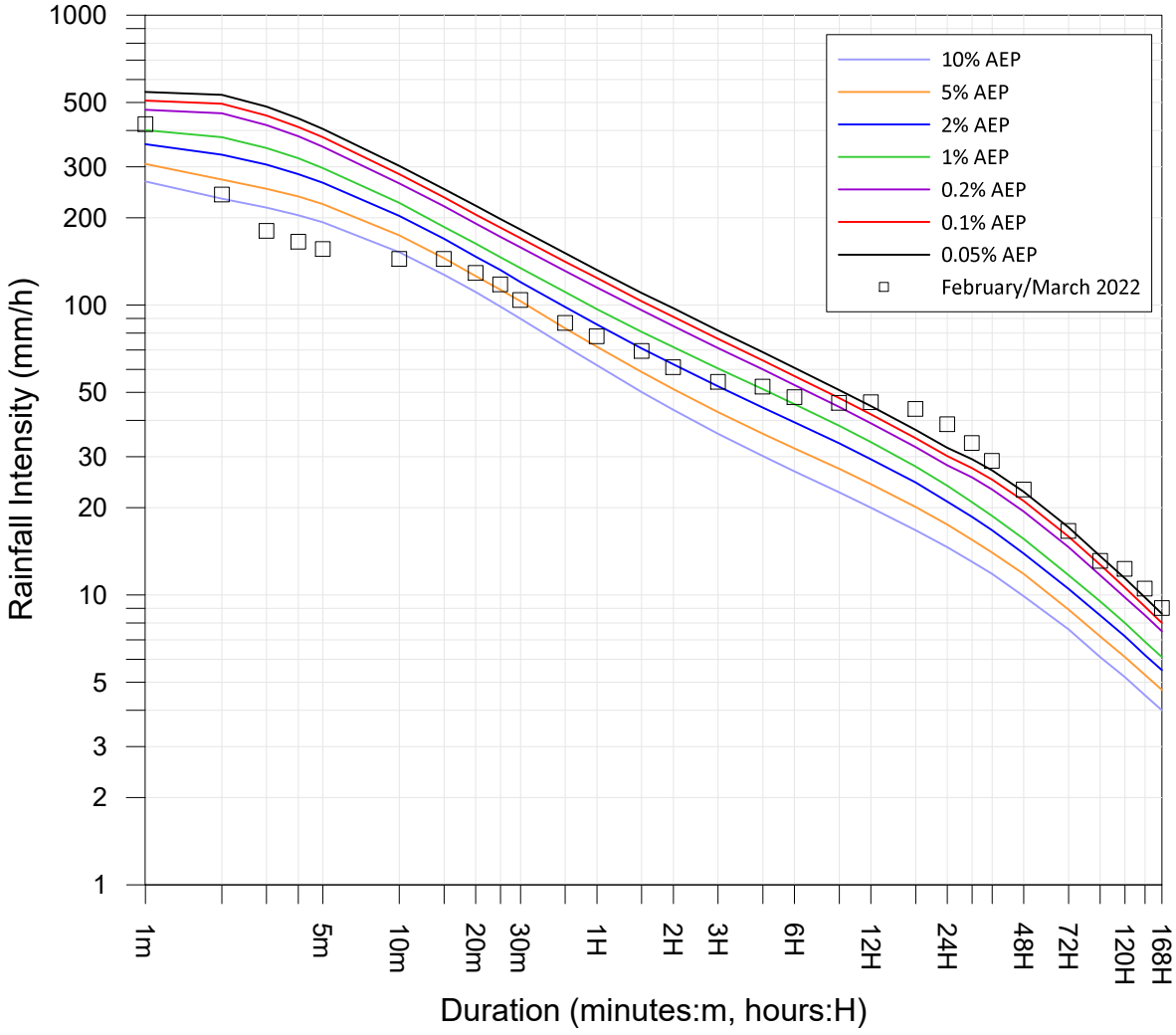
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.23

IFD_558079_Figure 4.23.pdf

Site Owner: BoM
Latitude: -28.5314 Longitude:153.3151

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	420	00:59 28 Feb 2022
2m	240	01:00 28 Feb 2022
3m	180	09:39 28 Feb 2022
4m	165	09:40 28 Feb 2022
5m	156	09:41 28 Feb 2022
10m	144	09:41 28 Feb 2022
15m	144	09:41 28 Feb 2022
20m	129	09:46 28 Feb 2022
25m	117.6	09:46 28 Feb 2022
30m	104	09:45 28 Feb 2022
45m	86.7	02:06 28 Feb 2022
1H	78	02:04 28 Feb 2022
1.5H	69.3	02:28 28 Feb 2022
2H	61	02:07 28 Feb 2022
3H	54.3	12:26 28 Feb 2022
5H	52.2	13:45 28 Feb 2022
6H	48	07:21 28 Feb 2022
9H	45.9	09:58 28 Feb 2022
12H	46.2	12:58 28 Feb 2022
18H	43.8	13:52 28 Feb 2022
24H	38.8	16:41 28 Feb 2022
30H	33.4	17:05 28 Feb 2022
36H	29	17:39 28 Feb 2022
48H	23.1	16:24 28 Feb 2022
72H	16.6	22:17 28 Feb 2022
96H	13.1	22:05 28 Feb 2022
120H	12.3	21:21 28 Feb 2022
144H	10.5	02:47 01 Mar 2022
168H	9	22:00 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

DOON DOON (MCCABES ROAD) (58019)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

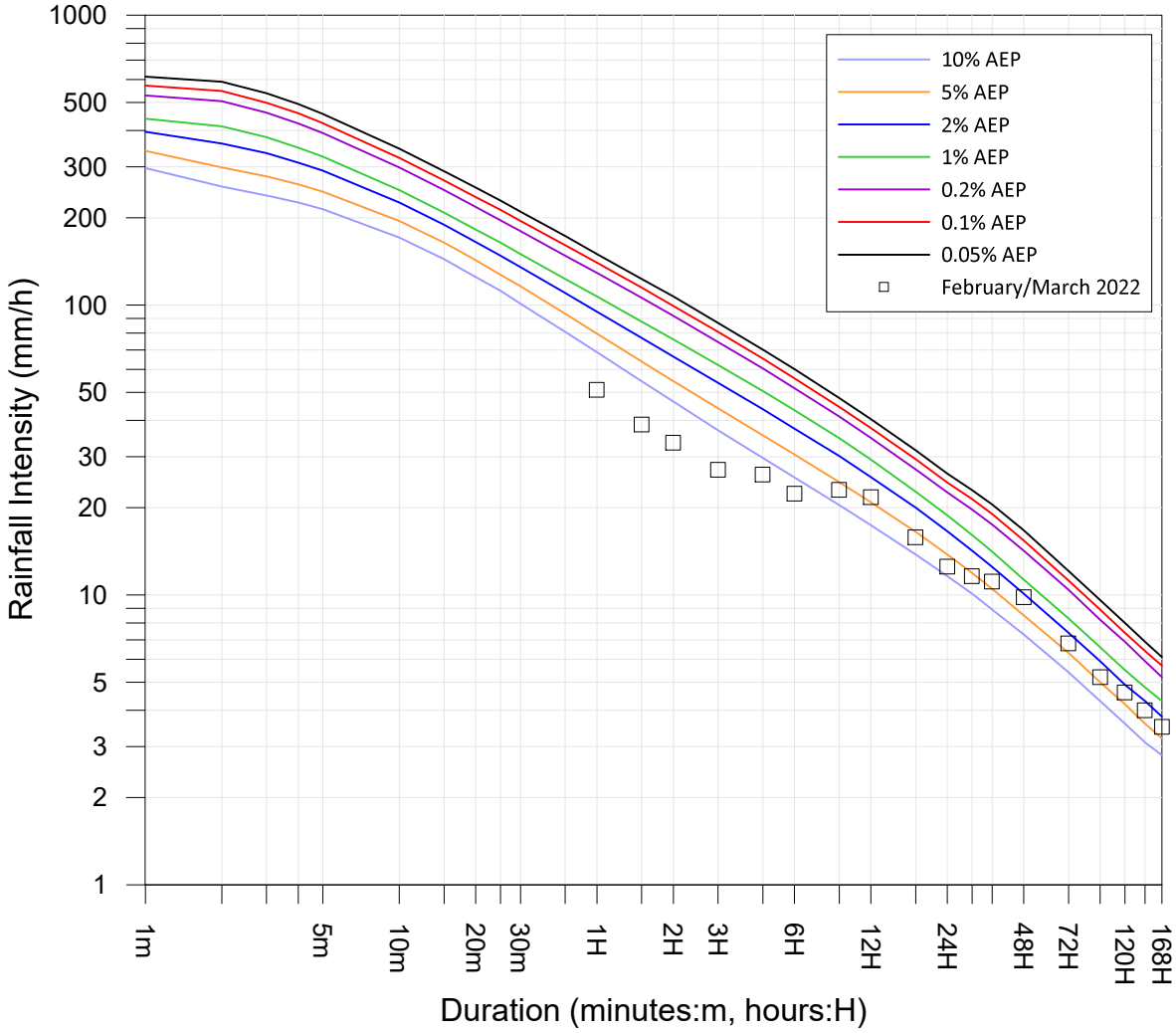
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.24

IFD_58019_Figure 4.24.pdf

Site Owner: Tweed Shire Council
Latitude: -28.256 Longitude:153.548

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	51	04:53 28 Feb 2022
1.5H	38.7	05:34 28 Feb 2022
2H	33.5	11:51 28 Feb 2022
3H	27	07:04 28 Feb 2022
5H	26	08:23 28 Feb 2022
6H	22.3	06:53 28 Feb 2022
9H	23	12:39 28 Feb 2022
12H	21.7	12:45 28 Feb 2022
18H	15.8	16:43 28 Feb 2022
24H	12.5	18:49 28 Feb 2022
30H	11.6	12:34 28 Feb 2022
36H	11.1	12:36 28 Feb 2022
48H	9.8	13:01 28 Feb 2022
72H	6.8	22:21 28 Feb 2022
96H	5.2	21:59 28 Feb 2022
120H	4.6	18:47 28 Feb 2022
144H	4	20:28 28 Feb 2022
168H	3.5	20:28 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

KINGSCLIFF (SEWERAGE TREATMENT PLANT) (558090)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

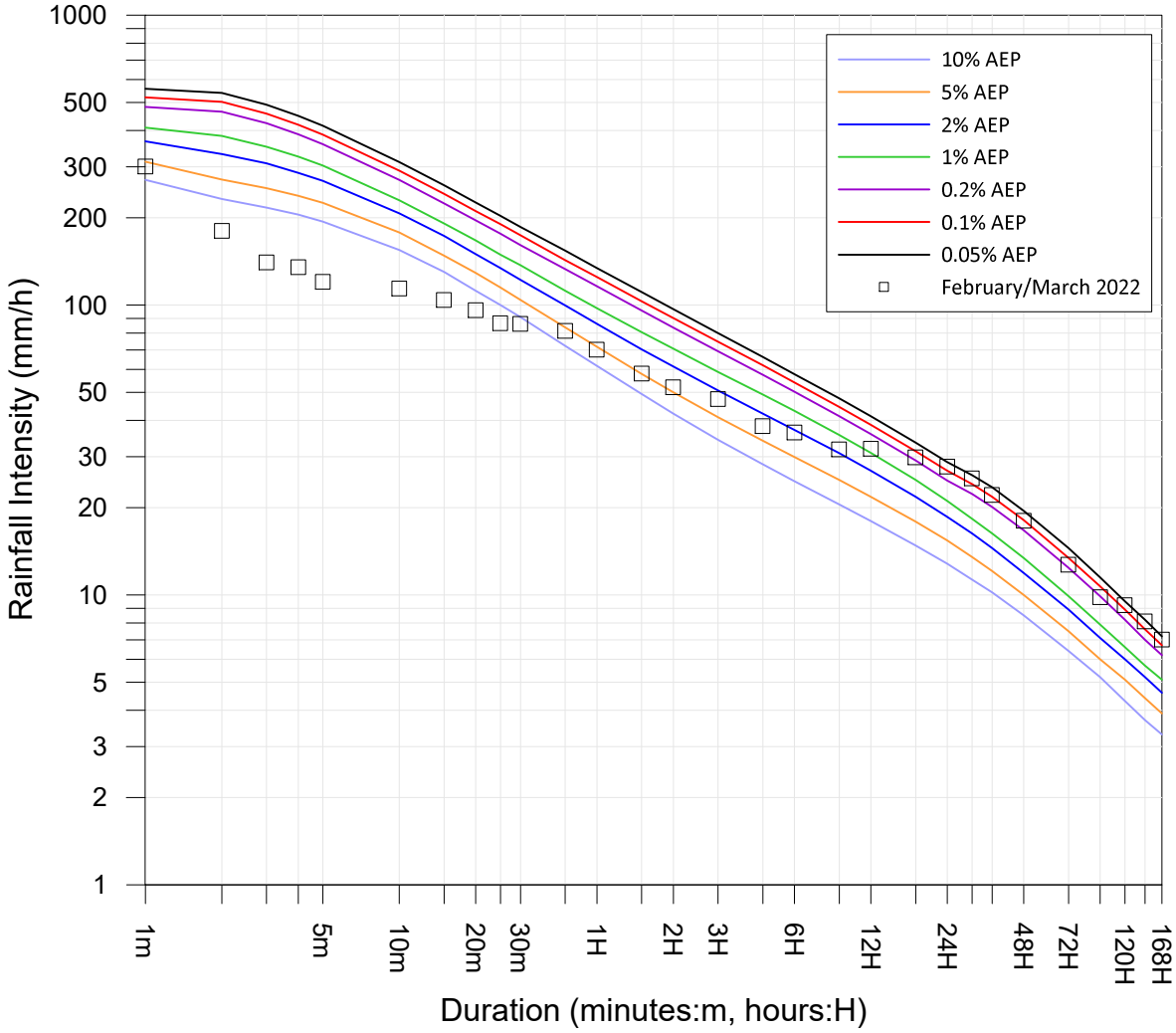
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.25

IFD_558090_Figure 4.25.pdf

Site Owner: BoM
Latitude: -28.4696 Longitude:153.2532

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	09:01 28 Feb 2022
2m	180	09:02 28 Feb 2022
3m	140	09:03 28 Feb 2022
4m	135	09:04 28 Feb 2022
5m	120	09:11 28 Feb 2022
10m	114	09:10 28 Feb 2022
15m	104	09:15 28 Feb 2022
20m	96	09:20 28 Feb 2022
25m	86.4	09:20 28 Feb 2022
30m	86	09:13 28 Feb 2022
45m	81.3	09:21 28 Feb 2022
1H	70	09:22 28 Feb 2022
1.5H	58	10:06 28 Feb 2022
2H	52	10:15 28 Feb 2022
3H	47.3	11:10 28 Feb 2022
5H	38.2	11:12 28 Feb 2022
6H	36.3	11:12 28 Feb 2022
9H	31.7	10:02 28 Feb 2022
12H	31.9	11:29 28 Feb 2022
18H	29.8	11:23 28 Feb 2022
24H	27.7	15:53 28 Feb 2022
30H	25.2	16:18 28 Feb 2022
36H	22.1	16:42 28 Feb 2022
48H	18	16:06 28 Feb 2022
72H	12.7	05:17 01 Mar 2022
96H	9.8	17:51 28 Feb 2022
120H	9.2	15:56 28 Feb 2022
144H	8.1	01:14 01 Mar 2022
168H	7	09:41 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

KUNGHUR (THE JUNCTION) (58129)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

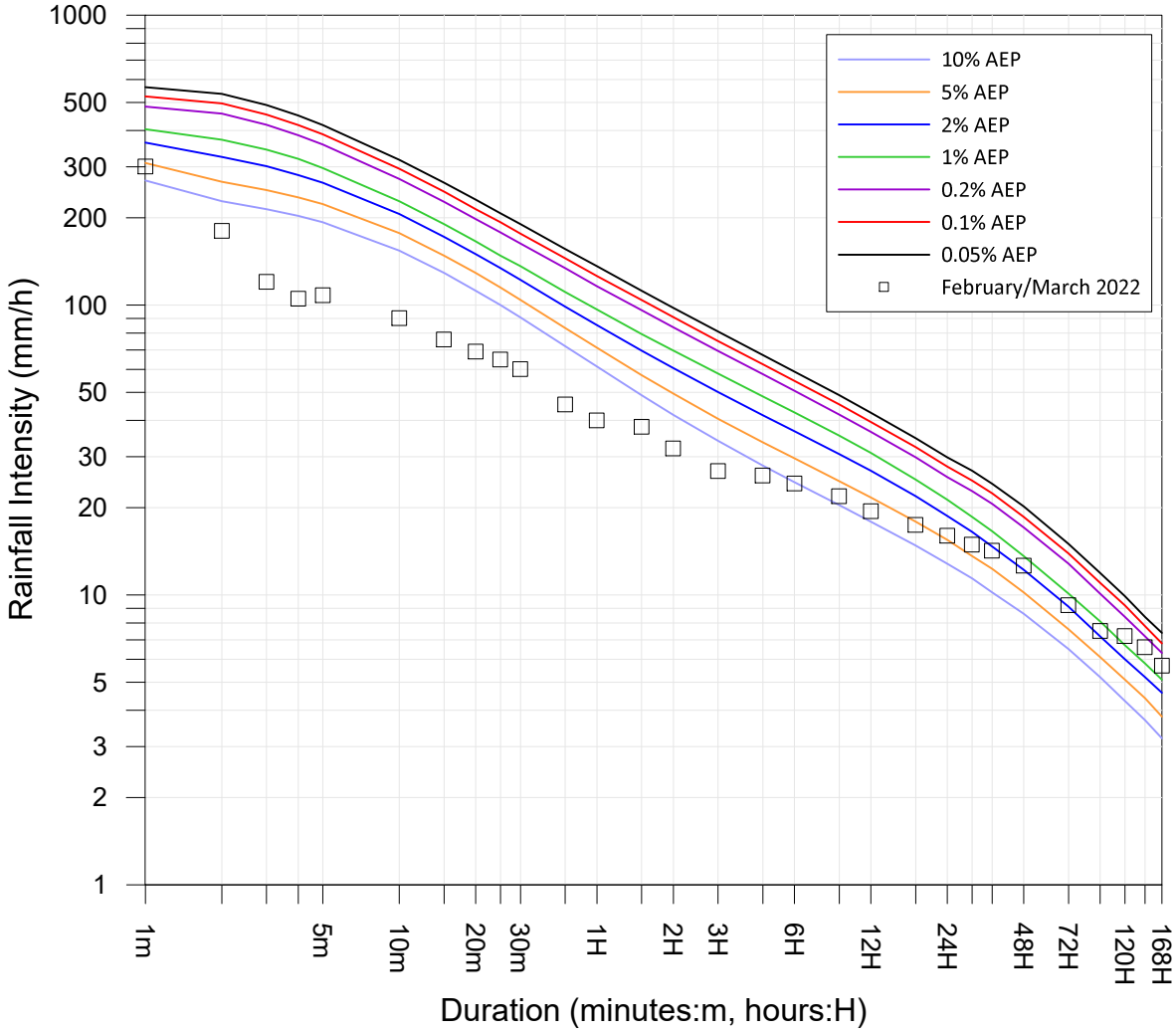
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.26

IFD_58129_Figure 4.26.pdf

Site Owner: BoM
Latitude: -28.3082 Longitude:153.2331

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	22:35 24 Feb 2022
2m	180	08:44 24 Feb 2022
3m	120	08:58 24 Feb 2022
4m	105	08:59 24 Feb 2022
5m	108	05:31 23 Feb 2022
10m	90	06:37 23 Feb 2022
15m	76	08:58 24 Feb 2022
20m	69	09:02 24 Feb 2022
25m	64.8	05:48 23 Feb 2022
30m	60	05:49 23 Feb 2022
45m	45.3	06:04 23 Feb 2022
1H	40	06:20 23 Feb 2022
1.5H	38	06:50 23 Feb 2022
2H	32	06:38 23 Feb 2022
3H	26.7	08:24 28 Feb 2022
5H	25.8	07:52 28 Feb 2022
6H	24.2	08:45 28 Feb 2022
9H	21.9	09:01 28 Feb 2022
12H	19.4	10:16 28 Feb 2022
18H	17.4	10:16 28 Feb 2022
24H	16	10:09 28 Feb 2022
30H	14.9	10:30 28 Feb 2022
36H	14.2	16:54 28 Feb 2022
48H	12.6	15:00 28 Feb 2022
72H	9.2	23:41 28 Feb 2022
96H	7.5	17:26 28 Feb 2022
120H	7.2	21:01 28 Feb 2022
144H	6.6	23:52 28 Feb 2022
168H	5.7	04:46 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LIMPINWOOD (BALD MOUNTAIN) (558032) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

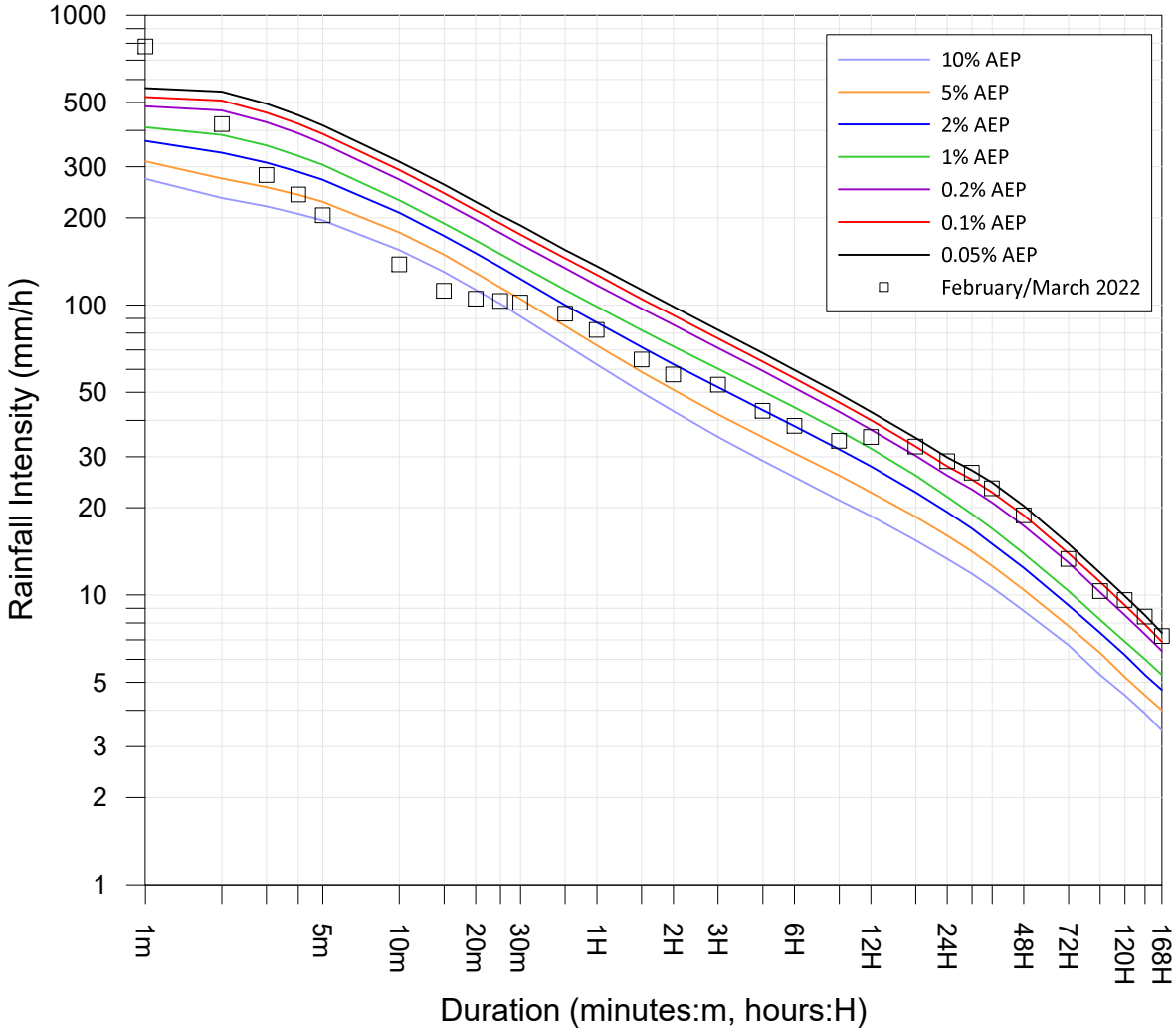
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.27

IFD_558032_Figure 4.27.pdf

Site Owner: Tweed Shire Council
Latitude: -28.434 Longitude:153.295

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	780	01:06 28 Feb 2022
2m	420	01:07 28 Feb 2022
3m	280	01:08 28 Feb 2022
4m	240	01:09 28 Feb 2022
5m	204	01:10 28 Feb 2022
10m	138	01:06 28 Feb 2022
15m	112	01:10 28 Feb 2022
20m	105	08:55 28 Feb 2022
25m	103.2	09:00 28 Feb 2022
30m	102	09:05 28 Feb 2022
45m	93.3	09:12 28 Feb 2022
1H	82	09:17 28 Feb 2022
1.5H	64.7	09:21 28 Feb 2022
2H	57.5	10:10 28 Feb 2022
3H	53	11:20 28 Feb 2022
5H	43.1	11:30 28 Feb 2022
6H	38.3	11:21 28 Feb 2022
9H	34	09:51 28 Feb 2022
12H	35	11:30 28 Feb 2022
18H	32.5	11:26 28 Feb 2022
24H	28.9	16:43 28 Feb 2022
30H	26.4	16:10 28 Feb 2022
36H	23.3	17:32 28 Feb 2022
48H	18.8	16:27 28 Feb 2022
72H	13.3	22:27 28 Feb 2022
96H	10.3	22:21 28 Feb 2022
120H	9.6	21:09 28 Feb 2022
144H	8.4	23:57 28 Feb 2022
168H	7.2	09:24 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

PALMERS ROAD (558018)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

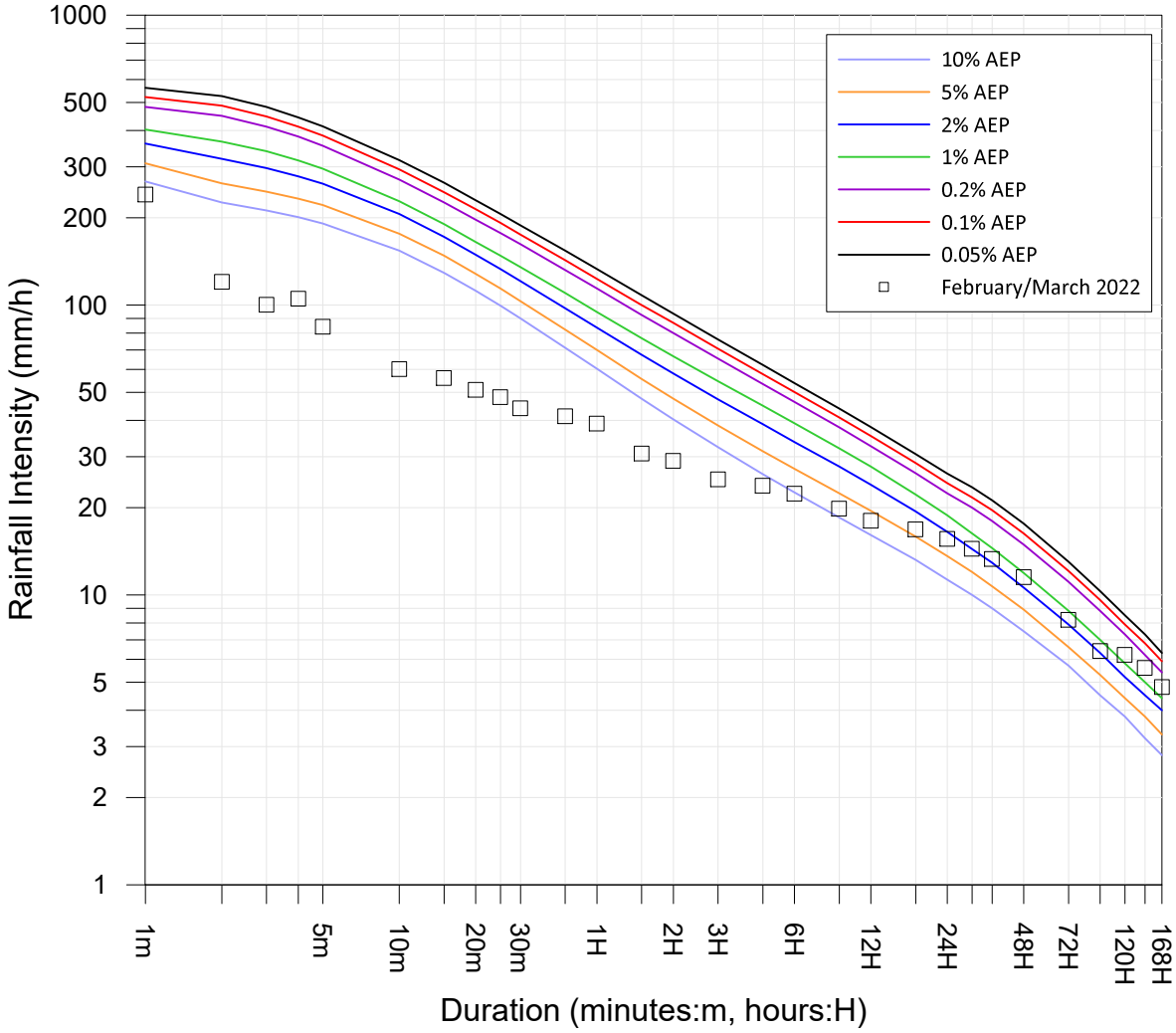
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.28

IFD_558018_Figure 4.28.pdf

Site Owner: Tweed Shire Council
Latitude: -28.359 Longitude:153.21

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	240	04:51 28 Feb 2022
2m	120	15:08 28 Feb 2022
3m	100	15:09 28 Feb 2022
4m	105	00:05 24 Feb 2022
5m	84	15:11 28 Feb 2022
10m	60	15:16 28 Feb 2022
15m	56	08:12 28 Feb 2022
20m	51	08:17 28 Feb 2022
25m	48	08:17 28 Feb 2022
30m	44	08:20 28 Feb 2022
45m	41.3	08:21 28 Feb 2022
1H	39	08:17 28 Feb 2022
1.5H	30.7	08:47 28 Feb 2022
2H	29	08:17 28 Feb 2022
3H	25	08:40 28 Feb 2022
5H	23.8	08:18 28 Feb 2022
6H	22.3	08:56 28 Feb 2022
9H	19.8	08:52 28 Feb 2022
12H	18	10:21 28 Feb 2022
18H	16.8	10:32 28 Feb 2022
24H	15.6	10:29 28 Feb 2022
30H	14.4	15:22 28 Feb 2022
36H	13.3	17:29 28 Feb 2022
48H	11.5	15:36 28 Feb 2022
72H	8.2	18:16 28 Feb 2022
96H	6.4	16:35 28 Feb 2022
120H	6.2	15:38 28 Feb 2022
144H	5.6	04:53 01 Mar 2022
168H	4.8	05:29 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

TYALGUM BRIDGE (TYALGUM RIVER) (558088) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

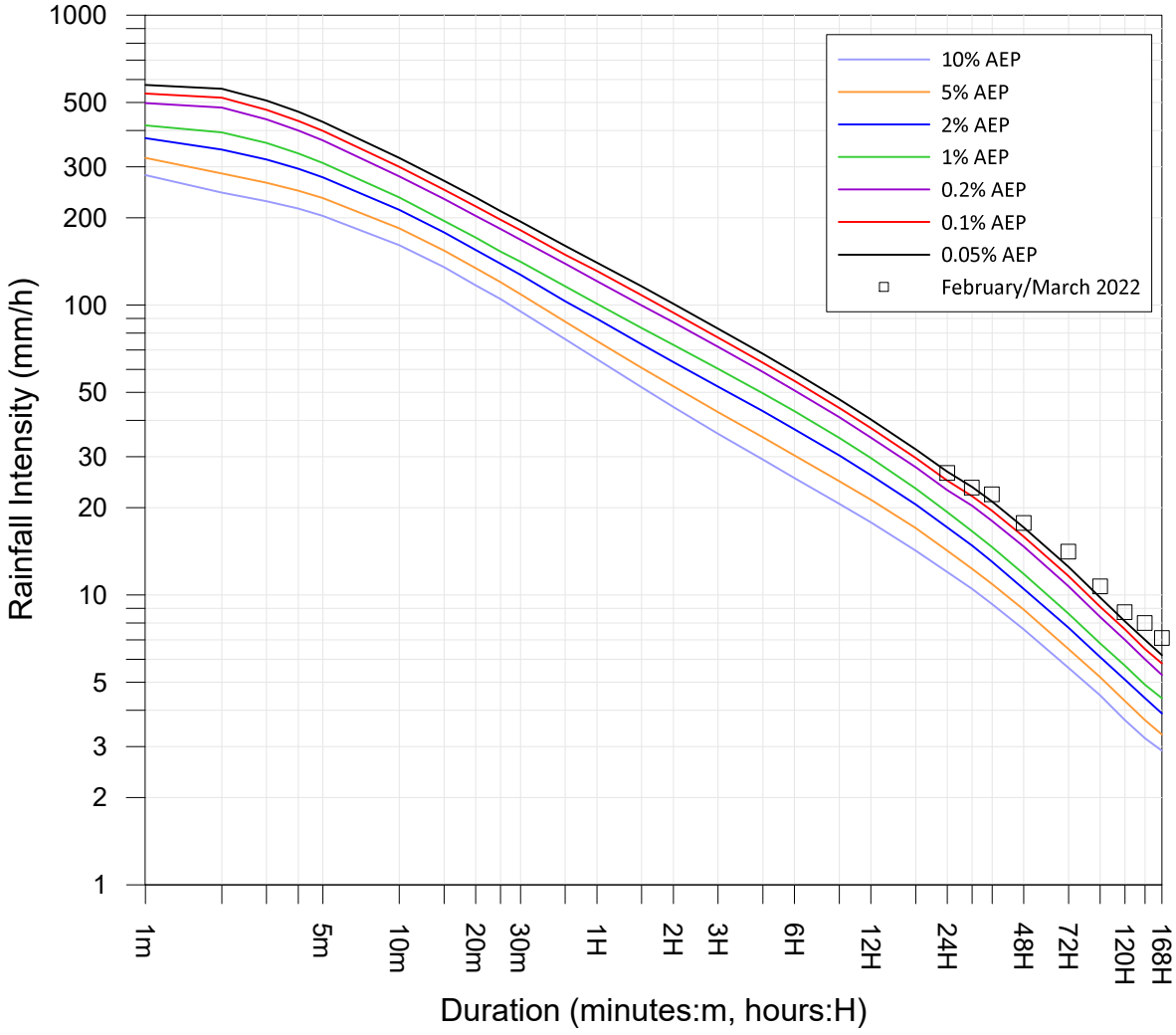
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.29

IFD_558088_Figure 4.29.pdf

Site Owner: Tweed Shire Council
Latitude: -28.4372 Longitude:153.4729

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	26.3	13:40 28 Feb 2022
30H	23.4	13:09 28 Feb 2022
36H	22.2	10:58 01 Mar 2022
48H	17.7	10:51 01 Mar 2022
72H	14.1	15:21 01 Mar 2022
96H	10.7	04:37 02 Mar 2022
120H	8.7	10:44 03 Mar 2022
144H	8	14:53 01 Mar 2022
168H	7.1	18:11 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BURRINGBAR (558083)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

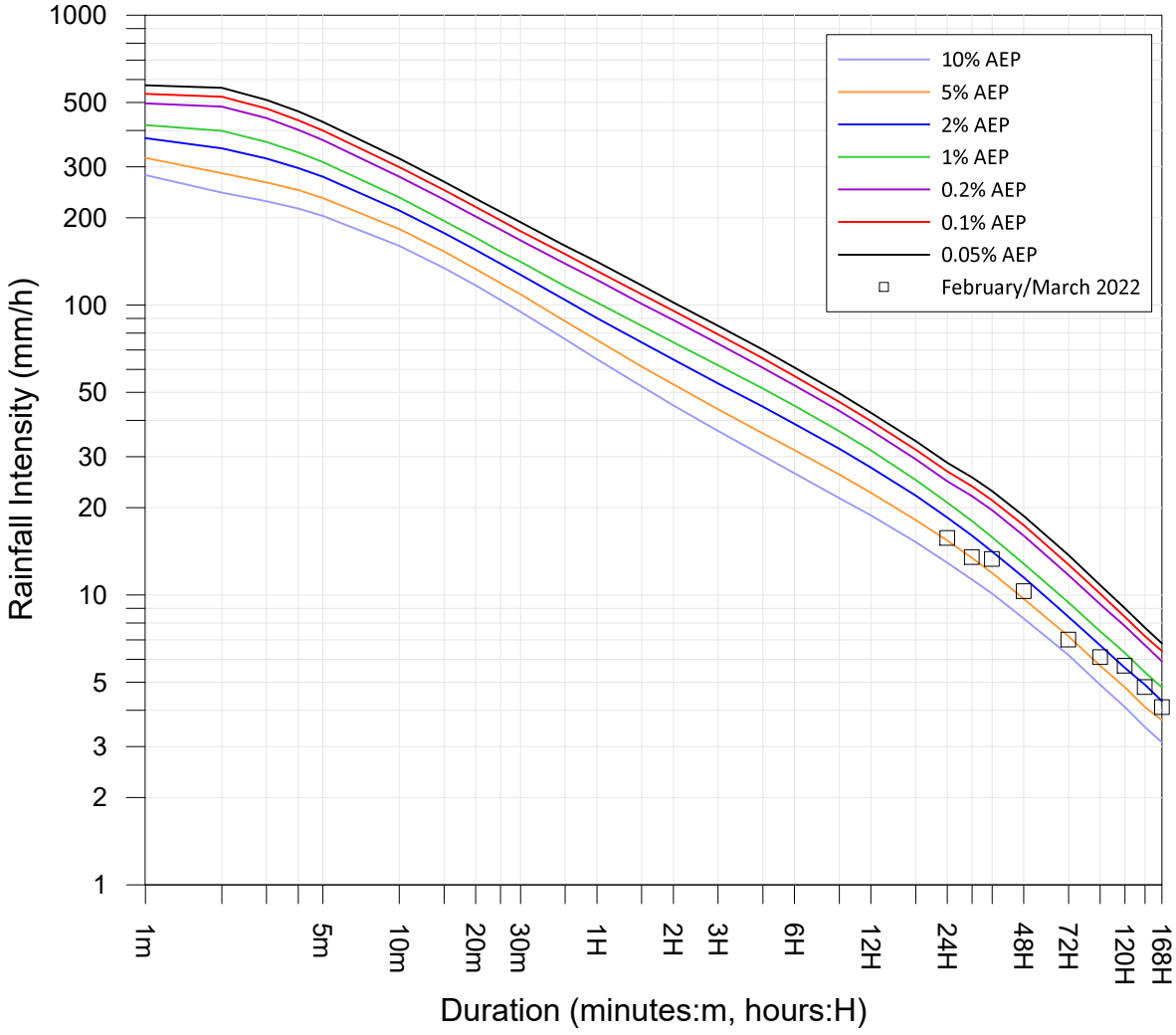
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.30

IFD_558083_Figure 4.30.pdf

Site Owner: Tweed Shire Council
Latitude: -28.444 Longitude:153.442

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	15.7	03:13 28 Feb 2022
30H	13.5	02:49 28 Feb 2022
36H	13.3	02:51 28 Feb 2022
48H	10.3	04:30 28 Feb 2022
72H	7	03:23 28 Feb 2022
96H	6.1	03:28 28 Feb 2022
120H	5.7	03:59 28 Feb 2022
144H	4.8	08:48 28 Feb 2022
168H	4.1	08:48 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.
Rainfall station failed at 02:47 28 February 2022.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BURRINGBAR RD (BURRINGBAR CREEK) (558106)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

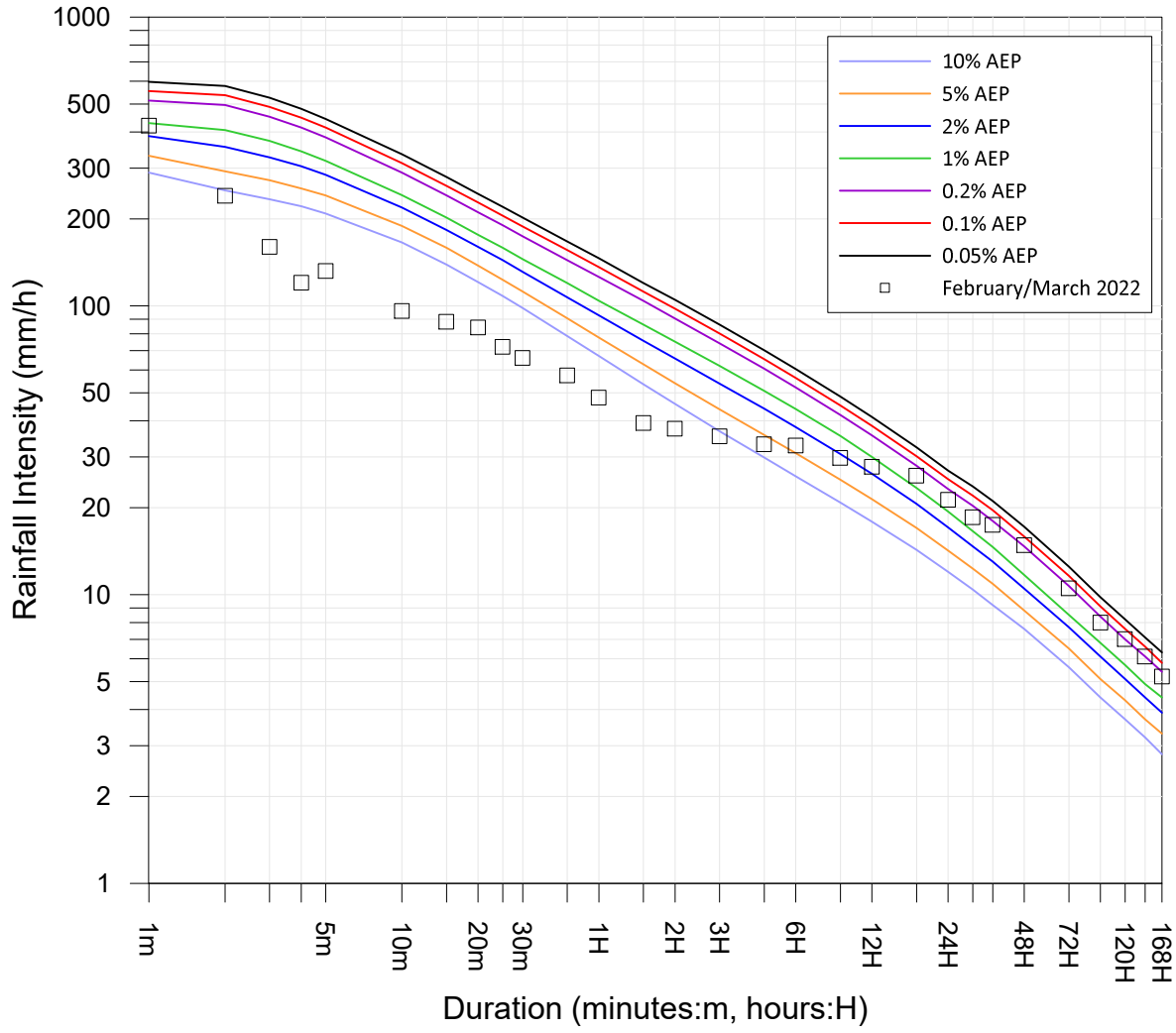
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.31

IFD_558106_Figure 4.31.pdf

Site Owner: Tweed Shire Council
Latitude: -28.336 Longitude:153.476

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	420	04:39 28 Feb 2022
2m	240	04:40 28 Feb 2022
3m	160	04:41 28 Feb 2022
4m	120	11:10 28 Feb 2022
5m	132	10:27 28 Feb 2022
10m	96	04:57 28 Feb 2022
15m	88	04:53 28 Feb 2022
20m	84	04:58 28 Feb 2022
25m	72	05:03 28 Feb 2022
30m	66	04:58 28 Feb 2022
45m	57.3	05:05 28 Feb 2022
1H	48	05:20 28 Feb 2022
1.5H	39.3	11:42 28 Feb 2022
2H	37.5	02:22 28 Feb 2022
3H	35.3	02:18 28 Feb 2022
5H	33.1	01:40 28 Feb 2022
6H	32.8	02:35 28 Feb 2022
9H	29.7	05:15 28 Feb 2022
12H	27.7	08:15 28 Feb 2022
18H	25.8	13:16 28 Feb 2022
24H	21.3	17:00 28 Feb 2022
30H	18.5	14:37 28 Feb 2022
36H	17.4	16:59 28 Feb 2022
48H	14.8	14:38 28 Feb 2022
72H	10.5	14:07 01 Mar 2022
96H	8	02:57 01 Mar 2022
120H	7	20:21 28 Feb 2022
144H	6.1	03:37 01 Mar 2022
168H	5.2	03:37 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CLOTHIERS CREEK (558082)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

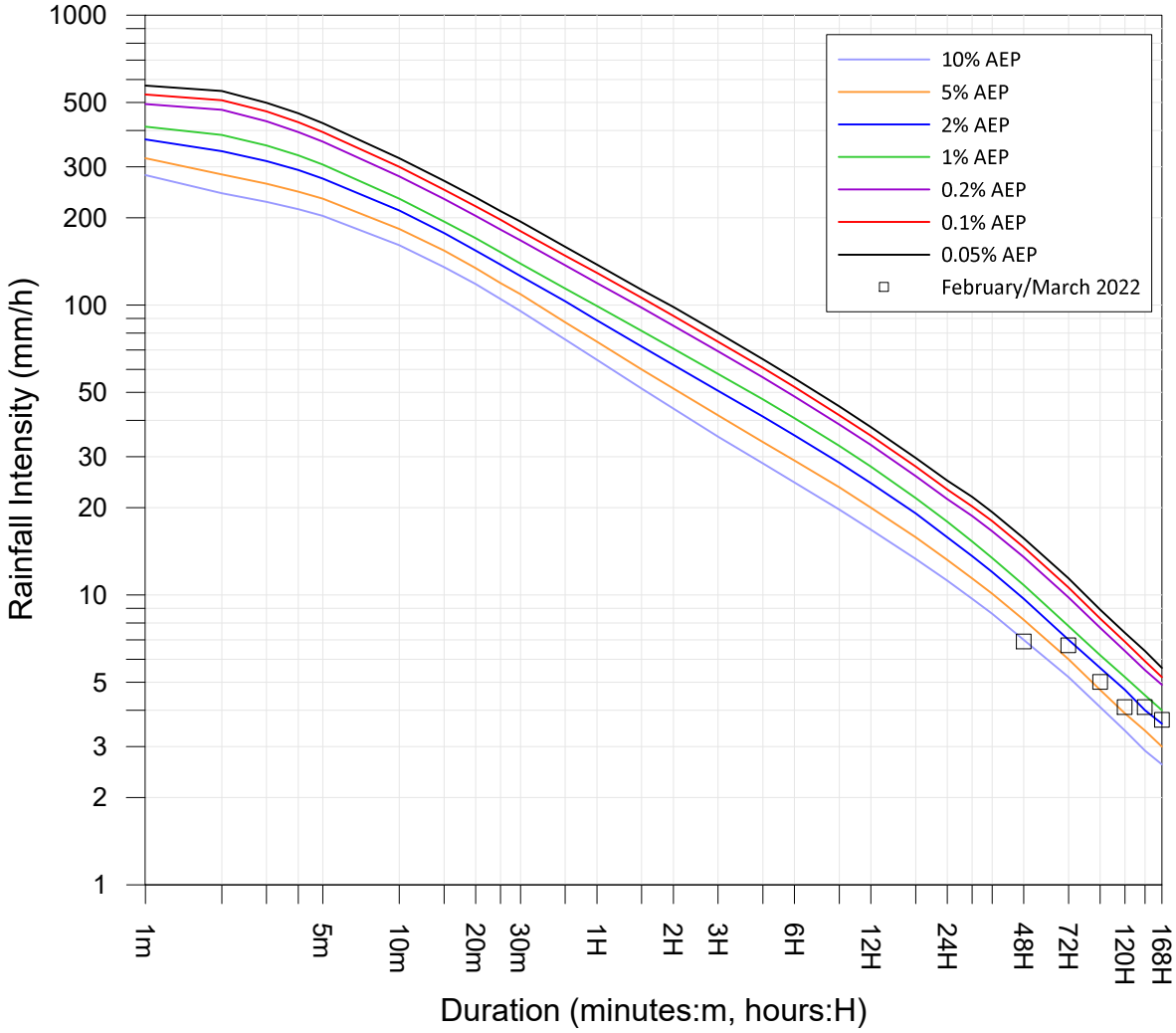
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.32

IFD_558082_Figure 4.32.pdf

Site Owner: North Byron Parklands
Latitude: -28.467 Longitude:153.53

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	-	-
30H	-	-
36H	-	-
48H	6.9	14:03 03 Mar 2022
72H	6.7	14:07 01 Mar 2022
96H	5	04:27 02 Mar 2022
120H	4.1	13:47 03 Mar 2022
144H	4.1	14:24 01 Mar 2022
168H	3.7	03:54 02 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

WOOYUNG RD (CRABBES CREEK) (558095)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

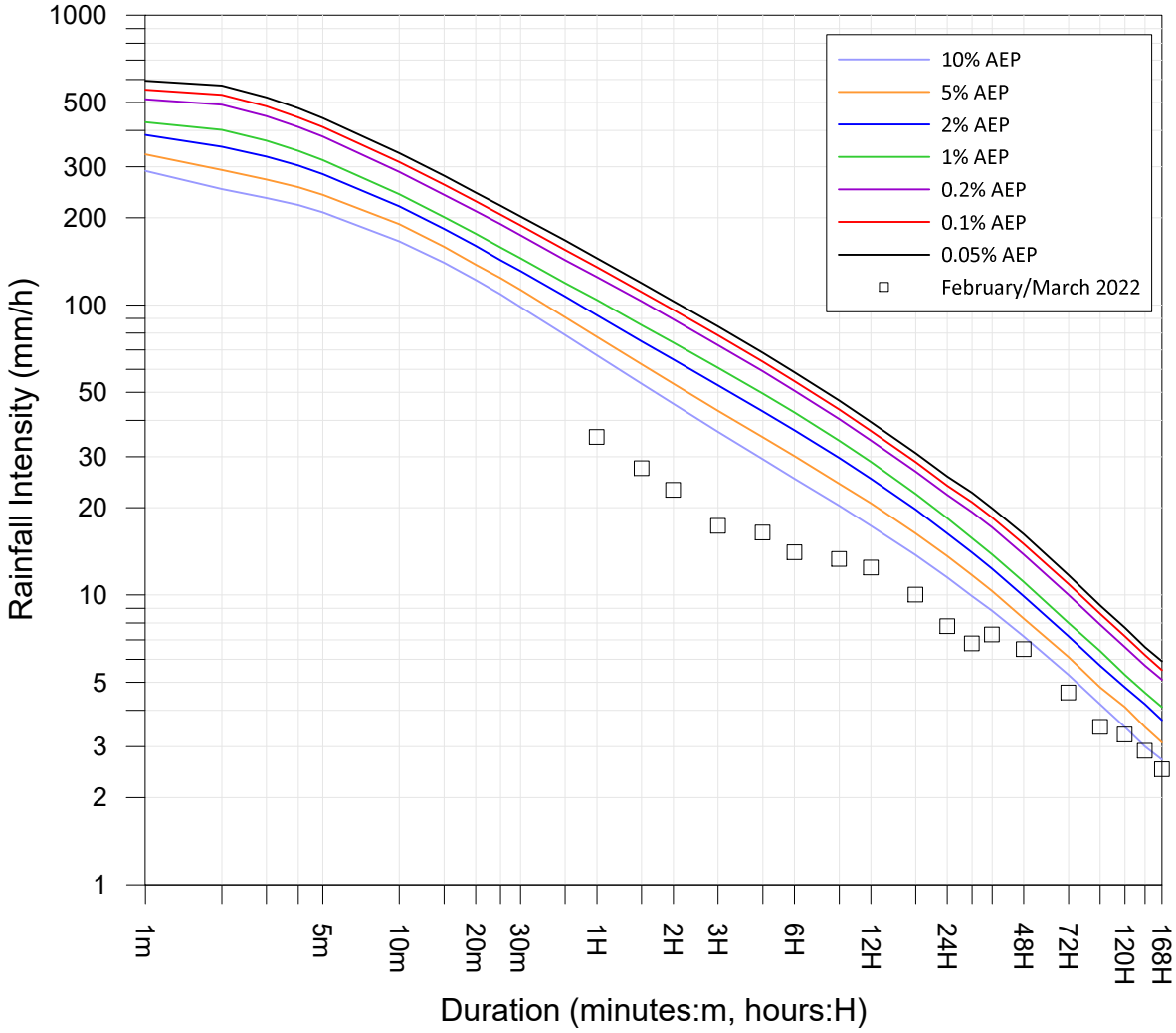
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.33

IFD_558095_Figure 4.33.pdf

Site Owner: Tweed Shire Council
Latitude: -28.353 Longitude:153.56

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	35	05:16 28 Feb 2022
1.5H	27.3	05:46 28 Feb 2022
2H	23	12:56 28 Feb 2022
3H	17.3	13:39 28 Feb 2022
5H	16.4	15:09 28 Feb 2022
6H	14	14:56 28 Feb 2022
9H	13.3	13:16 28 Feb 2022
12H	12.4	16:16 28 Feb 2022
18H	10	17:07 28 Feb 2022
24H	7.8	20:07 28 Feb 2022
30H	6.8	15:16 28 Feb 2022
36H	7.3	14:52 28 Feb 2022
48H	6.5	14:52 28 Feb 2022
72H	4.6	13:42 01 Mar 2022
96H	3.5	23:14 28 Feb 2022
120H	3.3	20:14 28 Feb 2022
144H	2.9	03:40 01 Mar 2022
168H	2.5	18:10 28 Feb 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

HASTINGS (SEWERAGE TREATMENT PLANT) (558091) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

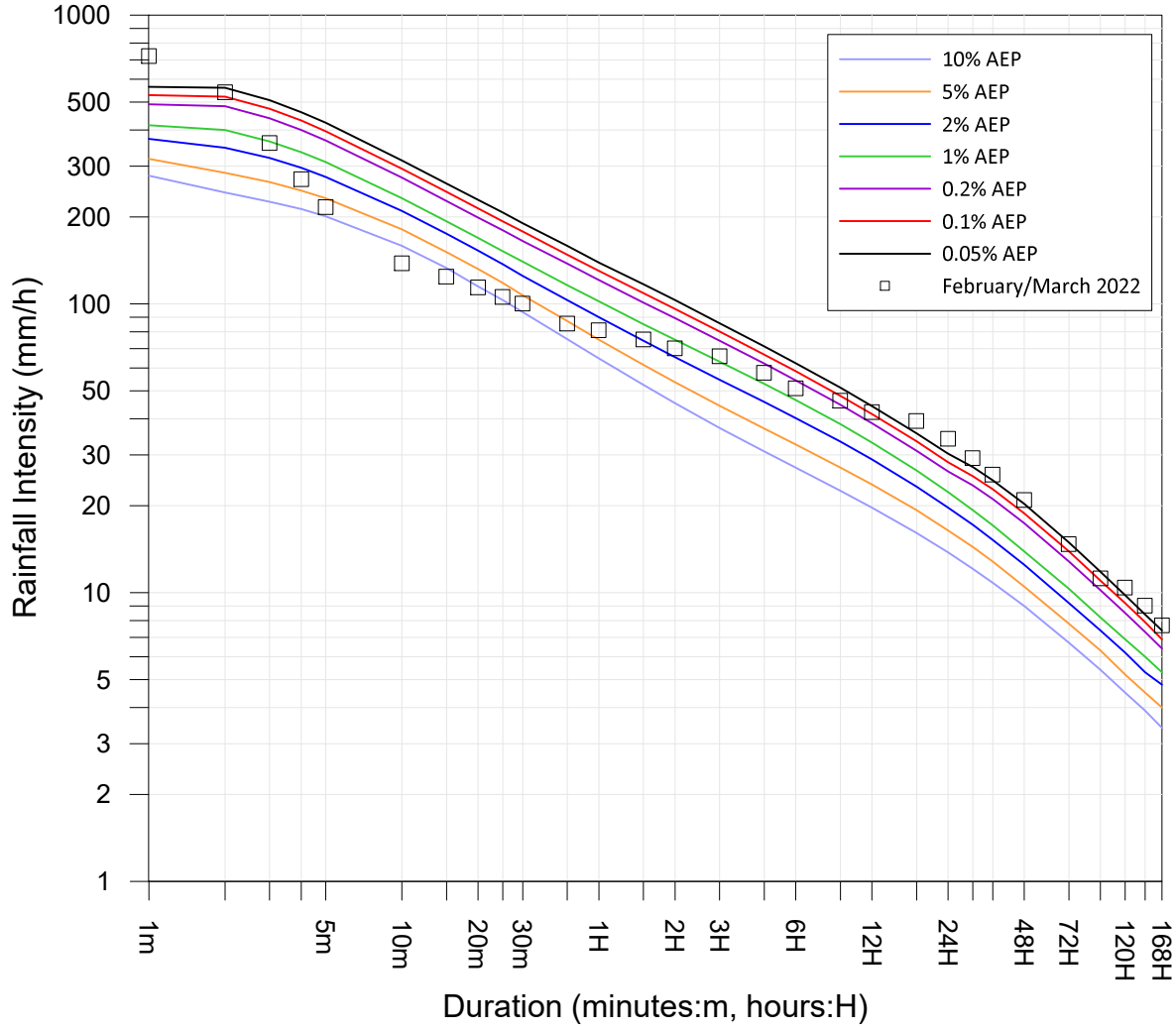
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.34

IFD_558091_Figure 4.34.pdf

Site Owner: Tweed Shire Council
Latitude: -28.4531 Longitude:153.406

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	720	09:53 28 Feb 2022
2m	540	09:53 28 Feb 2022
3m	360	09:54 28 Feb 2022
4m	270	09:55 28 Feb 2022
5m	216	09:56 28 Feb 2022
10m	138	14:08 28 Feb 2022
15m	124	14:11 28 Feb 2022
20m	114	05:30 28 Feb 2022
25m	105.6	05:35 28 Feb 2022
30m	100	05:40 28 Feb 2022
45m	85.3	05:55 28 Feb 2022
1H	81	12:46 28 Feb 2022
1.5H	75.3	12:47 28 Feb 2022
2H	70	12:52 28 Feb 2022
3H	65.7	14:14 28 Feb 2022
5H	57.6	14:21 28 Feb 2022
6H	51	15:51 28 Feb 2022
9H	46.1	14:10 28 Feb 2022
12H	42.1	14:14 28 Feb 2022
18H	39.3	14:21 28 Feb 2022
24H	34.1	16:58 28 Feb 2022
30H	29.2	17:02 28 Feb 2022
36H	25.6	17:01 28 Feb 2022
48H	20.9	16:24 28 Feb 2022
72H	14.7	04:34 01 Mar 2022
96H	11.2	02:29 01 Mar 2022
120H	10.4	20:58 28 Feb 2022
144H	9	23:15 28 Feb 2022
168H	7.7	21:38 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

UPPER BURRINGBAR RD (558107)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

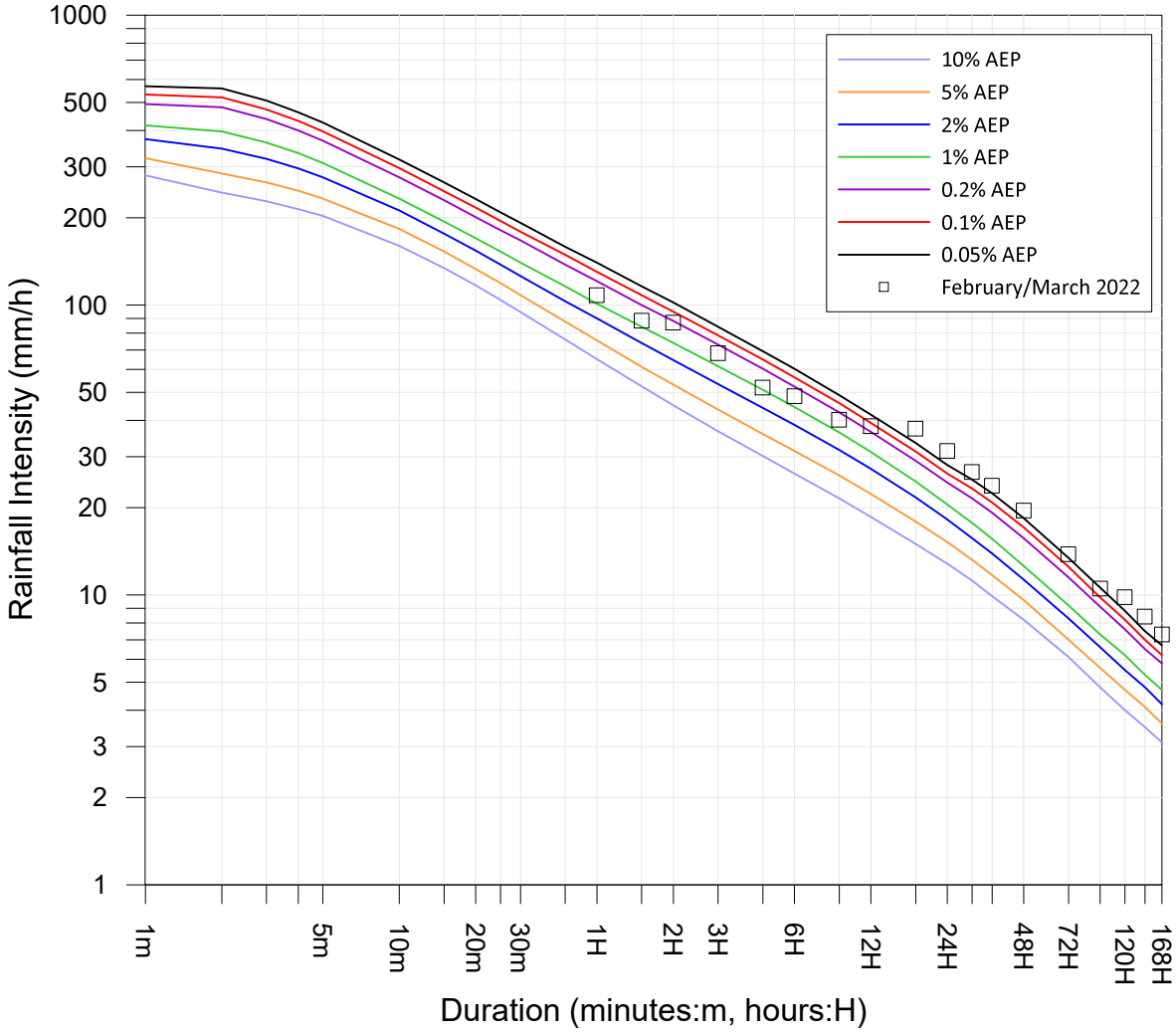
Manly Hydraulics Laboratory

Report MHL2880
Figure
4.35

IFD_558107_Figure 4.35.pdf

Site Owner: North Byron Parklands
Latitude: -28.4635 Longitude:153.4526

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	108	01:55 28 Feb 2022
1.5H	88.3	02:35 28 Feb 2022
2H	86.8	02:58 28 Feb 2022
3H	68.2	03:17 28 Feb 2022
5H	51.8	05:28 28 Feb 2022
6H	48.4	06:58 28 Feb 2022
9H	40.2	07:19 28 Feb 2022
12H	38.2	13:05 28 Feb 2022
18H	37.4	13:53 28 Feb 2022
24H	31.3	18:22 28 Feb 2022
30H	26.5	16:23 28 Feb 2022
36H	23.8	16:52 28 Feb 2022
48H	19.5	16:22 28 Feb 2022
72H	13.8	13:53 01 Mar 2022
96H	10.5	02:38 01 Mar 2022
120H	9.8	20:47 28 Feb 2022
144H	8.4	04:08 01 Mar 2022
168H	7.3	21:00 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

UPPER CRABBES CREEK (CRABBES CREEK RD) (558094)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
4.36

IFD_558094_Figure 4.36.pdf

5 Brunswick River region

5.1 Brunswick River region – water level

The peak observed water levels for the Brunswick River region are listed in **Table 5.1**. **Table 5.2** lists the SES flood classifications for Billinudgel and Mullumbimby (BoM, 2013). The locations of water level stations within the Brunswick River region are shown in **Figure 5.1**. The water level data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 5.2** to **Figure 5.10**.

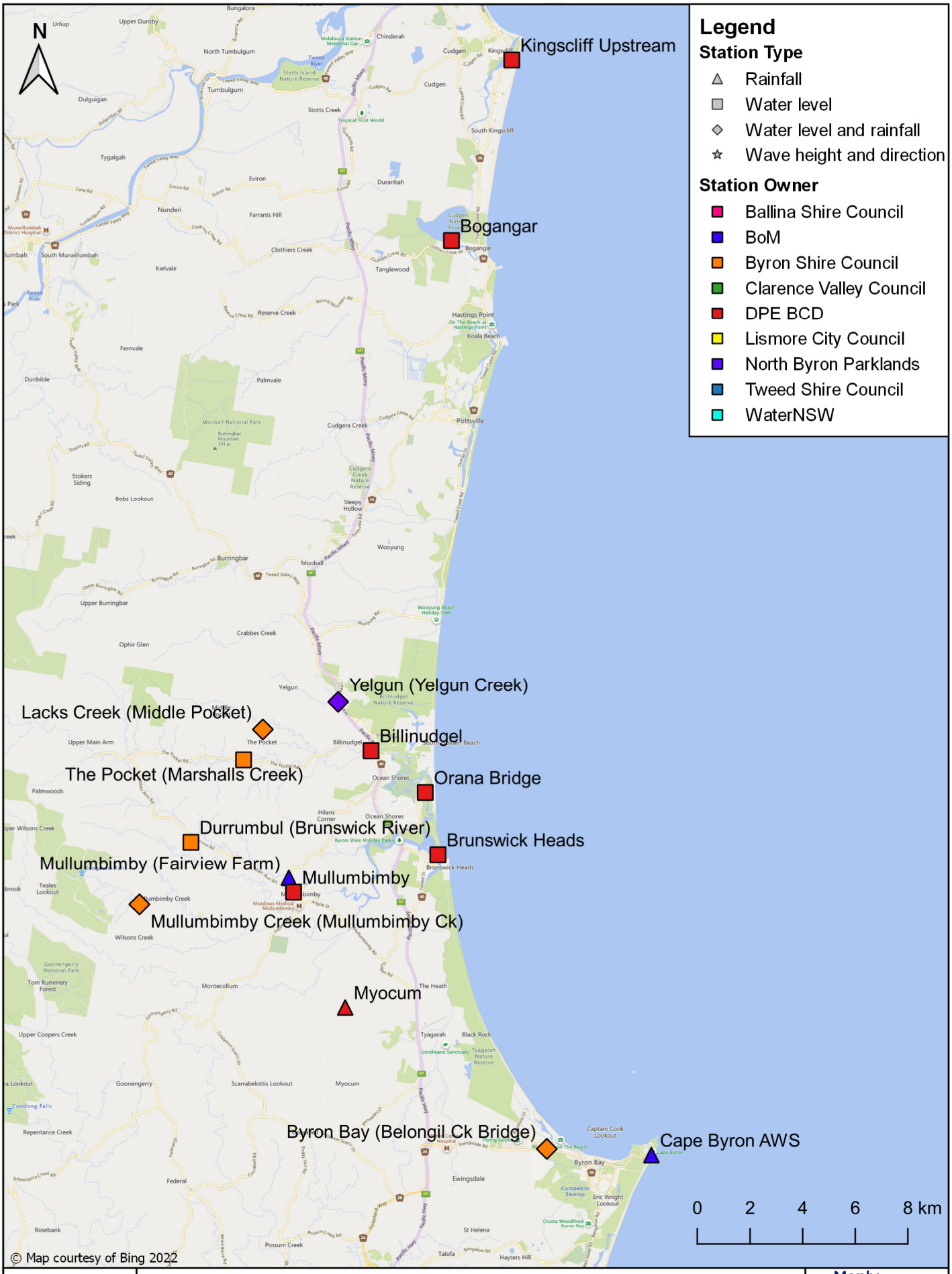
Table 5.1 Brunswick River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Kingscliff Upstream	202434	DPE BCD	AHD	1.46	01/03/2022 07:15
Bogangar	202416	DPE BCD	AHD	3.71	28/02/2022 19:00
Yelgun (Yelgun Creek)*	558096	North Byron Parklands	Local	-	-
Lacks Creek (Middle Pocket)*	558005	Byron Shire Council	Local	-	-
Billinudgel	202400	DPE BCD	AHD	4.28	28/02/2022 09:00
The Pocket (Marshalls Creek)*	558004	Byron Shire Council	Local	-	-
Orana Bridge	202475	DPE BCD	AHD	2.83	28/02/2022 19:45
Durrumbul (Brunswick River)	202001	WaterNSW	Local	5.71	28/02/2022 03:45
Brunswick Heads	202403	DPE BCD	AHD	1.77	28/02/2022 19:15
Mullumbimby	202402	DPE BCD	AHD	4.96	28/02/2022 05:45
Mullumbimby Creek (Mullumbimby Creek)*	558008	Byron Shire Council	Local	-	-
Byron Bay (Belongil Creek Bridge)	558099	Byron Shire Council	Local	1.68	01/03/2022 07:22

*Flood peak not captured due to missing water level data from 27/02/2022 – 01/03/2022.

Table 5.2 SES flood classification for Brunswick River region stations

Station name	Station number		Flood classification			Flood peak (m)	Datum	Flood event classification
	Bureau number	AWRC number	Minor	Moderate	Major			
			Water level (m)					
Billinudgel	558020	202400	2.48	2.98	3.48	4.28	AHD	Major
Mullumbimby	558006	202402	2.49	3.49	4.49	4.96	AHD	Major



NSW GOVERNMENT

BRUNSWICK RIVER STATIONS

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.1

Figures_MHL2880.qgs

5.2 Brunswick River region – rainfall

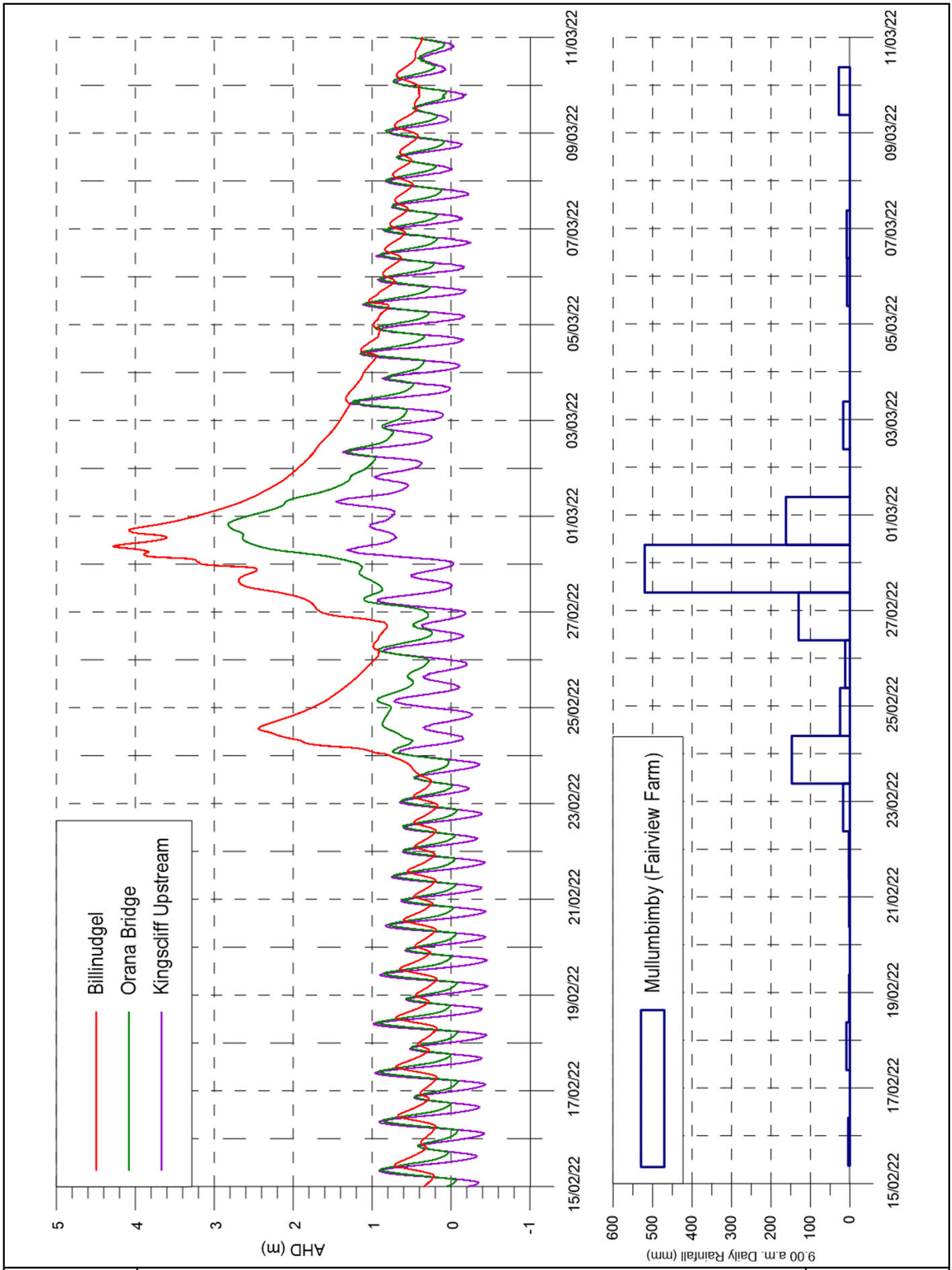
The water level and rainfall data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 5.2** to **Figure 5.10**. 24-hour rainfall totals up until 9:00 a.m. are displayed in **Table 5.3** and **Table 5.4** for the period 15 February to 11 March 2022. The rainfall intensities are displayed graphically in **Figure 5.11** to **Figure 5.17**, in ARR2019 format. Appendix C provides ARR1987 format.

Table 5.3 Brunswick River region daily rainfall totals

Date	Yelgun (Yelgun Creek) 558096 (mm)	Lacks Creek (Middle Pocket) 558005 (mm)	Mullumbimby (Upper Main Arm) 558034 (mm)	Mullumbimby (Fairview Farm) 58040 (mm)
	North Byron Parklands	Byron Shire Council	BoM	BoM
15/02/2022	7.0	6.0	9.0	18.8
16/02/2022	6.5	6.0	6.0	4.2
17/02/2022	0.0	0.0	0.0	0.0
18/02/2022	0.0	0.0	0.0	8.8
19/02/2022	1.5	2.0	11.0	2.0
20/02/2022	16.0	8.0	10.0	0.0
21/02/2022	0.5	1.0	0.0	2.0
22/02/2022	0.5	1.0	1.0	2.4
23/02/2022	20.0	24.0	33.0	17.0
24/02/2022	111.5	137.0	192.0	147.0
25/02/2022	12.5	16.0	47.0	24.8
26/02/2022	2.0	9.0	36.0	11.8
27/02/2022	118.5	132.0	163.0	130.0
28/02/2022	47.5	56.0	547.0	520.0
01/03/2022	---	---	391.0	162.0
02/03/2022	350.5	569.0	5.0	0.0
03/03/2022	11.0	10.0	18.0	16.8
04/03/2022	0.5	0.0	1.0	0.0
05/03/2022	11.5	7.0	5.0	0.0
06/03/2022	1.5	2.0	2.0	7.0
07/03/2022	4.0	3.0	8.0	8.0
08/03/2022	0.0	0.0	0.0	0.0
09/03/2022	0.0	0.0	0.0	0.0
10/03/2022	19.0	5.0	6.0	28.0
11/03/2022	8.0	3.0	5.0	5.0

Table 5.4 Brunswick River region daily rainfall totals (cont.)

Date	Mullumbimby Creek (Mullumbimby Creek)	Myocum	Byron Bay (Belongil Creek Bridge)	Cape Byron AWS
	558008 (mm)	558036 (mm)	558099 (mm)	58216 (mm)
	Byron Shire Council	DPE BCD	Byron Shire Council	BoM
15/02/2022	17.0	22.0	22.0	13.6
16/02/2022	9.0	0.0	0.5	0.8
17/02/2022	0.0	0.0	0.0	0.2
18/02/2022	0.0	8.8	0.0	0.0
19/02/2022	3.0	2.0	1.0	0.4
20/02/2022	4.0	8.5	6.0	1.8
21/02/2022	7.0	0.5	0.5	0.0
22/02/2022	1.0	5.5	0.5	2.8
23/02/2022	23.0	25.5	29.5	26.4
24/02/2022	185.0	154.0	77.0	52.6
25/02/2022	10.0	7.5	10.0	8.6
26/02/2022	20.0	21.5	8.5	4.6
27/02/2022	117.0	113.5	163.5	63.4
28/02/2022	558.0	278.0	164.0	117.8
01/03/2022	107.0	85.5	94.0	74.6
02/03/2022	141.0	4.0	1.0	1.4
03/03/2022	15.0	8.0	9.0	7.6
04/03/2022	0.0	0.5	2.5	0.8
05/03/2022	20.0	2.5	8.5	13.2
06/03/2022	0.0	10.5	4.5	2.2
07/03/2022	10.0	13.0	10.0	16.2
08/03/2022	0.0	0.0	0.0	0.0
09/03/2022	0.0	0.0	0.0	0.0
10/03/2022	34.0	39.5	16.5	6.4
11/03/2022	8.0	10.5	11.0	11.4



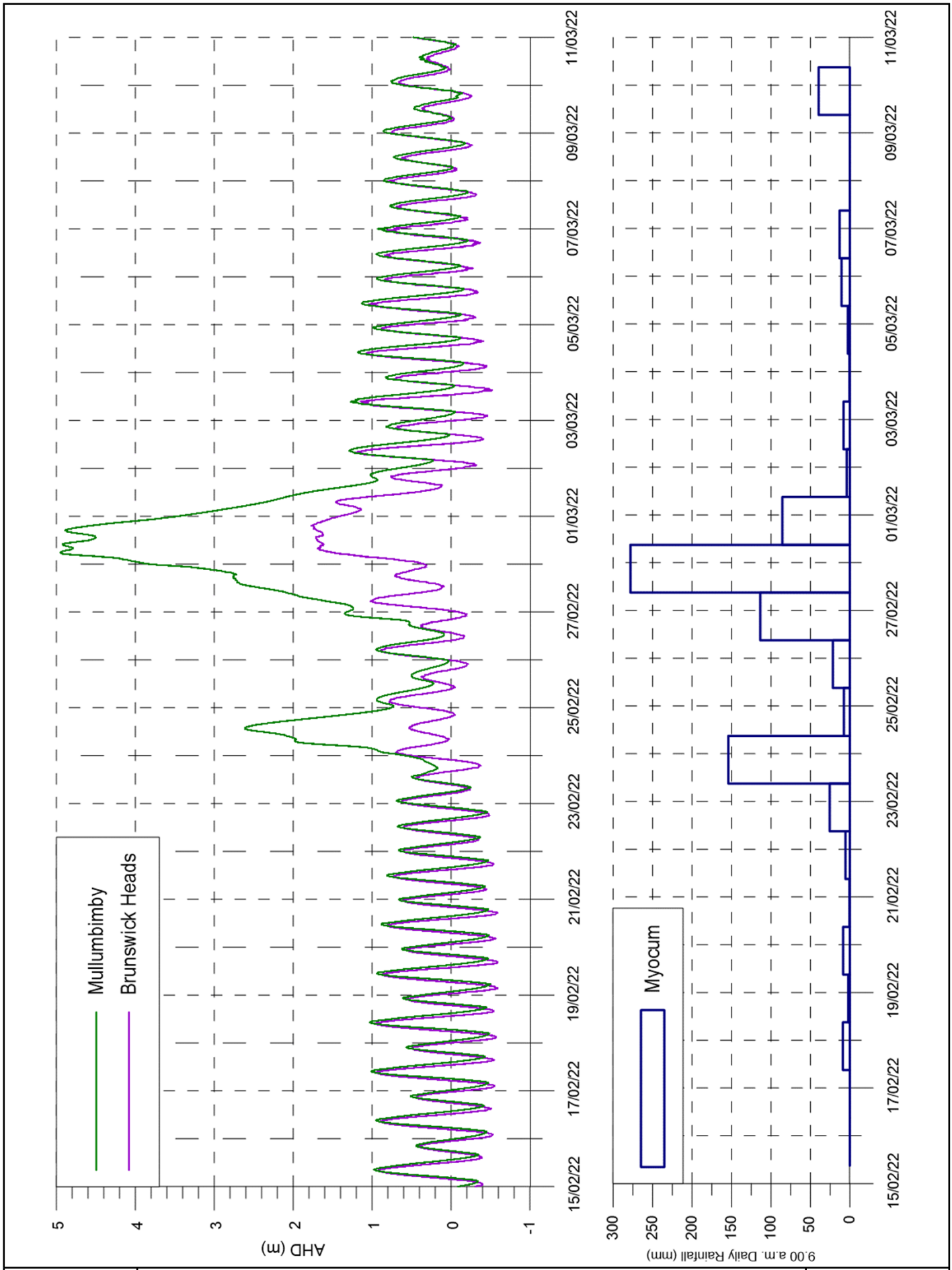
NSW GOVERNMENT

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.2

5.2.GRF



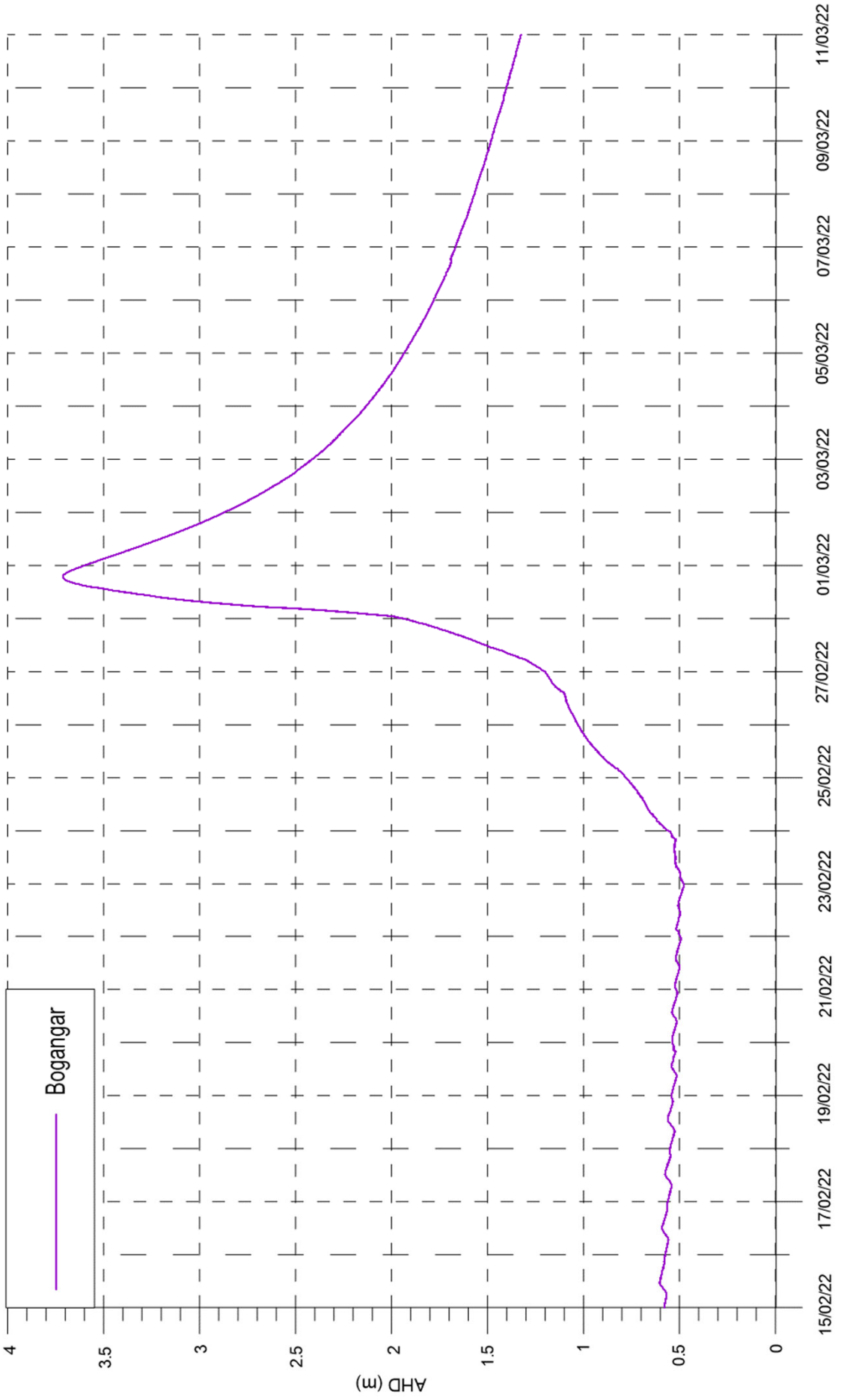
NSW GOVERNMENT

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.3

5.3.GRF



NSW GOVERNMENT

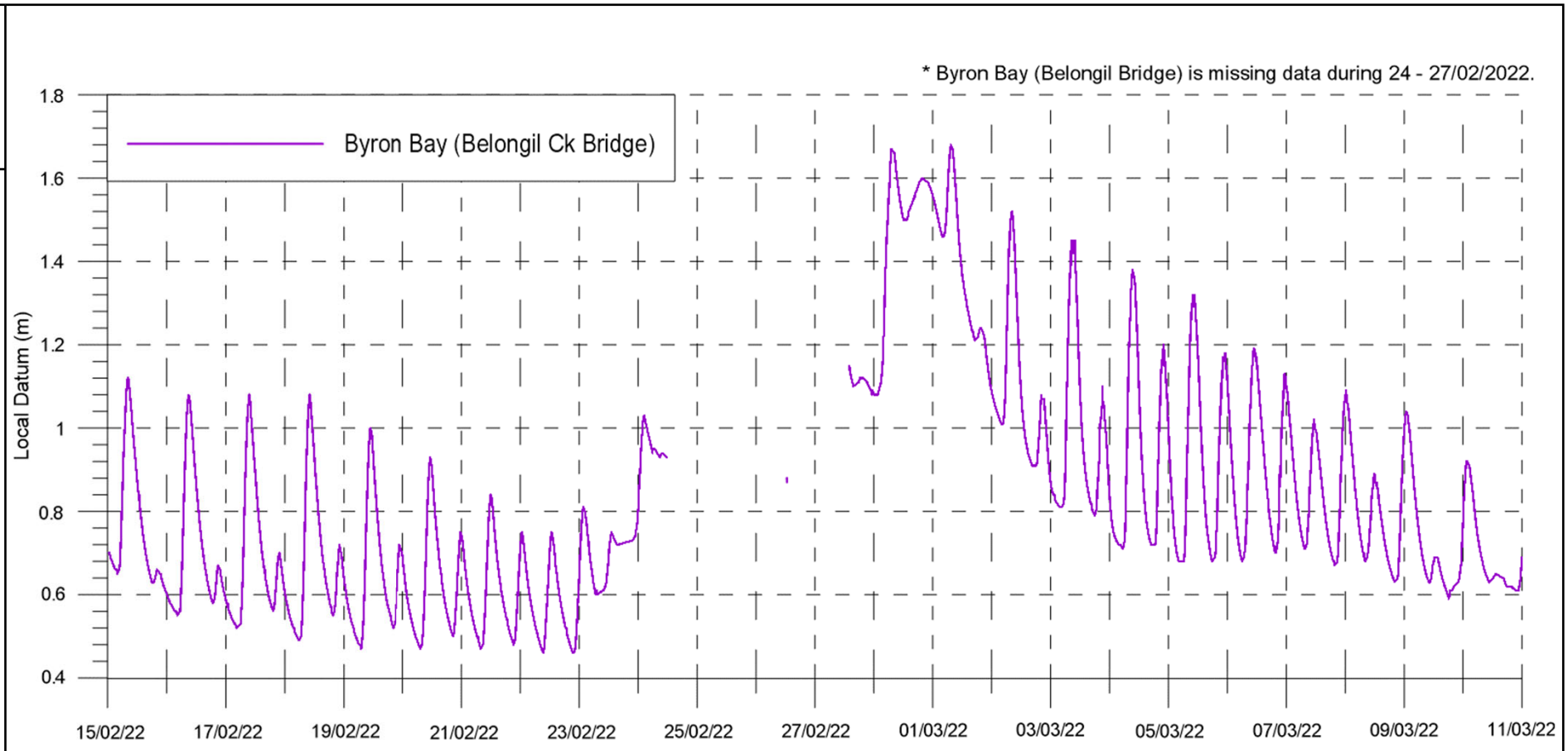
BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

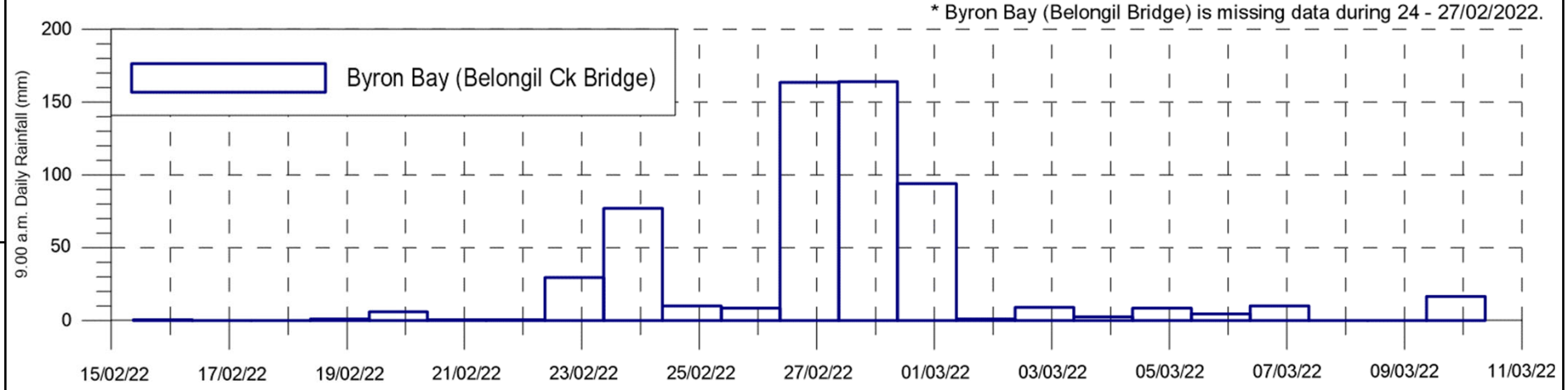
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.4

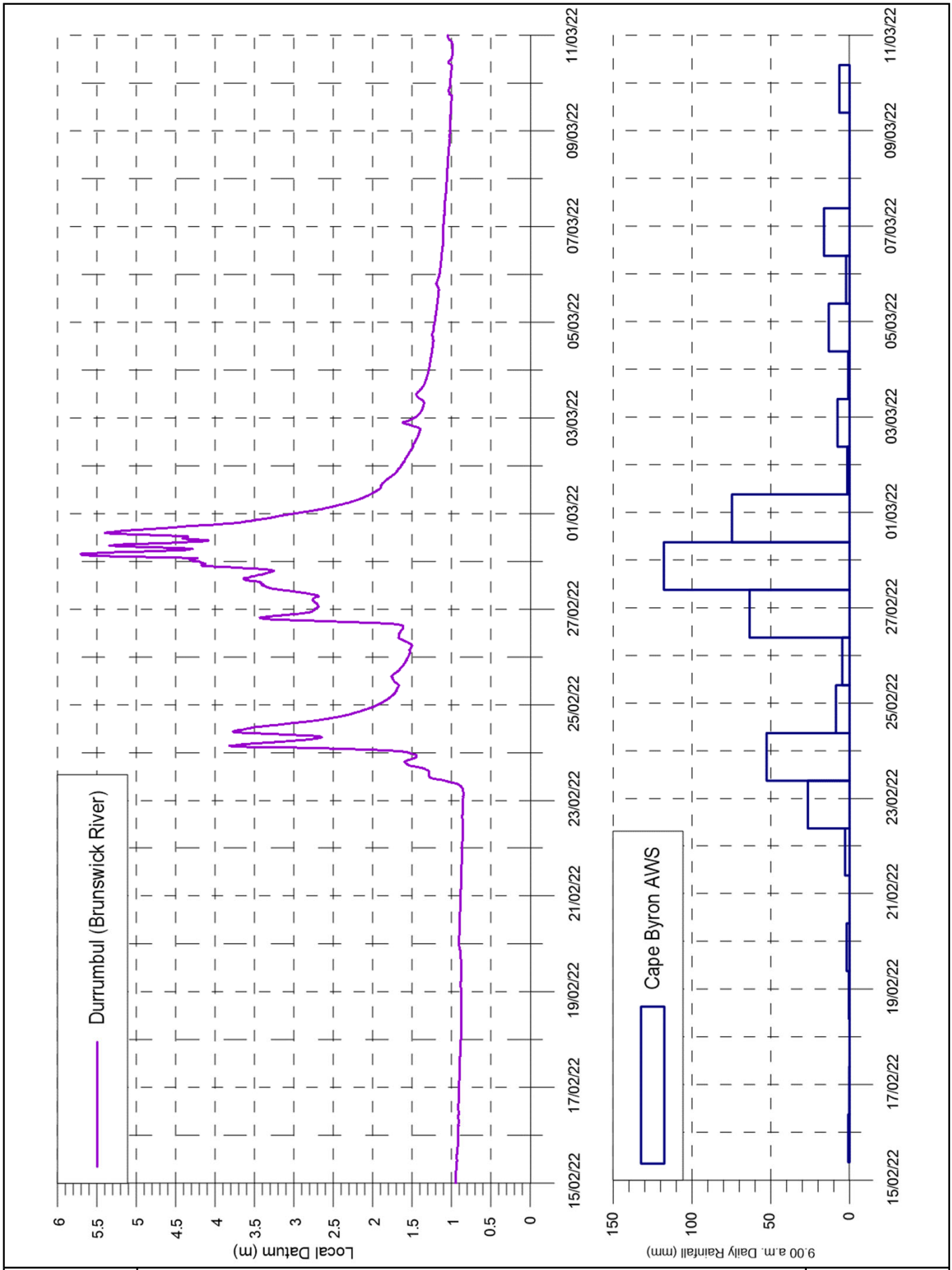
5.4.GRF

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022





Manly Hydraulics Laboratory
Report MHL2880
Figure 5.5
5.5.GRF



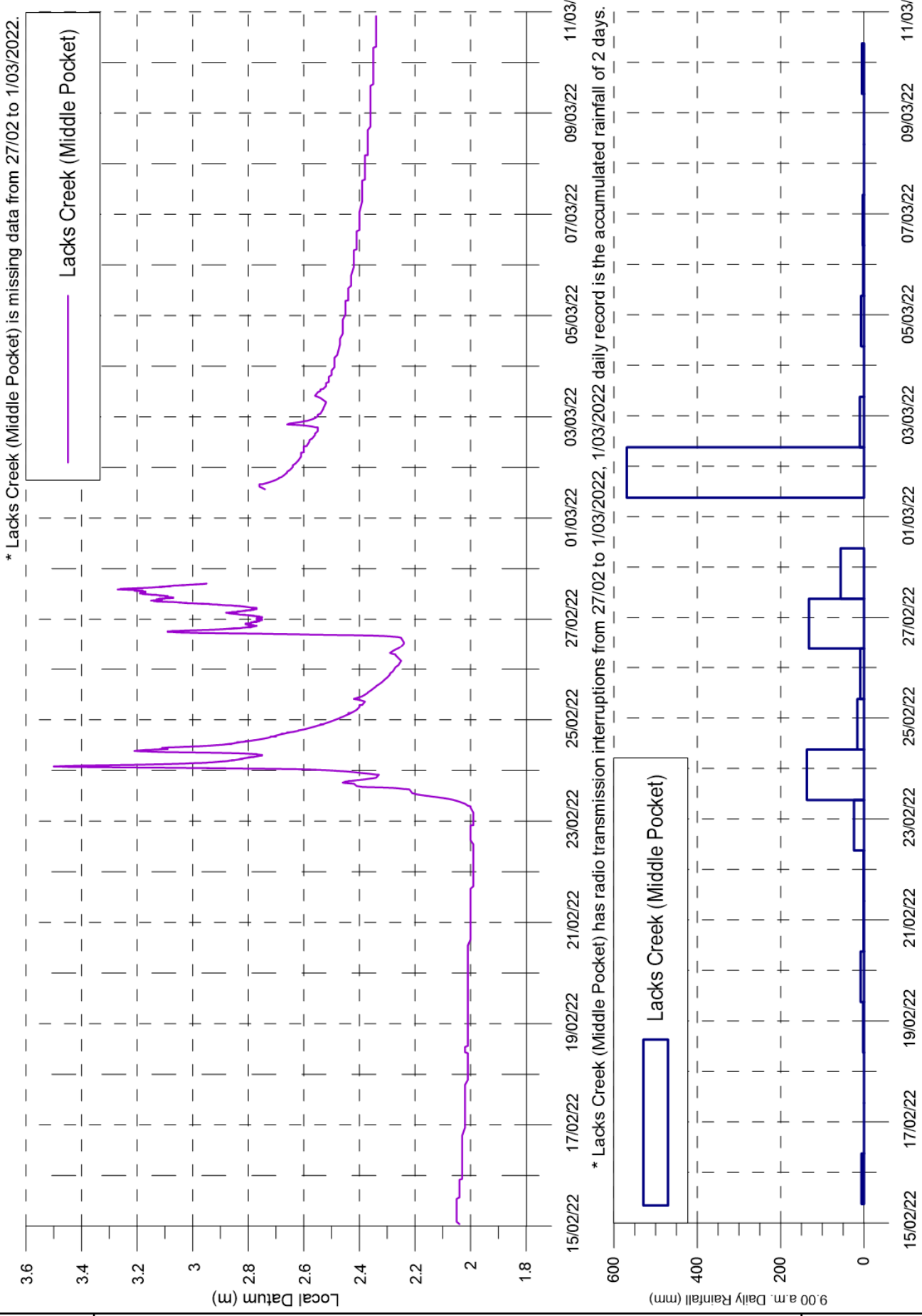
NSW GOVERNMENT

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.6

5.6.GRF



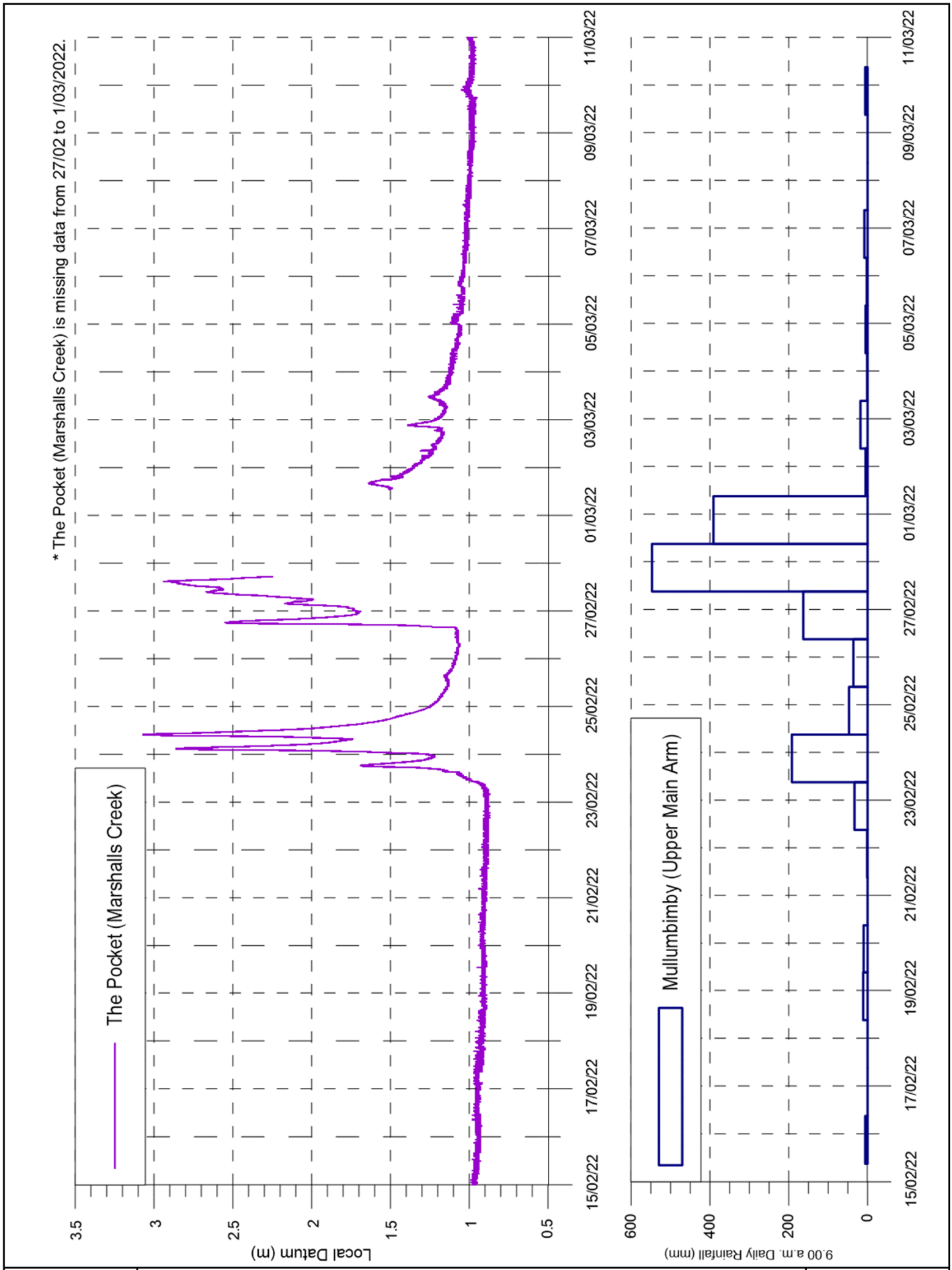
NSW GOVERNMENT

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.7

5.7.GRF



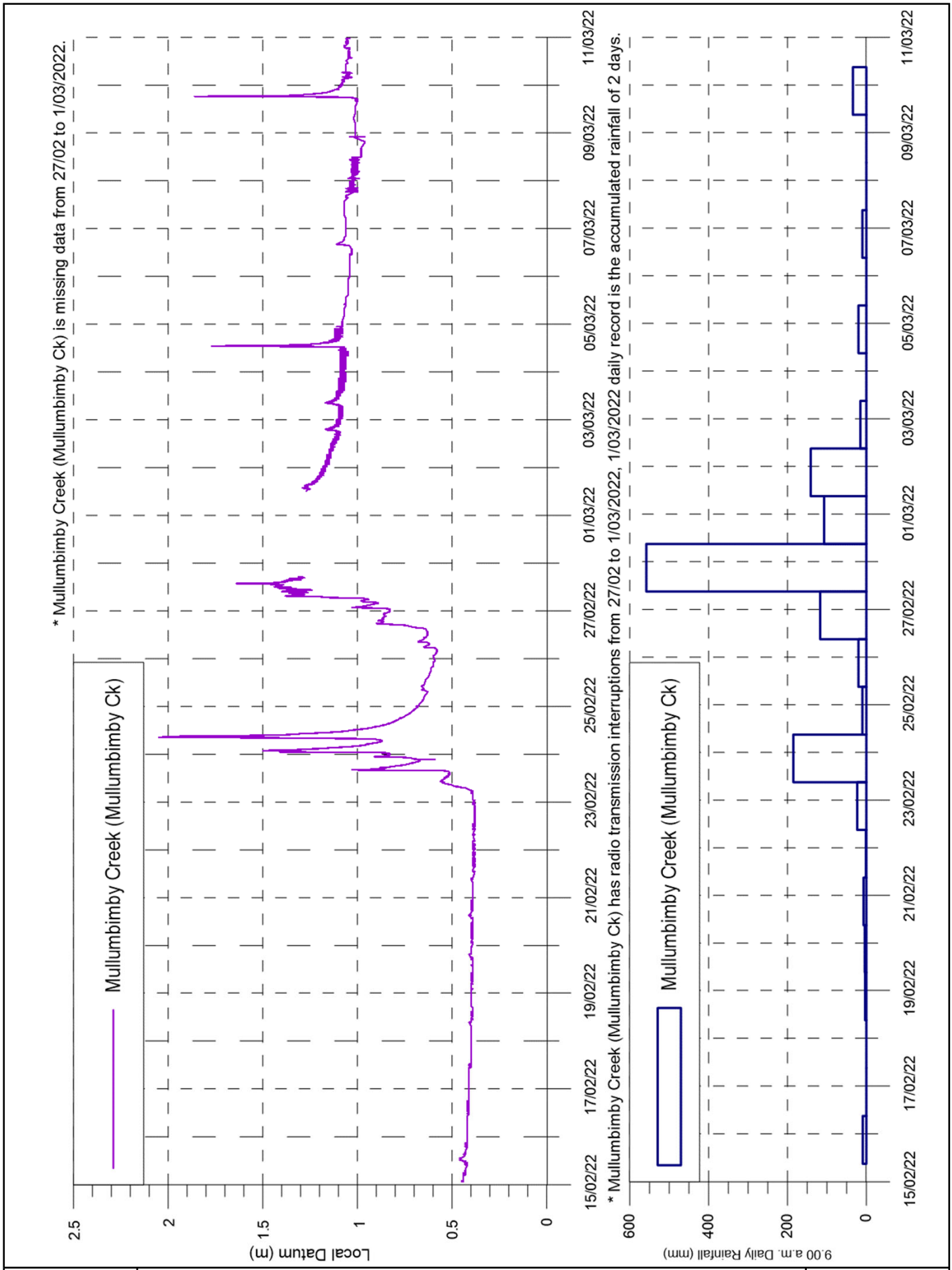
NSW GOVERNMENT

BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.8

5.8.GRF



NSW GOVERNMENT

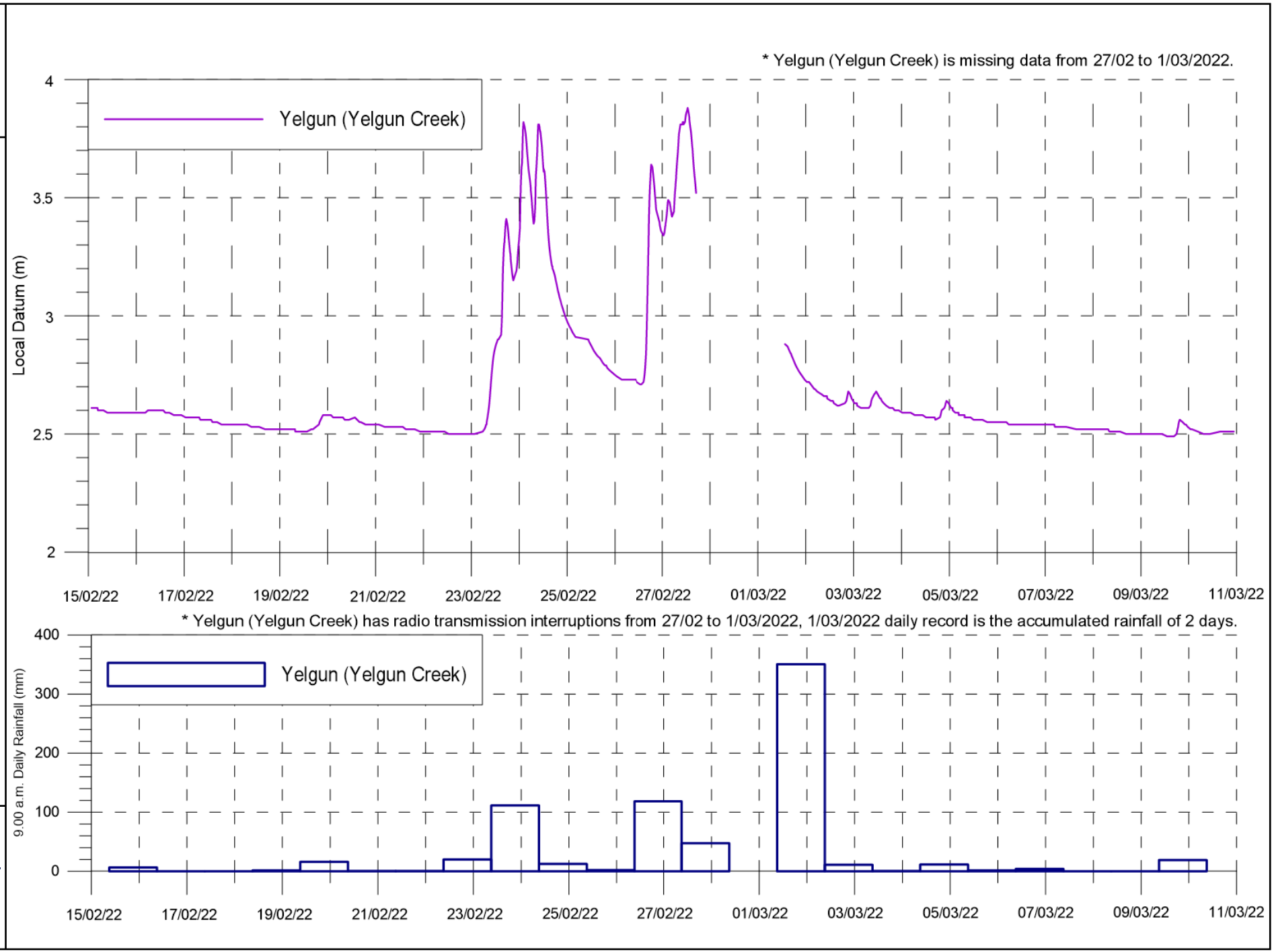
BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.9

5.9.GRF

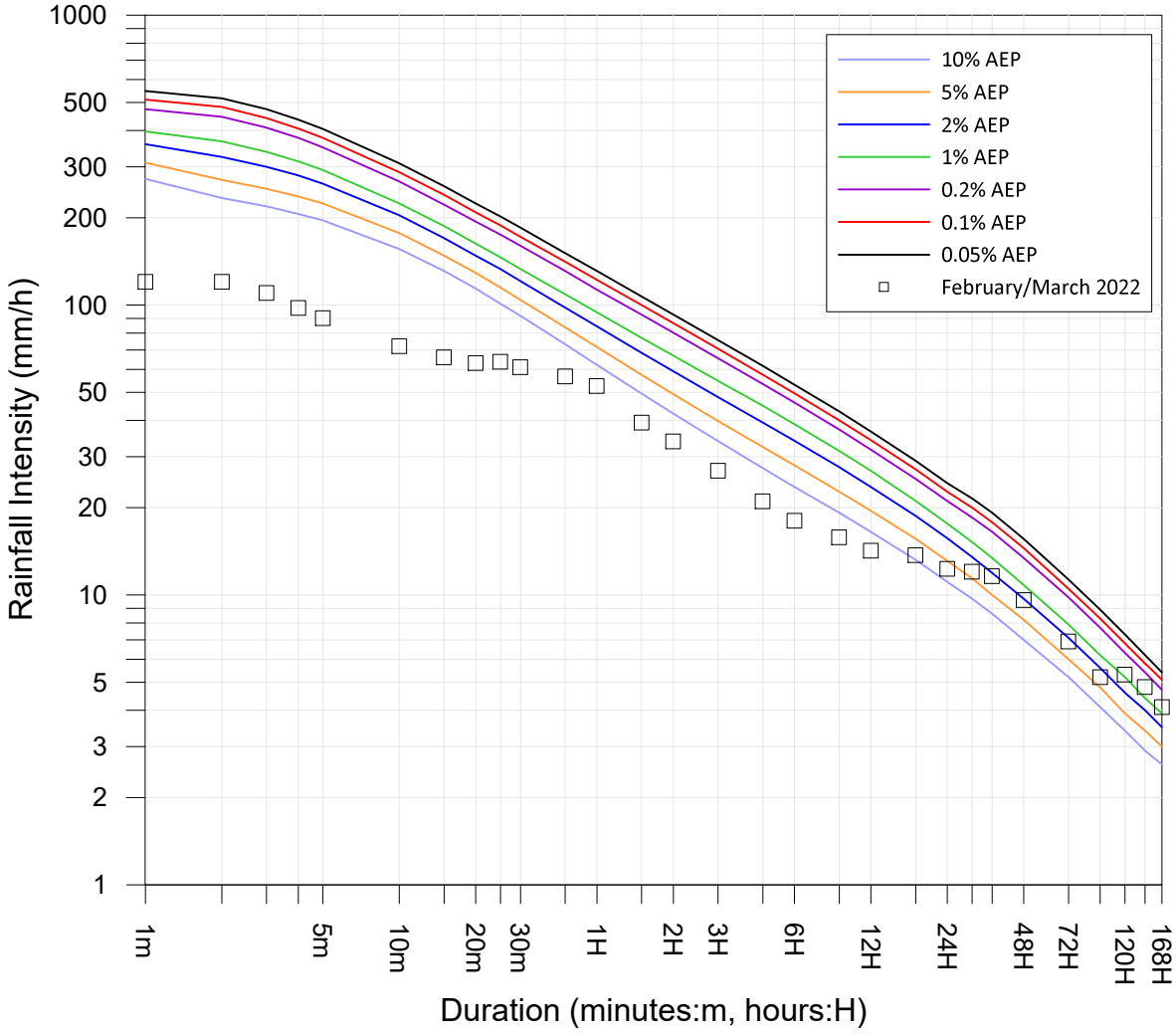
BRUNSWICK RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022



Manly Hydraulics Laboratory
Report MHL2880
Figure 5.10
5.10.GRF

Site Owner: DPE BCD
Latitude: -28.5894 Longitude:153.5167

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	120	17:59 09 Mar 2022
2m	120	07:16 28 Feb 2022
3m	110	07:17 28 Feb 2022
4m	97.5	07:18 28 Feb 2022
5m	90	07:19 28 Feb 2022
10m	72	01:24 24 Feb 2022
15m	66	01:27 24 Feb 2022
20m	63	19:37 27 Feb 2022
25m	63.6	01:23 24 Feb 2022
30m	61	19:38 27 Feb 2022
45m	56.7	19:40 27 Feb 2022
1H	52.5	19:43 27 Feb 2022
1.5H	39.3	07:22 28 Feb 2022
2H	33.8	07:52 28 Feb 2022
3H	26.8	08:16 28 Feb 2022
5H	21	09:17 28 Feb 2022
6H	18	10:06 28 Feb 2022
9H	15.8	13:45 28 Feb 2022
12H	14.2	15:49 28 Feb 2022
18H	13.7	12:40 28 Feb 2022
24H	12.3	16:28 28 Feb 2022
30H	12	11:52 28 Feb 2022
36H	11.6	15:50 28 Feb 2022
48H	9.6	16:48 28 Feb 2022
72H	6.9	04:49 01 Mar 2022
96H	5.2	21:40 01 Mar 2022
120H	5.3	15:16 28 Feb 2022
144H	4.8	04:01 01 Mar 2022
168H	4.1	02:53 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

MYOCUM (558036)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

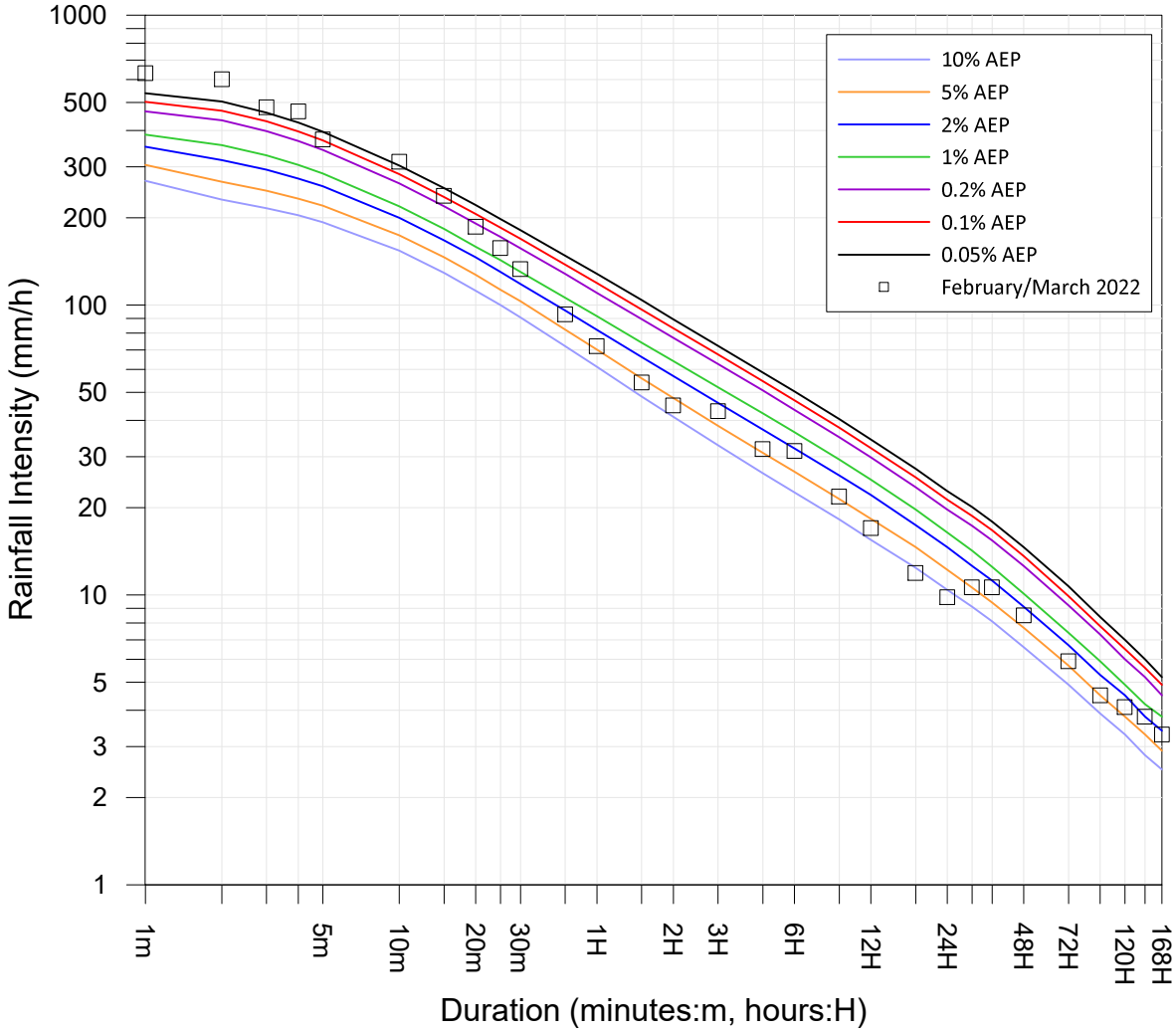
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.11

IFD_558036_Figure 5.11.pdf

Site Owner: Byron Shire Council
Latitude: -28.6378 Longitude:153.5951

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	630	06:01 27 Feb 2022
2m	600	06:02 27 Feb 2022
3m	480	08:07 27 Feb 2022
4m	465	08:07 27 Feb 2022
5m	372	08:08 27 Feb 2022
10m	312	08:07 27 Feb 2022
15m	238	08:07 27 Feb 2022
20m	186	08:11 27 Feb 2022
25m	157.2	08:13 27 Feb 2022
30m	133	08:18 27 Feb 2022
45m	92.7	08:27 27 Feb 2022
1H	72	08:30 27 Feb 2022
1.5H	54	08:17 27 Feb 2022
2H	45	08:17 27 Feb 2022
3H	43	08:58 27 Feb 2022
5H	31.8	10:28 27 Feb 2022
6H	31.3	11:35 27 Feb 2022
9H	21.8	13:45 27 Feb 2022
12H	17	12:22 27 Feb 2022
18H	11.9	11:33 27 Feb 2022
24H	9.8	07:38 28 Feb 2022
30H	10.6	11:00 28 Feb 2022
36H	10.6	16:45 28 Feb 2022
48H	8.5	21:25 28 Feb 2022
72H	5.9	05:12 01 Mar 2022
96H	4.5	00:08 02 Mar 2022
120H	4.1	21:27 28 Feb 2022
144H	3.8	04:26 01 Mar 2022
168H	3.3	21:17 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BYRON BAY (BELONGIL CK BRIDGE) (558099)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

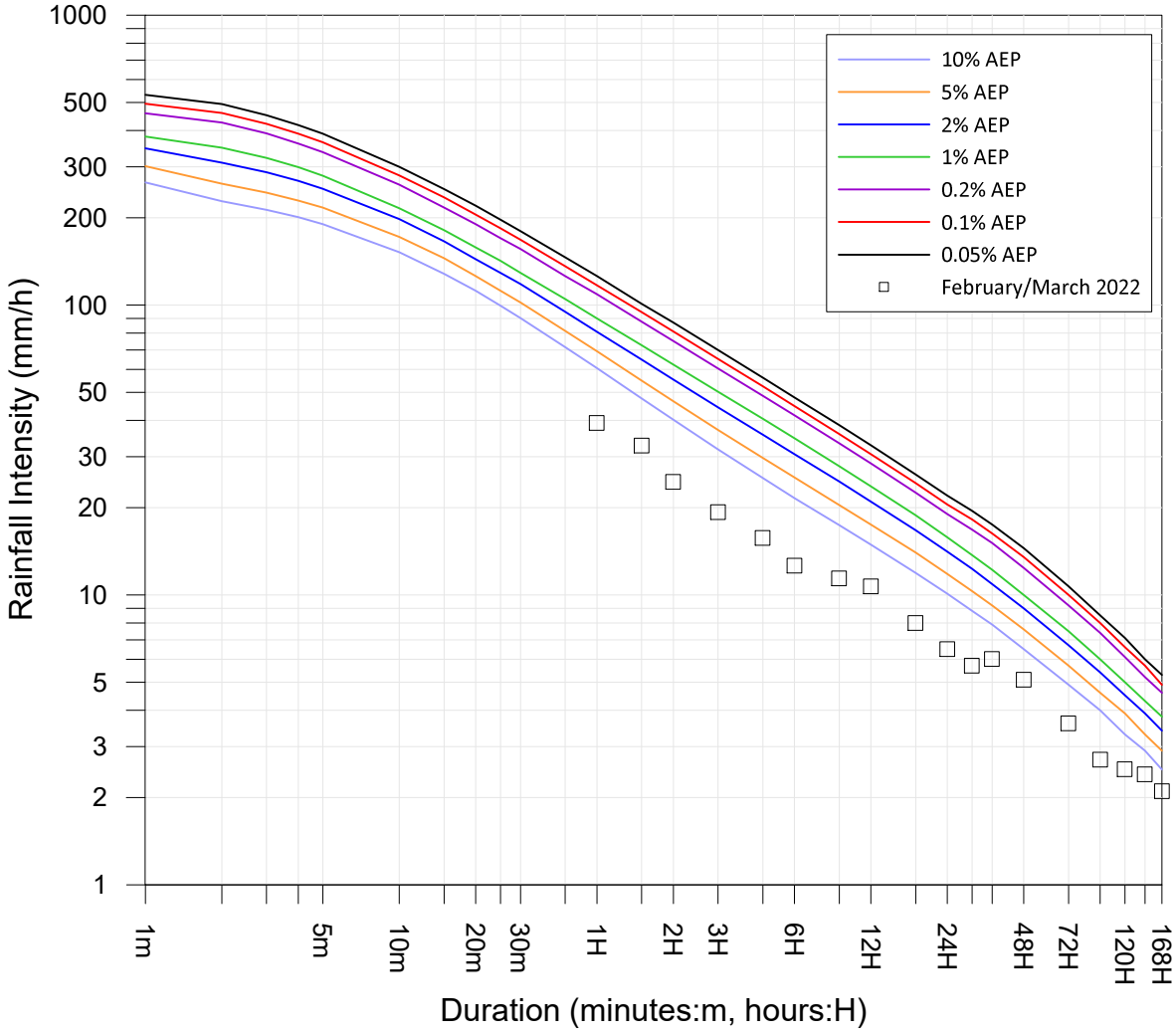
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.12

IFD_558099_Figure 5.12.pdf

Site Owner: BoM
Latitude: -28.6399 Longitude:153.6358

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	39.2	07:59 28 Feb 2022
1.5H	32.7	08:29 28 Feb 2022
2H	24.5	08:59 28 Feb 2022
3H	19.3	08:59 28 Feb 2022
5H	15.7	09:29 28 Feb 2022
6H	12.6	10:59 28 Feb 2022
9H	11.4	14:59 28 Feb 2022
12H	10.7	16:59 28 Feb 2022
18H	8	21:59 28 Feb 2022
24H	6.5	22:59 28 Feb 2022
30H	5.7	16:59 28 Feb 2022
36H	6	17:59 28 Feb 2022
48H	5.1	21:59 28 Feb 2022
72H	3.6	06:59 01 Mar 2022
96H	2.7	00:59 02 Mar 2022
120H	2.5	21:59 28 Feb 2022
144H	2.4	06:59 01 Mar 2022
168H	2.1	04:59 02 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CAPE BYRON AWS (58216)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

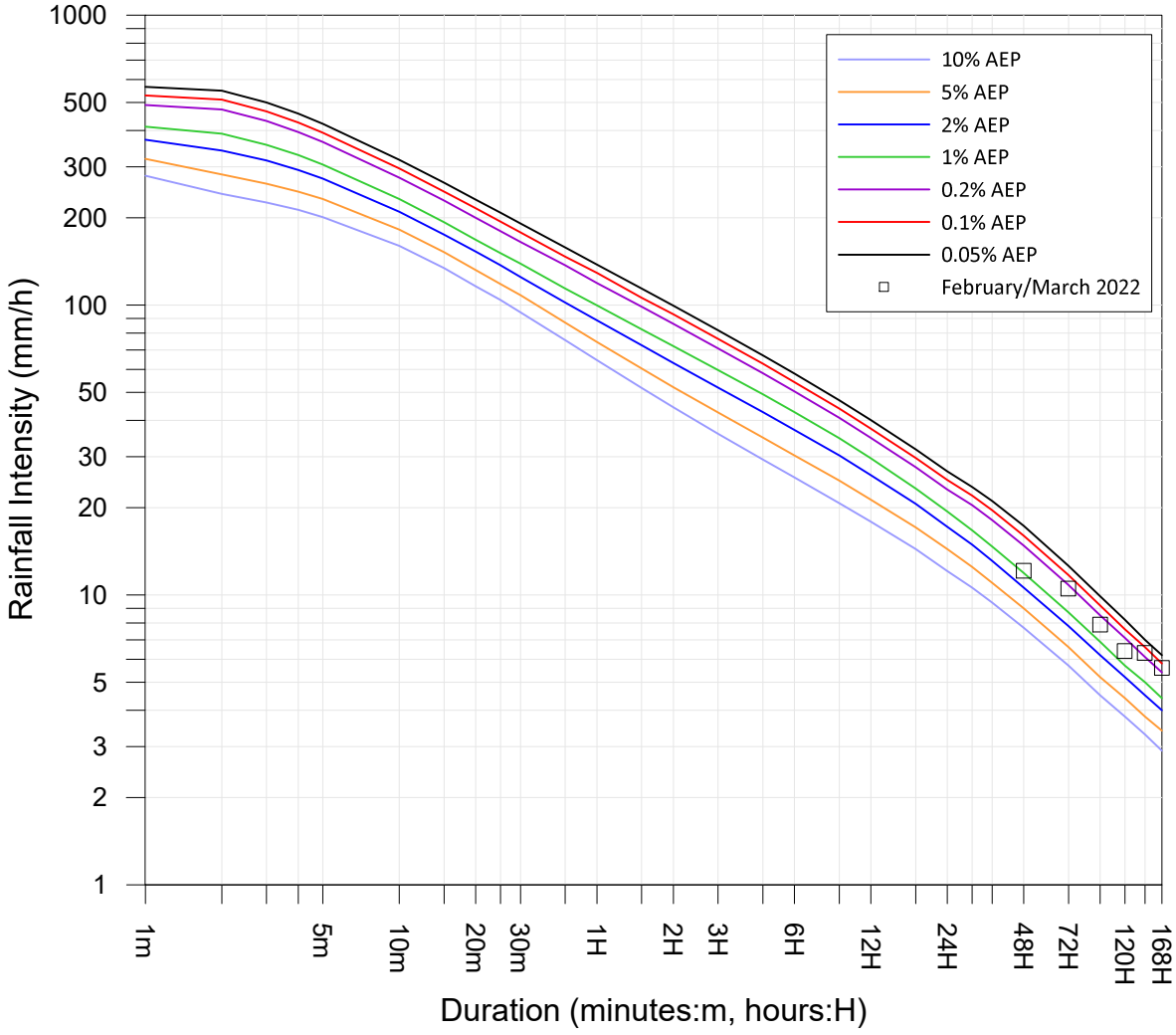
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.13

IFD_58216_Figure 5.13.pdf

Site Owner: Byron Shire Council
Latitude: -28.4944 Longitude:153.4847

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	-	-
30H	-	-
36H	-	-
48H	12.1	13:37 03 Mar 2022
72H	10.5	13:40 01 Mar 2022
96H	7.9	04:23 02 Mar 2022
120H	6.4	15:04 01 Mar 2022
144H	6.3	14:38 01 Mar 2022
168H	5.6	03:55 02 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LACKS CREEK (MIDDLE POCKET) (558005)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

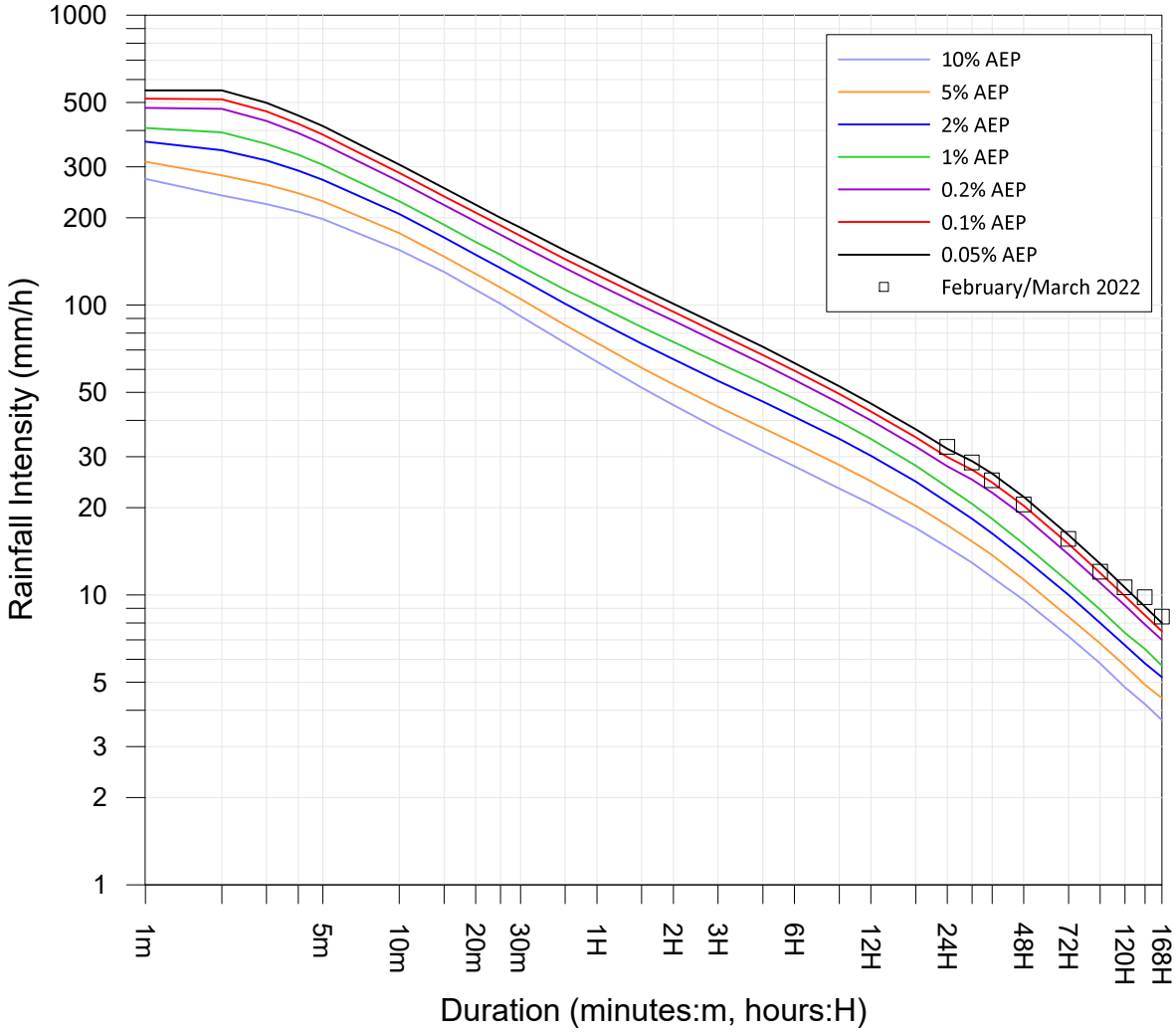
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.14

IFD_558005_Figure 5.14.pdf

Site Owner: BoM
Latitude: -28.5031 Longitude:153.3817

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	32.4	13:16 28 Feb 2022
30H	28.6	06:32 01 Mar 2022
36H	24.8	01:34 01 Mar 2022
48H	20.5	01:35 01 Mar 2022
72H	15.6	03:25 01 Mar 2022
96H	12	02:57 01 Mar 2022
120H	10.6	01:50 01 Mar 2022
144H	9.8	04:27 01 Mar 2022
168H	8.4	21:47 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

MULLUMBIMBY (UPPER MAIN ARM) (558034) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

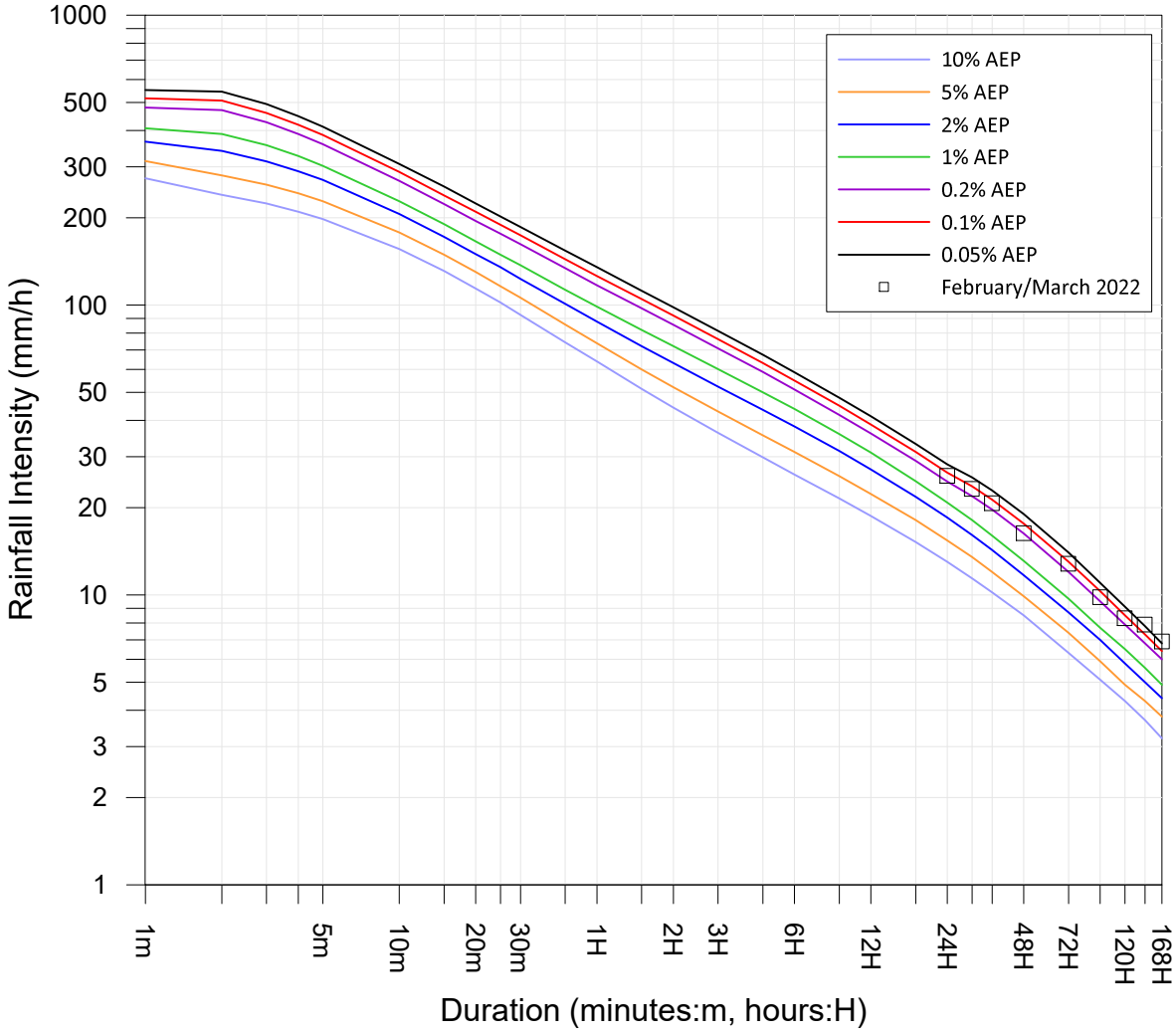
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.15

IFD_558034_Figure 5.15.pdf

Site Owner: Byron Shire Council
Latitude: -28.5542 Longitude:153.4367

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	25.7	12:40 28 Feb 2022
30H	23.2	12:44 28 Feb 2022
36H	20.7	12:44 28 Feb 2022
48H	16.3	12:38 28 Feb 2022
72H	12.8	14:35 01 Mar 2022
96H	9.8	00:11 02 Mar 2022
120H	8.3	15:02 28 Feb 2022
144H	7.9	15:02 01 Mar 2022
168H	6.9	22:38 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

MULLUMBIMBY CREEK (MULLUMBIMBY CK) (558008)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

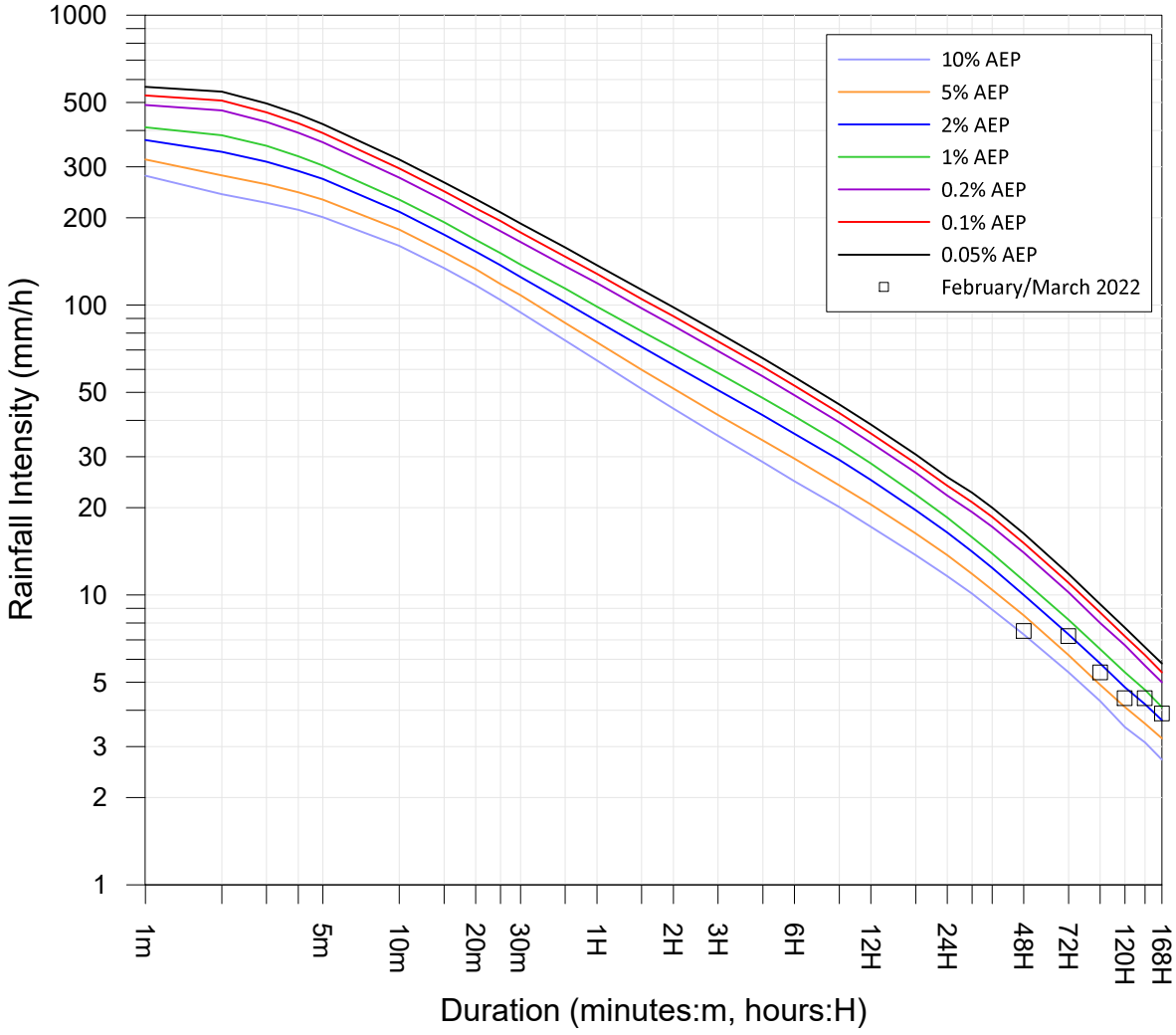
Manly Hydraulics Laboratory

Report MHL2880
Figure
5.16

IFD_558008_Figure 5.16.pdf

Site Owner: North Byron Parklands
Latitude: -28.485 Longitude:153.514

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	-	-
1.5H	-	-
2H	-	-
3H	-	-
5H	-	-
6H	-	-
9H	-	-
12H	-	-
18H	-	-
24H	-	-
30H	-	-
36H	-	-
48H	7.5	13:37 03 Mar 2022
72H	7.2	14:06 01 Mar 2022
96H	5.4	04:18 02 Mar 2022
120H	4.4	13:32 03 Mar 2022
144H	4.4	14:32 01 Mar 2022
168H	3.9	21:25 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

YELGUN (YELGUN CREEK) (558096) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
5.17

IFD_558096_Figure 5.17.pdf

6 Wilsons River region

6.1 Wilsons River region – water level

The peak observed water levels for the Wilsons River region are listed in **Table 6.1**. **Table 6.2** lists the SES flood classifications for Kyogle and Lismore (BoM, 2013). The locations of water level stations within the Wilsons River region are shown in **Figure 6.1**. The water level data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 6.2** to **Figure 6.20**.

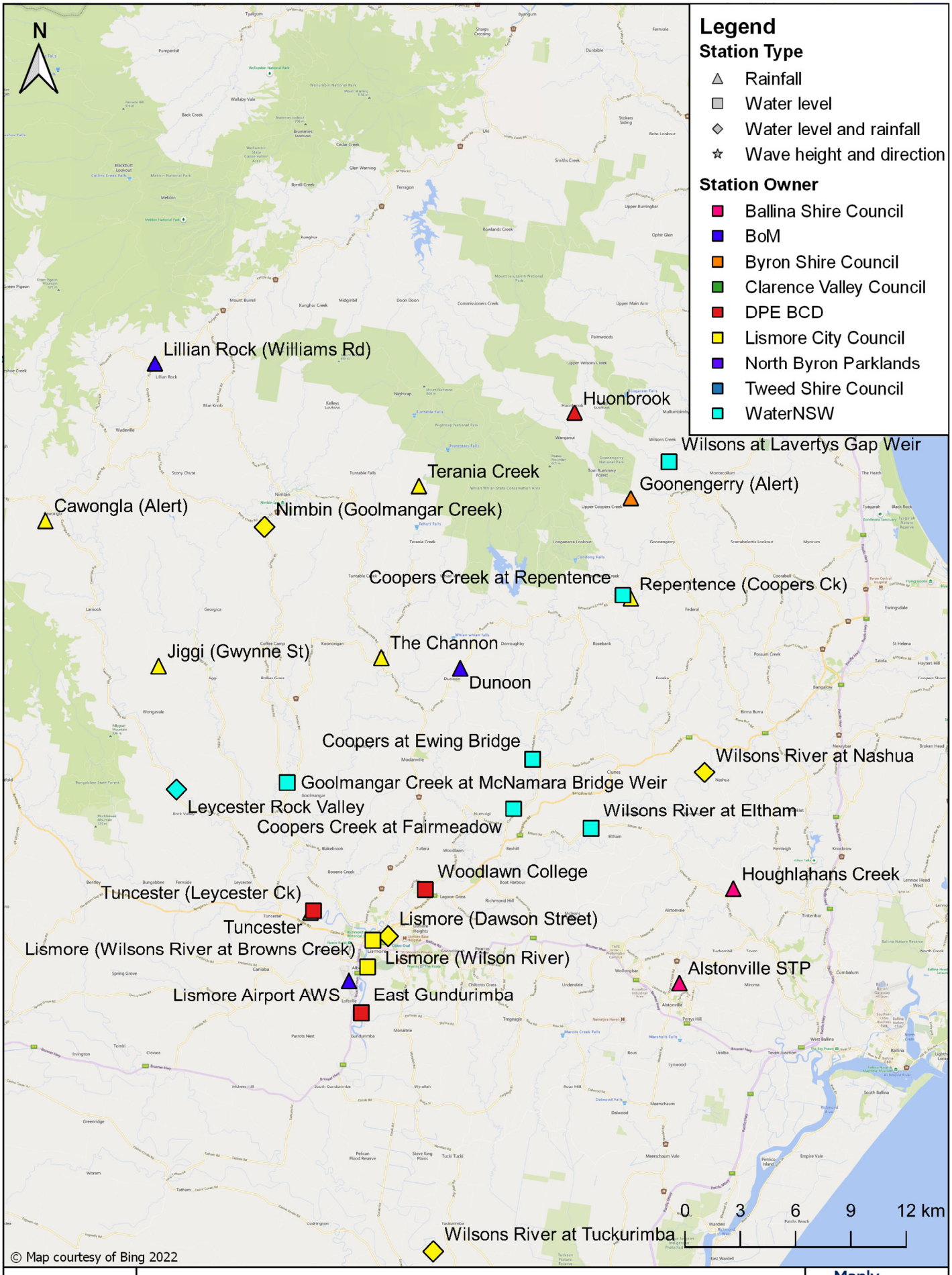
Table 6.1 Wilsons River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Wilsons at Lavertys Gap Weir	203062	WaterNSW	Local	6.05	28/02/2022 08:00
Nimbin (Goolmangar Creek)	58180	Lismore City Council	Local	9.34	28/02/2022 04:45
Richmond River at Kyogle	203900	WaterNSW	Local	17.86	28/02/2022 12:45
Coopers Creek at Repentence	203002	WaterNSW	Local	9.94	28/02/2022 08:30
Coopers at Ewing Bridge	203024	WaterNSW	Local	12.41	28/02/2022 09:15
Wilsons River at Nashua	58162	Lismore City Council	Local	9.83	28/02/2022 11:06
Goolmangar Creek at McNamara Bridge Weir	203061	WaterNSW	Local	9.94	28/02/2022 09:00
Leycester Rock Valley	203010	WaterNSW	Local	13.17	28/02/2022 16:15
Bentley (Back Creek)	58202	Lismore City Council	Local	12.19	28/02/2022 13:08
Coopers Creek at Fairmeadow	203060	WaterNSW	Local	10.93	28/02/2022 10:15
Wilsons River at Eltham	203014	WaterNSW	Local	10.54	28/02/2022 15:30
Woodlawn College	203402	DPE BCD	AHD	15.03	28/02/2022 14:45
Tuncester (Leycester Ck)	203443	DPE BCD	AHD	15.12	28/02/2022 12:15
Lismore (Dawson Street)	558087	Lismore City Council	Local	14.79	28/02/2022 11:48
Lismore (Wilson River)*	58176	Lismore City Council	AHD	-	-
Lismore (Wilsons River at Browns Creek)	558100	Lismore City Council	Local	14.36	28/02/2022 14:07
East Gundurimba	203427	DPE BCD	AHD	12.94	debris line survey
Wilsons River at Tuckurimba	558076	Lismore City Council	Local	8.21	28/02/2022 22:28

*Flood peak not captured due to station failure during the flood event.

Table 6.2 SES flood classification for Wilsons River region stations

Station name	Station number		Flood classification			Flood peak (m)	Datum	Flood event classification
	Bureau number	AWRC number	Minor	Moderate	Major			
			Water level (m)					
Kyogle	558002	203900	12.0	14.4	16.0	17.86	Local	Major
Lismore	58176	203904	4.2	7.2	9.7	14.39	AHD	Major



NSW GOVERNMENT

WILSONS RIVER STATIONS

Manly Hydraulics Laboratory

Report MHL2880
Figure
6.1

Figures_MHL2880.qgs

6.2 Wilsons River region – rainfall

The water level and rainfall data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 6.2** to **Figure 6.20**. 24-hour rainfall totals up until 9:00 a.m. are displayed in **Table 6.3** and **Table 6.6** for the period 15 February to 11 March 2022. The rainfall intensities are displayed graphically in **Figure 6.21** to **Figure 6.39**, in ARR2019 format. Appendix C provides ARR1987 format.

Table 6.3 Wilsons River region daily rainfall totals

Date	Lillian Rock (Williams Road) 58148 (mm) BoM	Huonbrook 558049 (mm) DPE BCD	Goonengerry (Alert) 558033 (mm) Byron Shire Council	Cawongla (Alert) 558024 (mm) Lismore City Council	Nimbin (Goolmangar Creek) 58180 (mm) Lismore City Council
15/02/2022	0.0	11.5	0.0	0.0	0.0
16/02/2022	4.0	5.5	3.0	0.0	1.0
17/02/2022	0.0	1.0	2.0	0.0	0.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	8.0	7.5	3.0	2.0	15.0
20/02/2022	5.0	12.0	15.0	6.0	8.0
21/02/2022	0.0	0.5	0.0	1.0	0.0
22/02/2022	2.0	0.0	3.0	0.0	0.0
23/02/2022	27.0	40.5	24.0	35.0	19.0
24/02/2022	117.0	154.0	164.0	90.0	98.0
25/02/2022	46.0	36.0	49.0	41.0	64.0
26/02/2022	18.0	27.5	12.0	16.0	19.0
27/02/2022	89.0	121.0	118.0	78.0	85.0
28/02/2022	385.0	667.5	708.0	330.0	538.0
01/03/2022	207.0	251.5	209.0	166.0	217.0
02/03/2022	2.0	4.5	14.0	1.0	2.0
03/03/2022	13.0	19.5	15.0	19.0	22.0
04/03/2022	0.0	0.5	2.0	3.0	2.0
05/03/2022	1.0	3.5	5.0	5.0	1.0
06/03/2022	0.0	0.0	0.0	0.0	0.0
07/03/2022	1.0	8.5	14.0	0.0	1.0
08/03/2022	1.0	0.0	1.0	5.0	1.0
09/03/2022	0.0	0.5	0.0	0.0	0.0
10/03/2022	12.0	14.5	39.0	5.0	8.0
11/03/2022	1.0	13.0	5.0	1.0	1.0

Table 6.4 Wilsons River region daily rainfall totals (cont.)

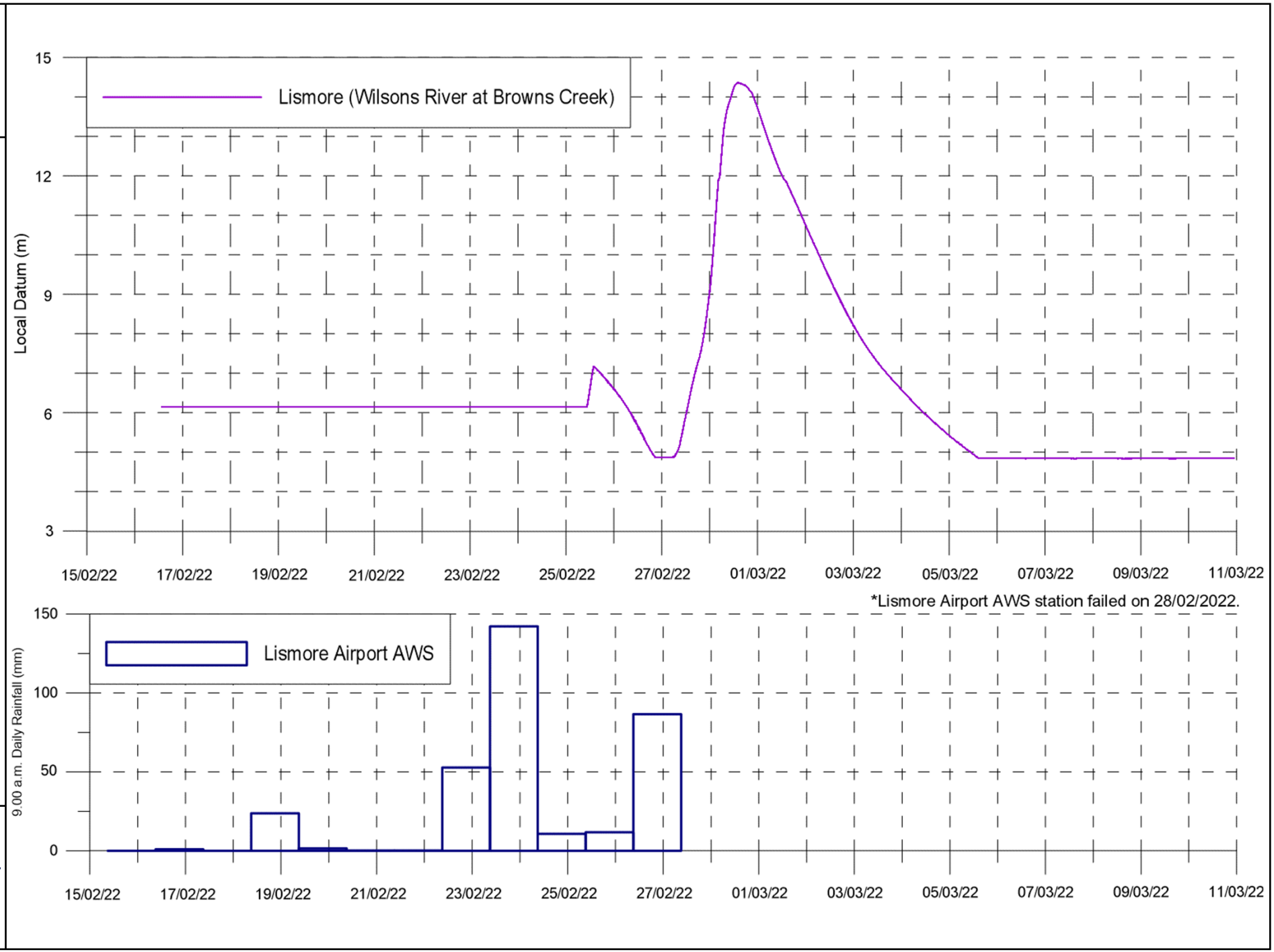
Date	Richmond River at Kyogle 203900 (mm)	Repentence (Coopers Creek) 558000 (mm)	The Channon 58147 (mm)	Jiggi (Gwynne St) 558086 (mm)	Dunoon 558031 (mm)
	WaterNSW	Lismore City Council	Lismore City Council	Lismore City Council	BoM
15/02/2022	0.0	0.0	0.0	0.0	0.0
16/02/2022	0.2	2.0	2.0	0.0	2.0
17/02/2022	0.0	1.0	1.0	1.0	0.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	0.8	3.0	25.0	11.0	10.0
20/02/2022	1.2	13.0	2.0	4.0	8.0
21/02/2022	0.0	1.0	0.0	1.0	0.0
22/02/2022	0.0	2.0	0.0	0.0	1.0
23/02/2022	22.6	18.0	16.0	17.0	14.0
24/02/2022	62.0	120.0	104.0	63.0	120.0
25/02/2022	20.4	50.0	71.0	40.0	76.0
26/02/2022	15.4	22.0	19.0	16.0	13.0
27/02/2022	61.4	114.0	88.0	74.0	97.0
28/02/2022	234.4	592.0	550.0	504.0	775.0
01/03/2022	93.6	137.0	---	151.0	173.0
02/03/2022	1.2	8.0	---	1.0	5.0
03/03/2022	24.8	13.0	---	23.0	14.0
04/03/2022	1.4	2.0	---	2.0	1.0
05/03/2022	3.2	5.0	---	2.0	1.0
06/03/2022	0.0	0.0	---	3.0	0.0
07/03/2022	0.8	56.0	---	4.0	8.0
08/03/2022	5.0	1.0	---	6.0	1.0
09/03/2022	0.2	0.0	---	0.0	0.0
10/03/2022	17.8	24.0	---	7.0	39.0
11/03/2022	0.0	2.0	---	1.0	0.0

Table 6.5 Wilsons River region daily rainfall totals (cont.)

Date	Wilsons River at Nashua 58162 (mm)	Leycester Rock Valley 203010 (mm)	Bentley (Back Creek) 58202 (mm)	Houghlahans Creek 558069 (mm)	Tuncester 58201 (mm)
	Lismore City Council	WaterNSW	Lismore City Council	Ballina Shire Council	Lismore City Council
15/02/2022	0.0	1.0	0.0	0.0	1.0
16/02/2022	3.0	0.5	0.0	2.0	0.0
17/02/2022	0.0	0.5	1.0	1.0	1.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	3.0	7.5	14.0	1.0	5.0
20/02/2022	7.0	7.0	5.0	7.0	2.0
21/02/2022	0.0	0.5	0.0	0.0	0.0
22/02/2022	1.0	0.0	0.0	6.0	2.0
23/02/2022	36.0	20.0	46.0	17.0	20.0
24/02/2022	116.0	126.0	119.0	142.0	176.0
25/02/2022	28.0	29.5	34.0	9.0	35.0
26/02/2022	7.0	5.5	12.0	1.0	7.0
27/02/2022	87.0	68.5	61.0	48.0	54.0
28/02/2022	323.0	535.5	484.0	320.0	436.0
01/03/2022	109.0	88.0	180.0	97.0	129.0
02/03/2022	3.0	3.0	0.0	2.0	0.0
03/03/2022	12.0	22.5	25.0	7.0	9.0
04/03/2022	0.0	1.0	4.0	2.0	1.0
05/03/2022	7.0	12.5	12.0	17.0	1.0
06/03/2022	0.0	0.0	0.0	2.0	0.0
07/03/2022	45.0	14.0	3.0	23.0	13.0
08/03/2022	0.0	4.5	5.0	0.0	10.0
09/03/2022	0.0	0.0	0.0	0.0	0.0
10/03/2022	28.0	15.0	11.0	19.0	6.0
11/03/2022	1.0	1.0	1.0	1.0	1.0

Table 6.6 Wilsons River region daily rainfall totals (cont.)

Date	Lismore (Dawson Street) 558087 (mm)	Lismore Airport AWS 58214 (mm)	Alstonville STP 558072 (mm)	Wilsons River at Tuckurimba 558076 (mm)
	Lismore City Council	BoM	Ballina Shire Council	Lismore City Council
15/02/2022	1.0	0.0	1.2	0.0
16/02/2022	0.0	0.0	2.6	0.0
17/02/2022	0.0	1.0	0.2	0.0
18/02/2022	0.0	0.0	0.0	0.0
19/02/2022	11.0	23.8	2.0	2.0
20/02/2022	1.0	1.6	7.2	1.0
21/02/2022	0.0	0.2	0.2	0.0
22/02/2022	0.0	0.2	9.4	5.0
23/02/2022	43.0	52.8	35.6	1.0
24/02/2022	146.0	142.2	239.8	207.0
25/02/2022	23.0	10.8	11.2	3.0
26/02/2022	9.0	11.8	5.6	17.0
27/02/2022	85.0	86.6	73.9	43.0
28/02/2022	633.0	321.6	389.6	318.0
01/03/2022	10.0	---	101.6	150.0
02/03/2022	2.0	---	4.0	0.0
03/03/2022	0.0	---	9.0	1.0
04/03/2022	0.0	---	1.2	1.0
05/03/2022	0.0	---	7.0	1.0
06/03/2022	0.0	---	1.4	1.0
07/03/2022	7.0	---	42.0	47.0
08/03/2022	---	---	2.6	27.0
09/03/2022	---	---	0.0	1.0
10/03/2022	---	---	12.6	9.0
11/03/2022	---	---	1.4	0.0



WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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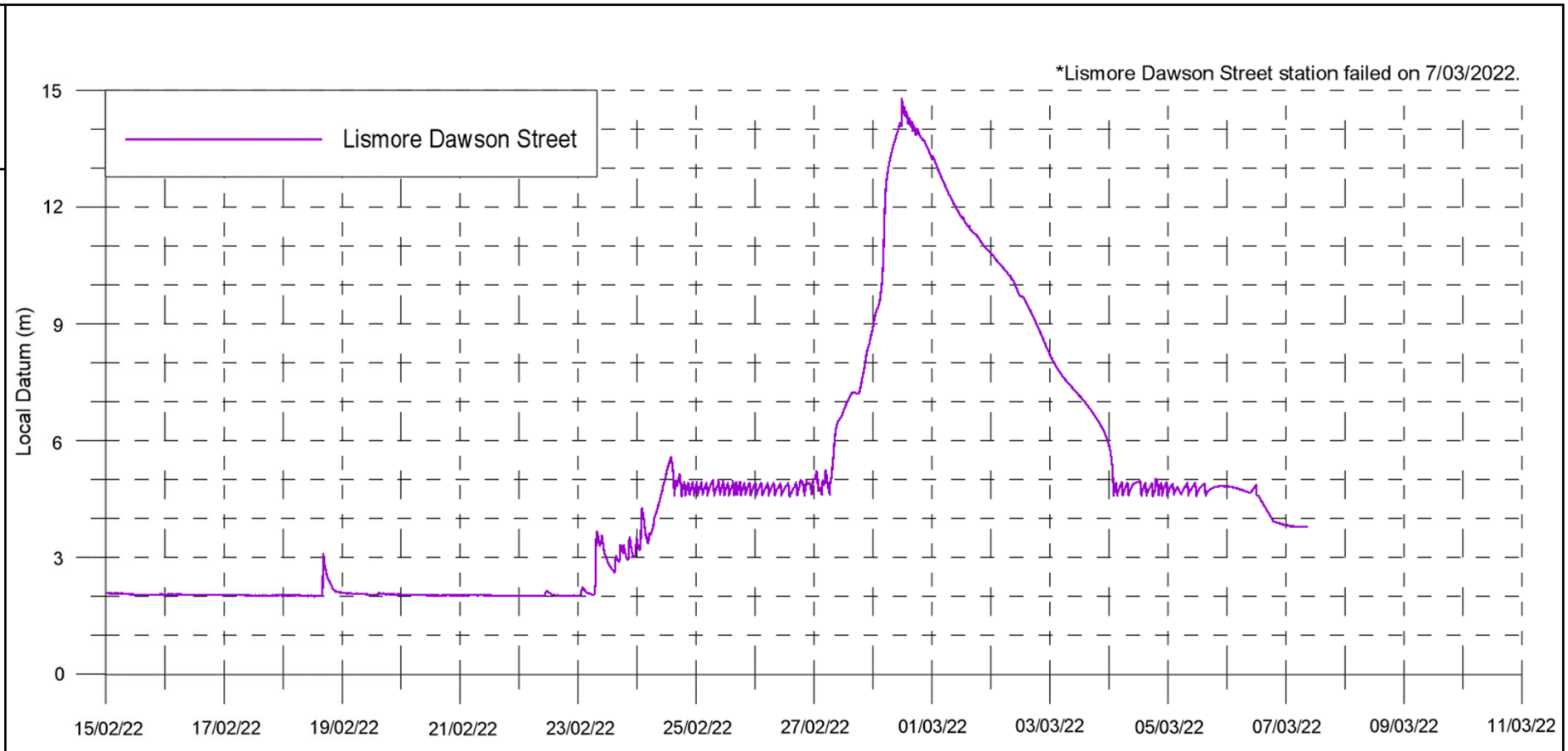
Report MHL2880
Figure 6.2
6.2.GRF

NSW GOVERNMENT

WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022



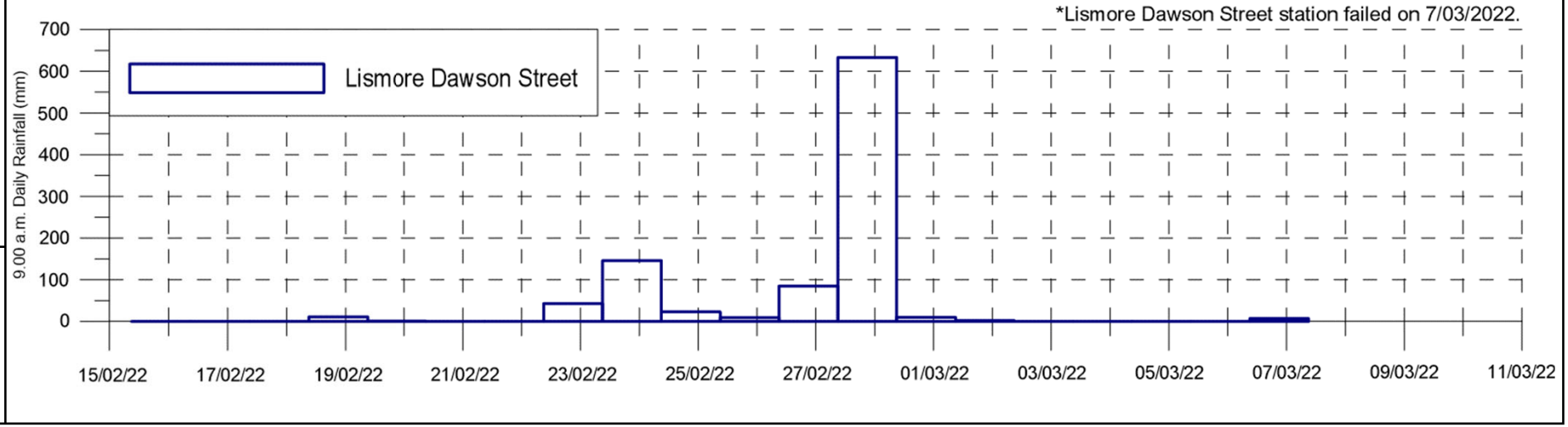


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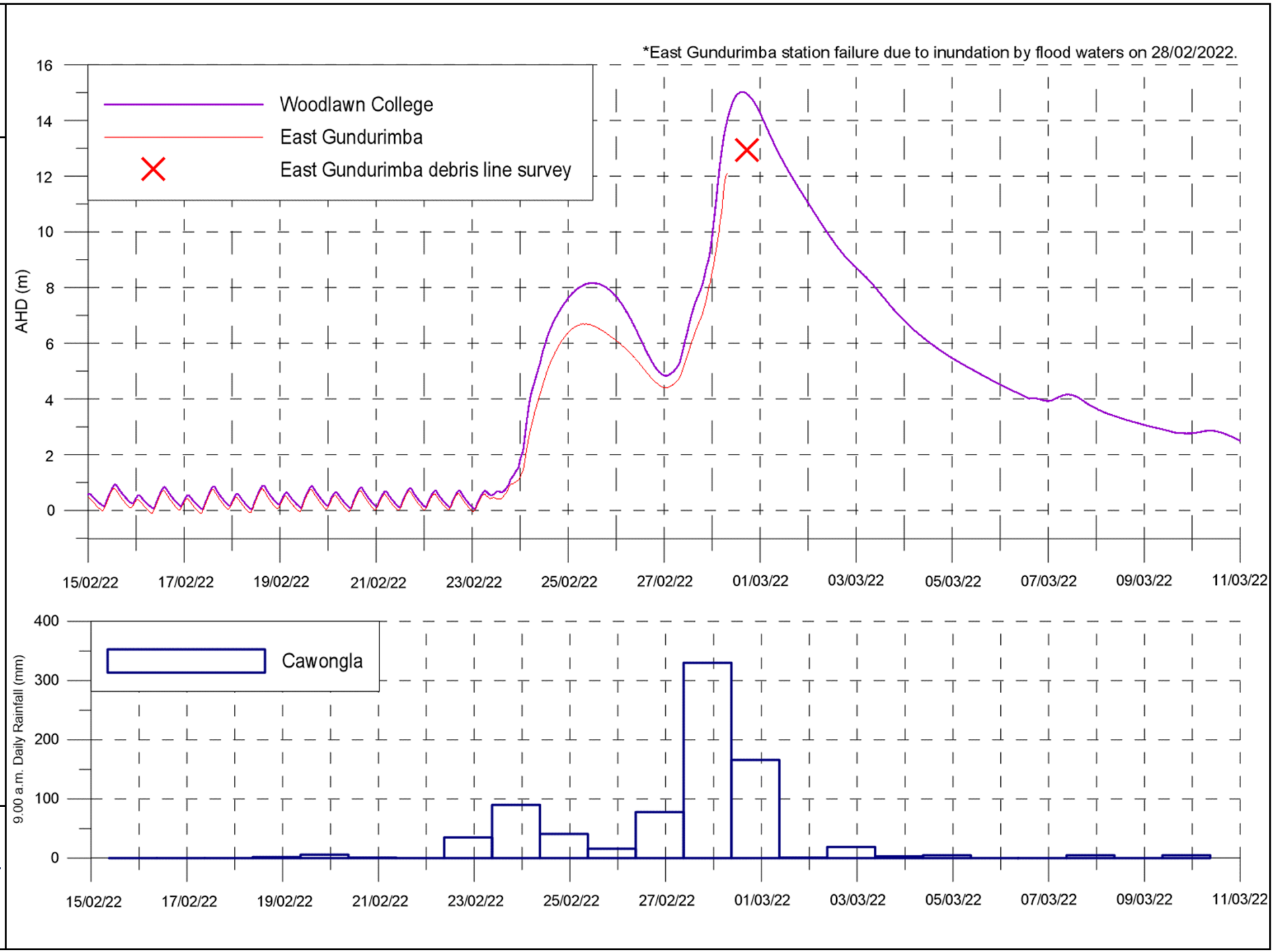
Figure 6.3

6.3.GRF



WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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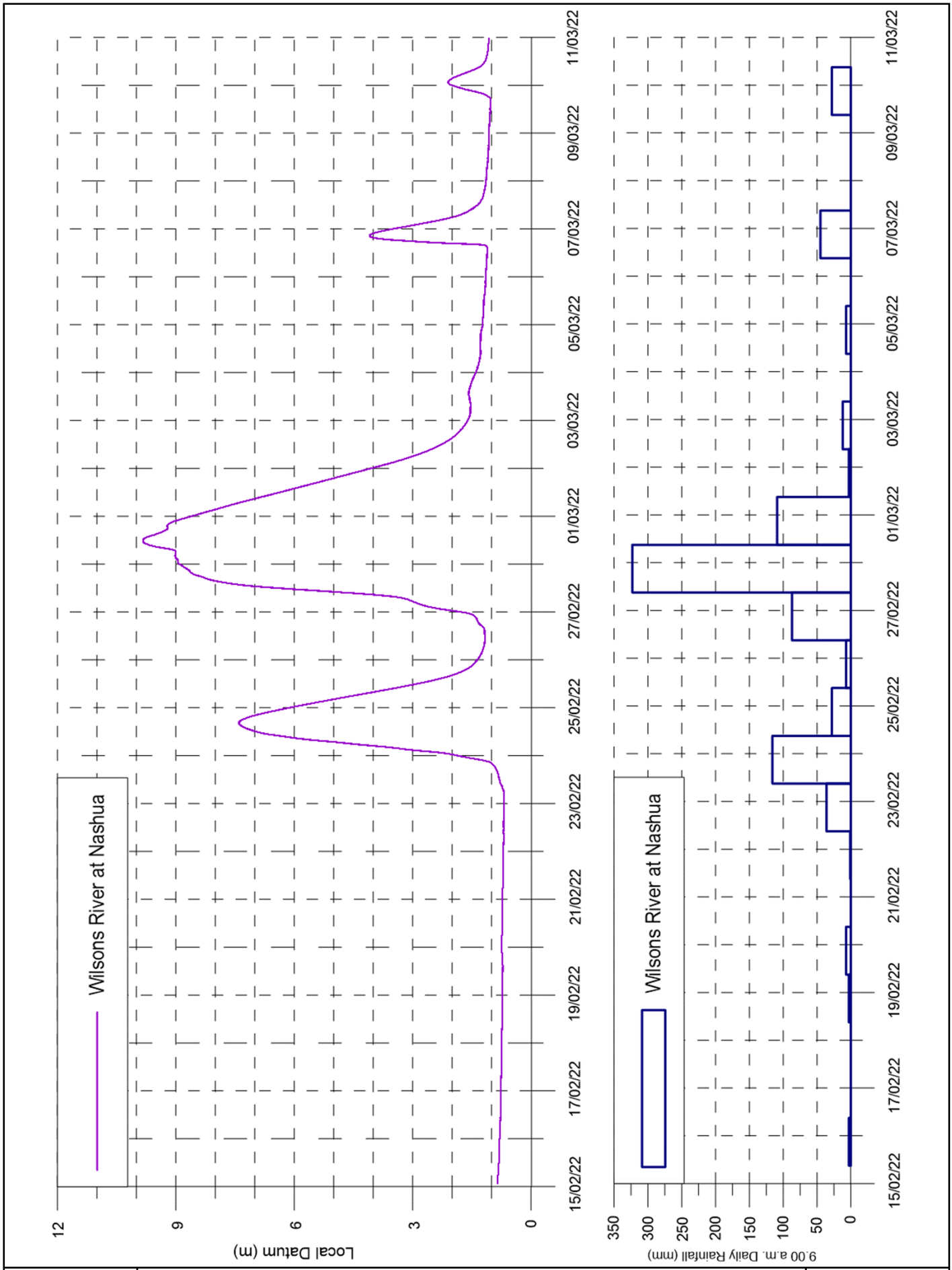
Report MHL2880
Figure 6.4

6.4.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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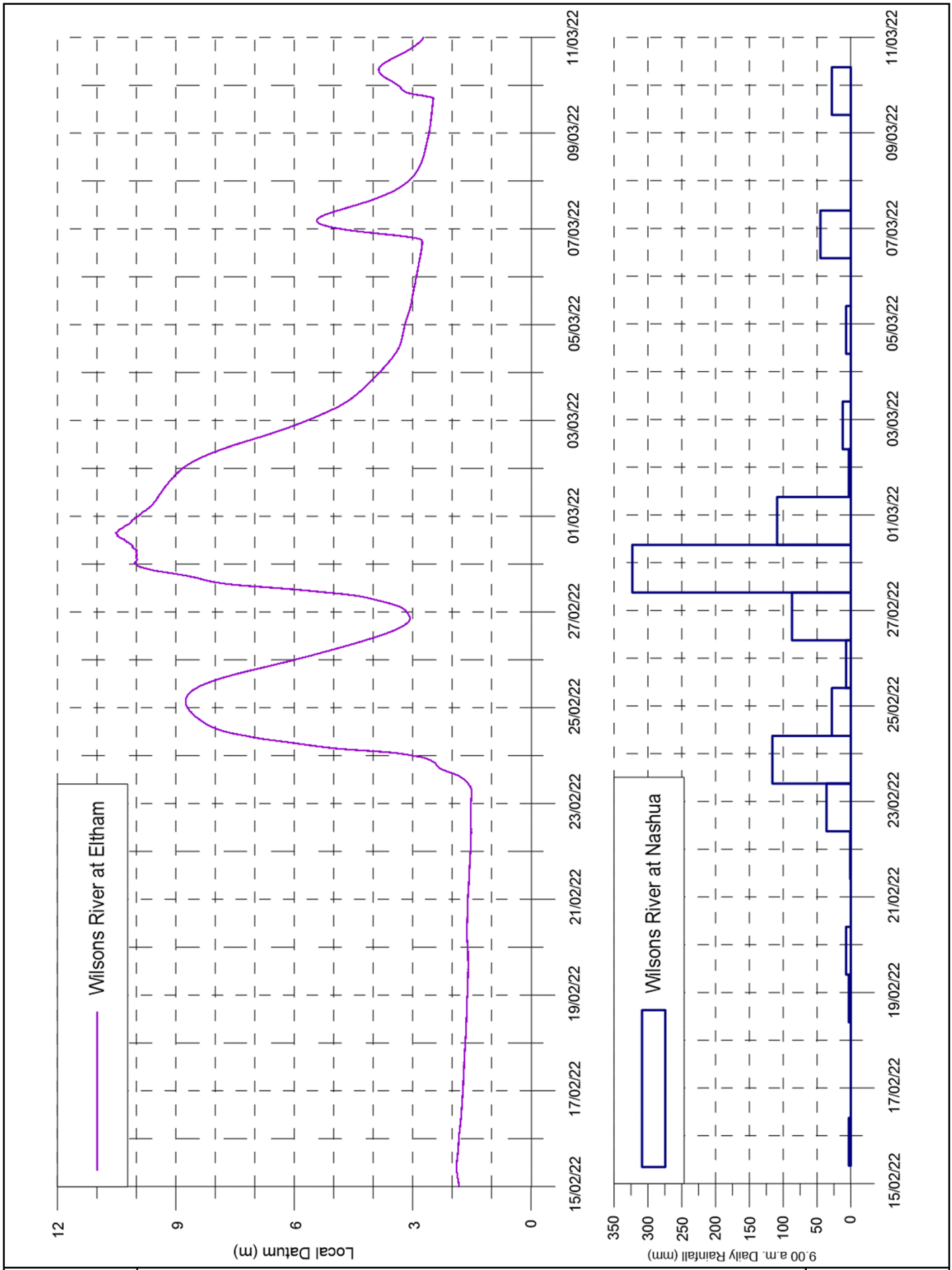
Report MHL2880
Figure
6.5

6.5.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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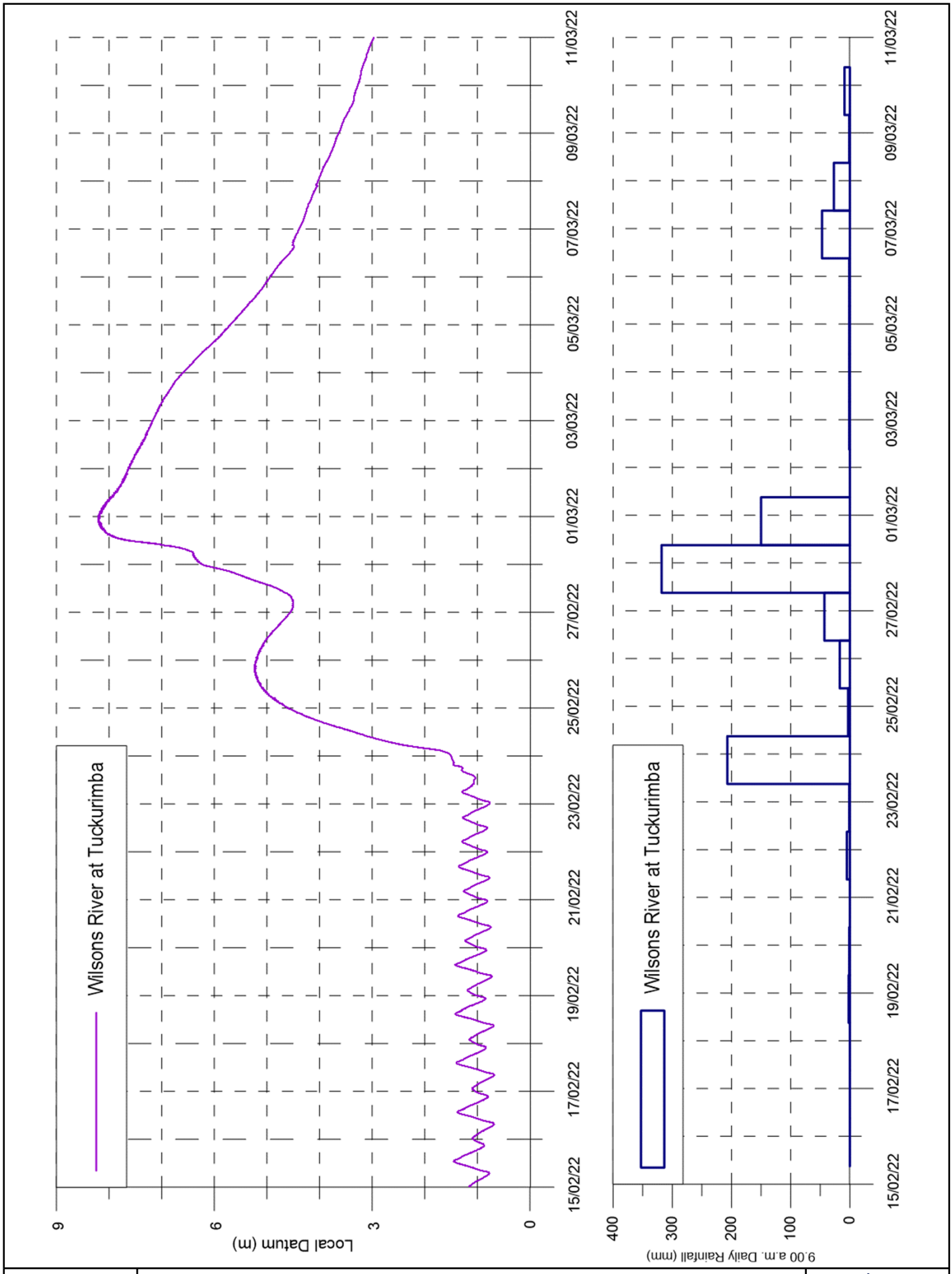
Report MHL2880
Figure
6.6

6.6.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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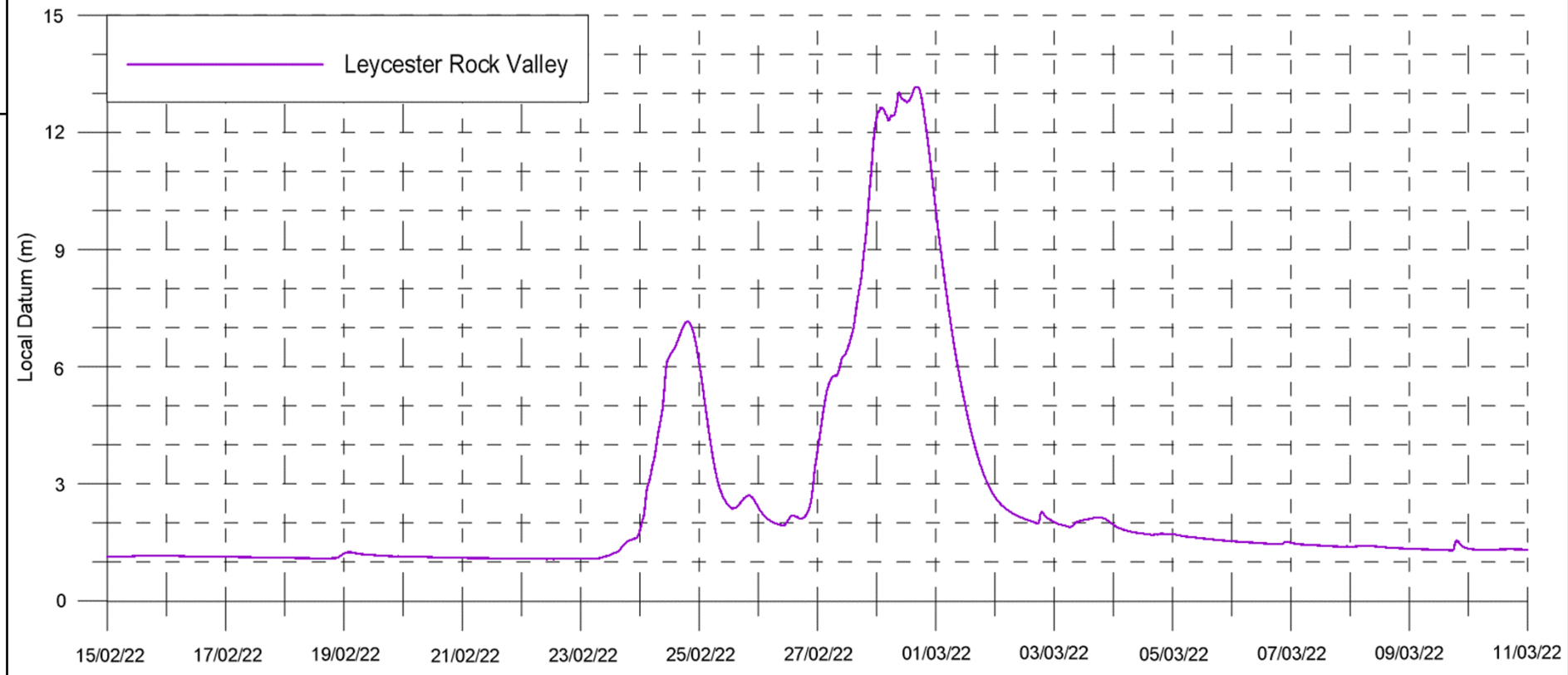
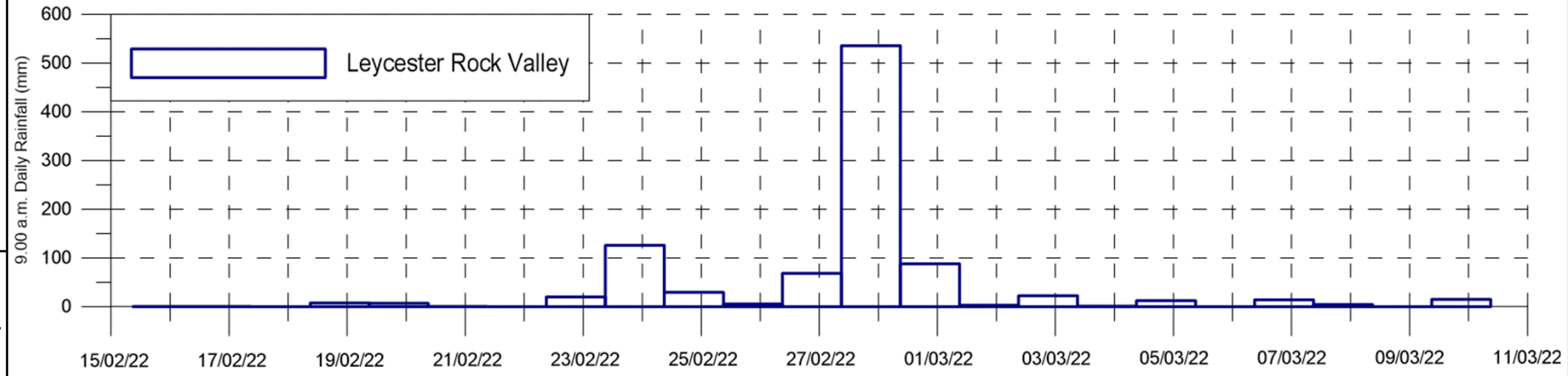
Report MHL2880
Figure
6.7

6.7.GRF

WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022





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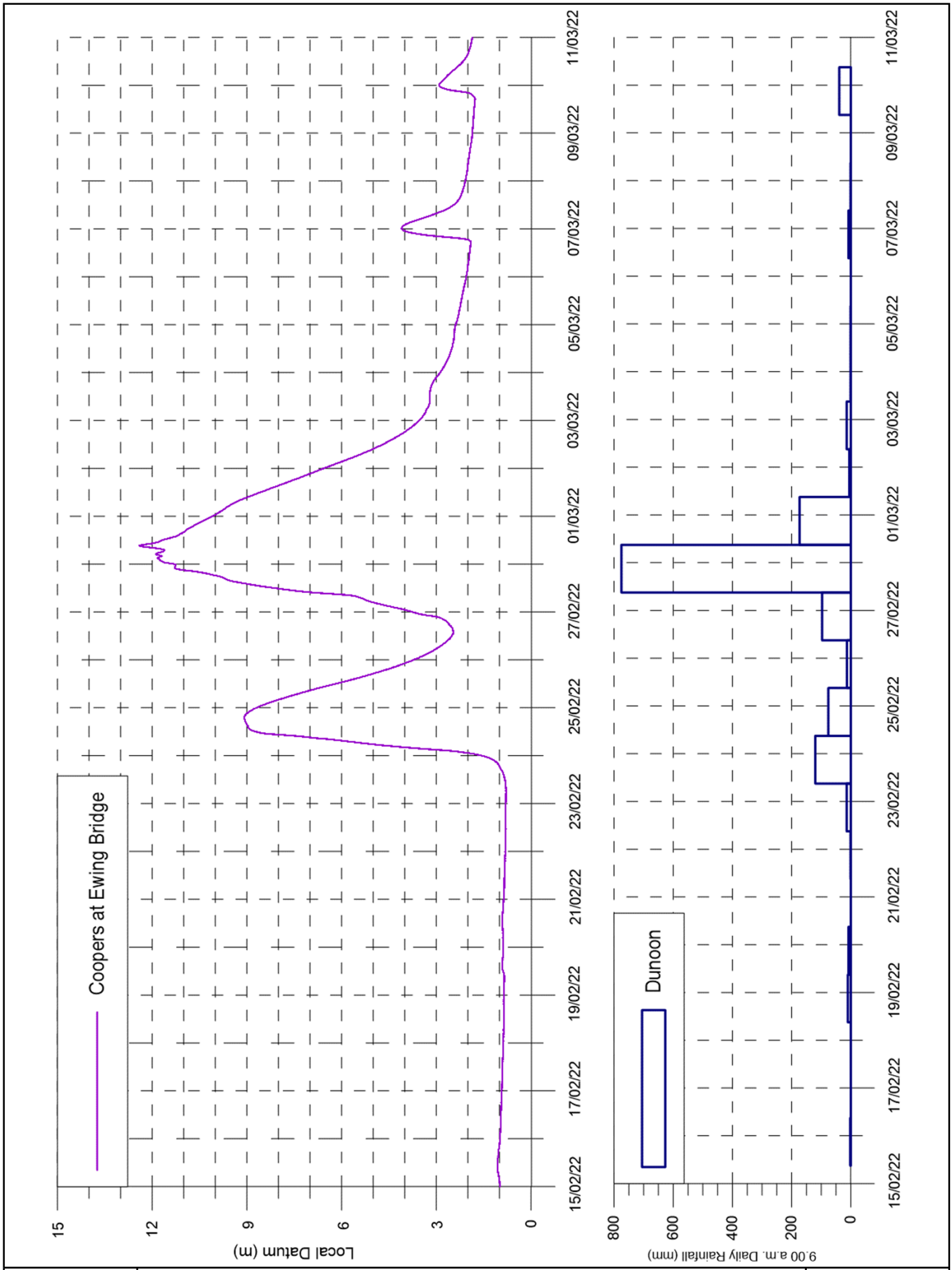
Report MHL2880
Figure 6.8
6.8.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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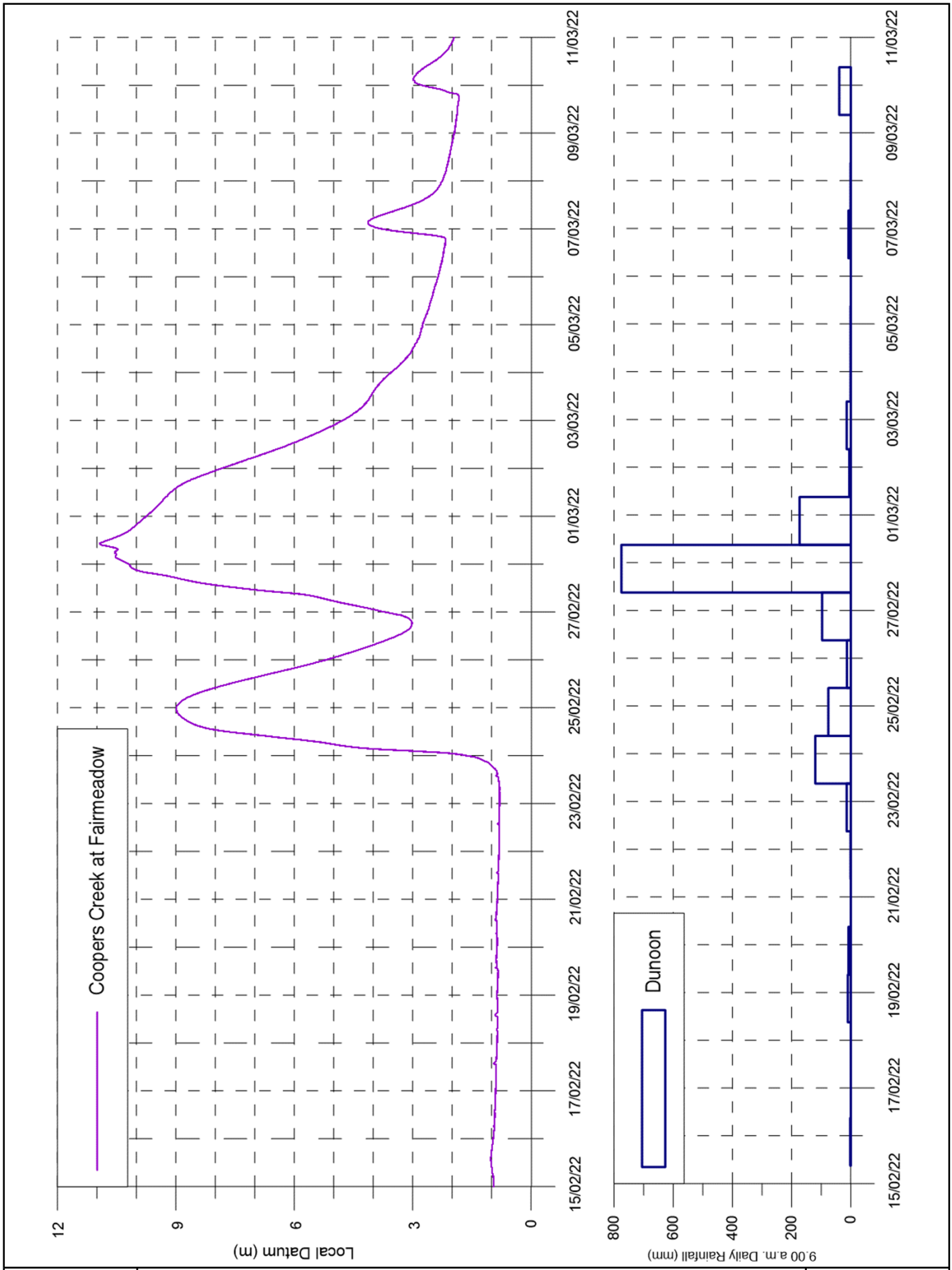
Report MHL2880
Figure
6.9

6.9.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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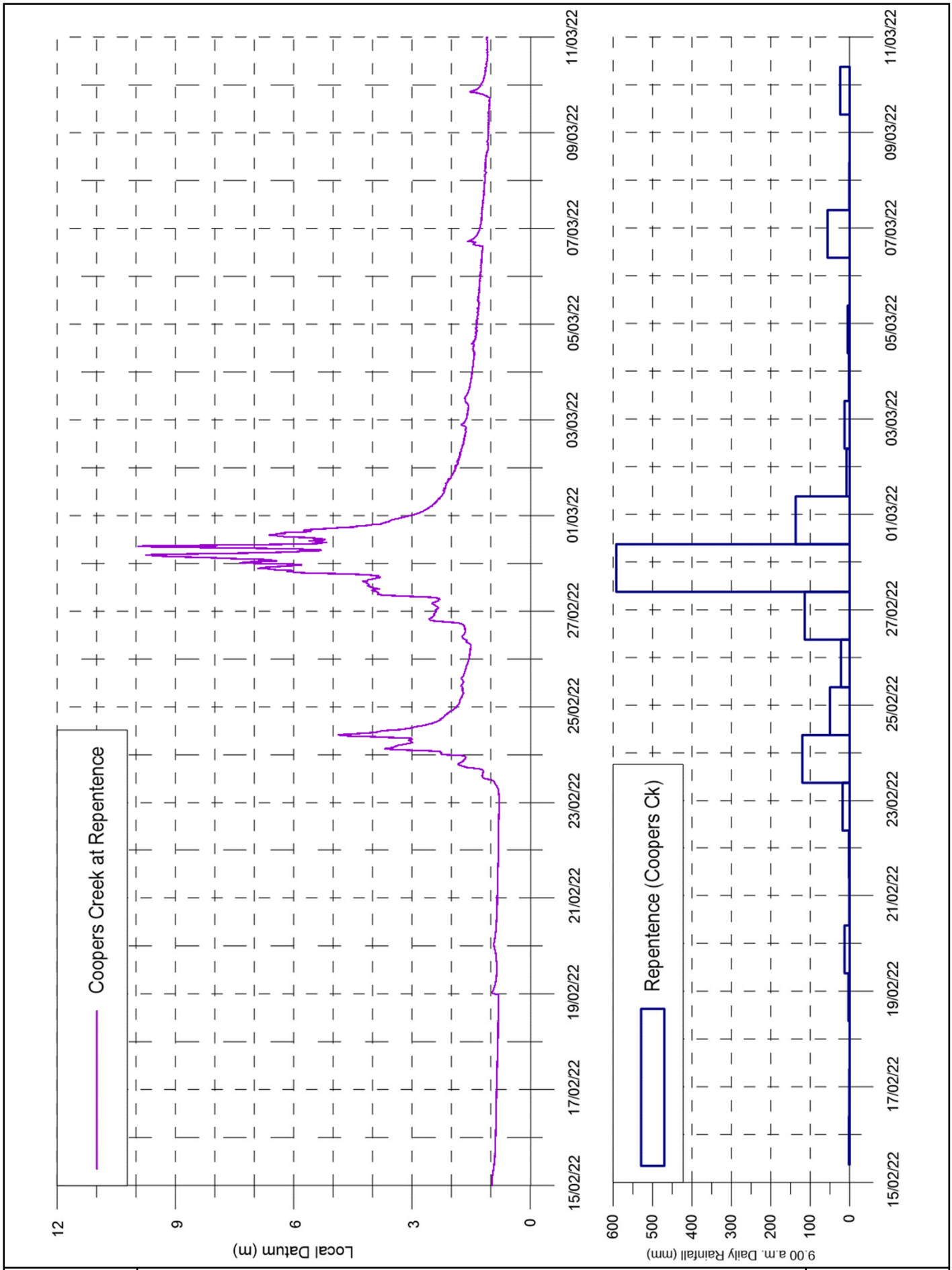
Report MHL2880
Figure
6.10

6.10.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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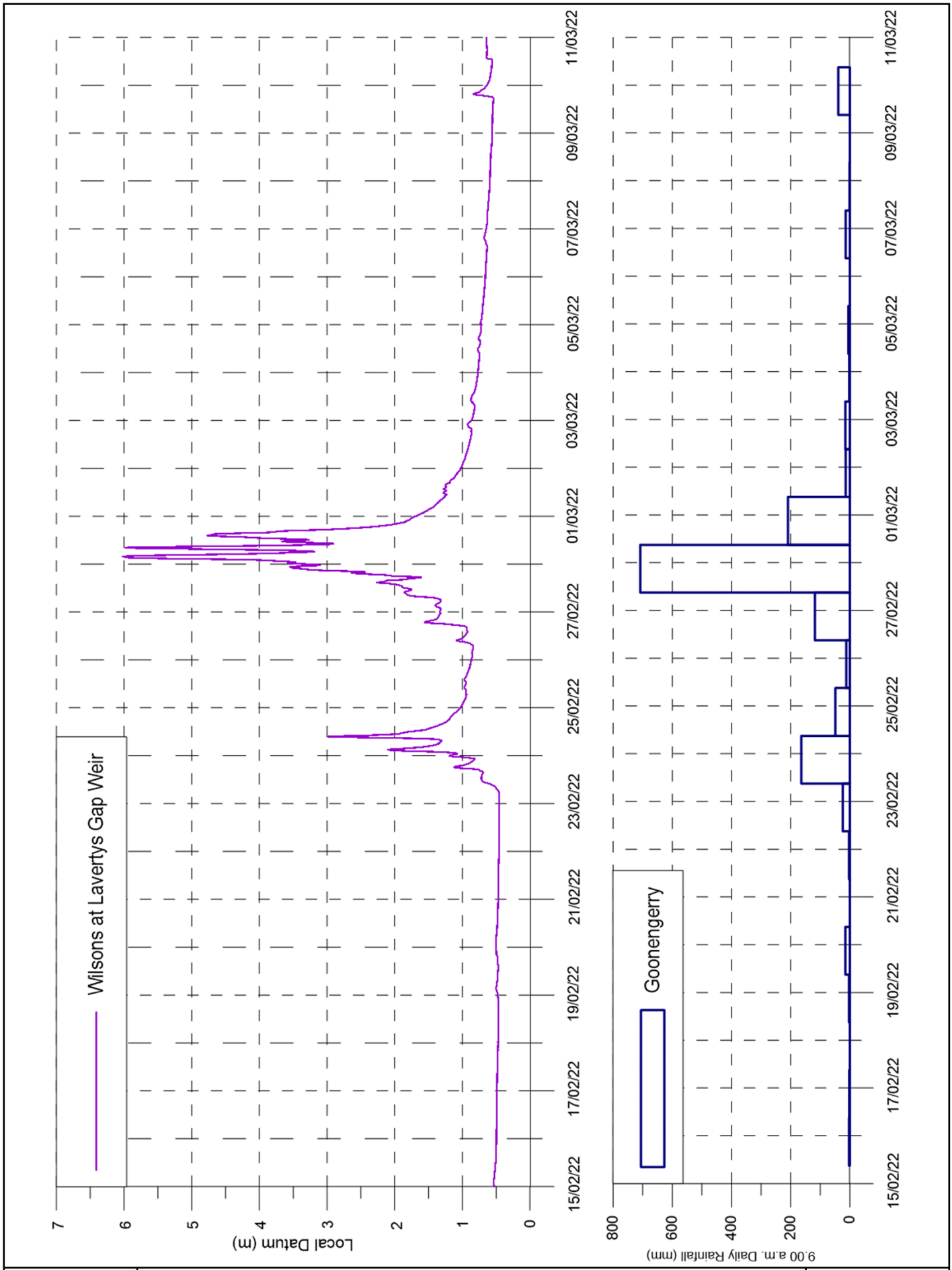
Report MHL2880
Figure
6.11

6.11.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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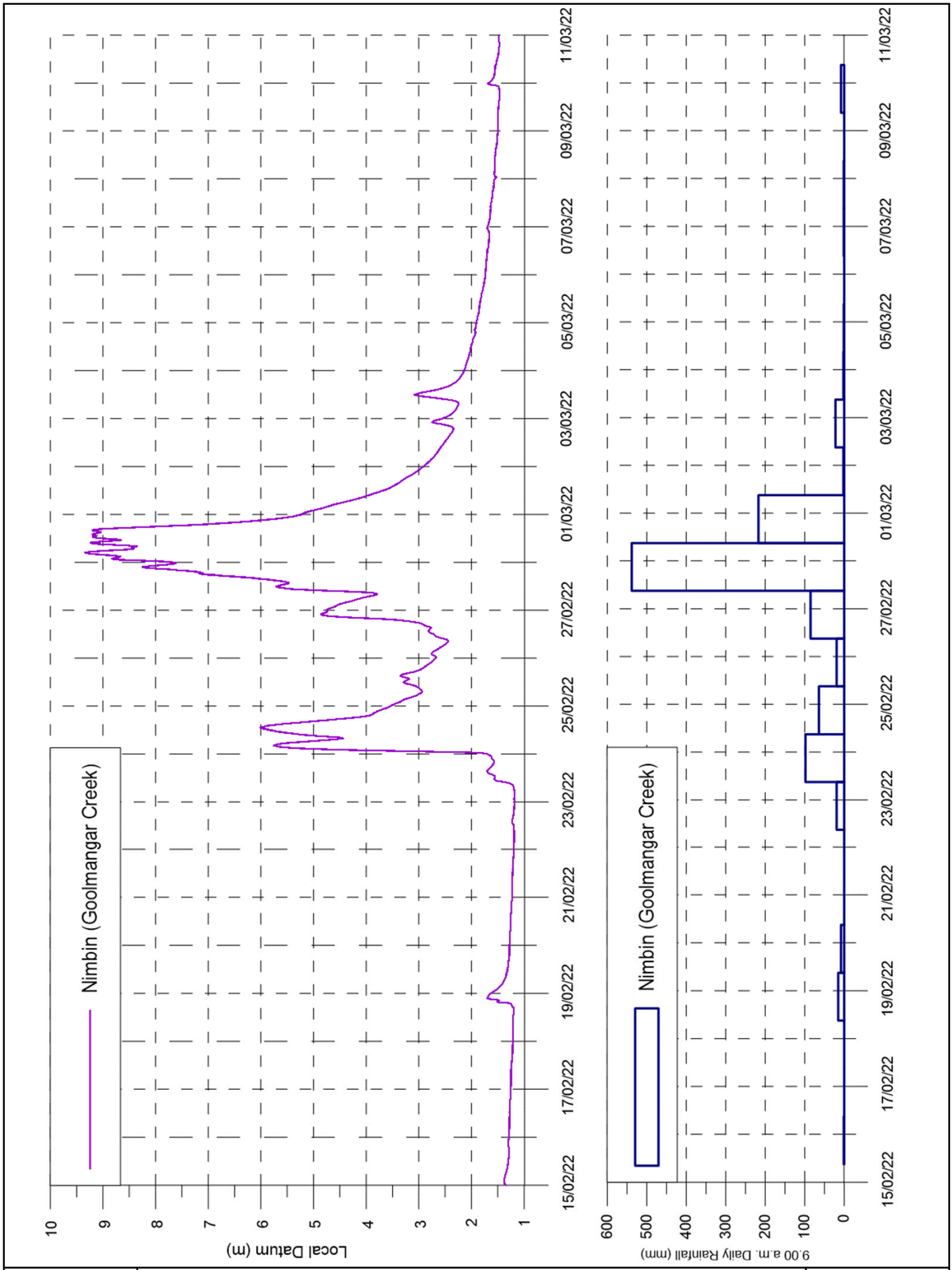
Report MHL2880
Figure
6.12

6.12.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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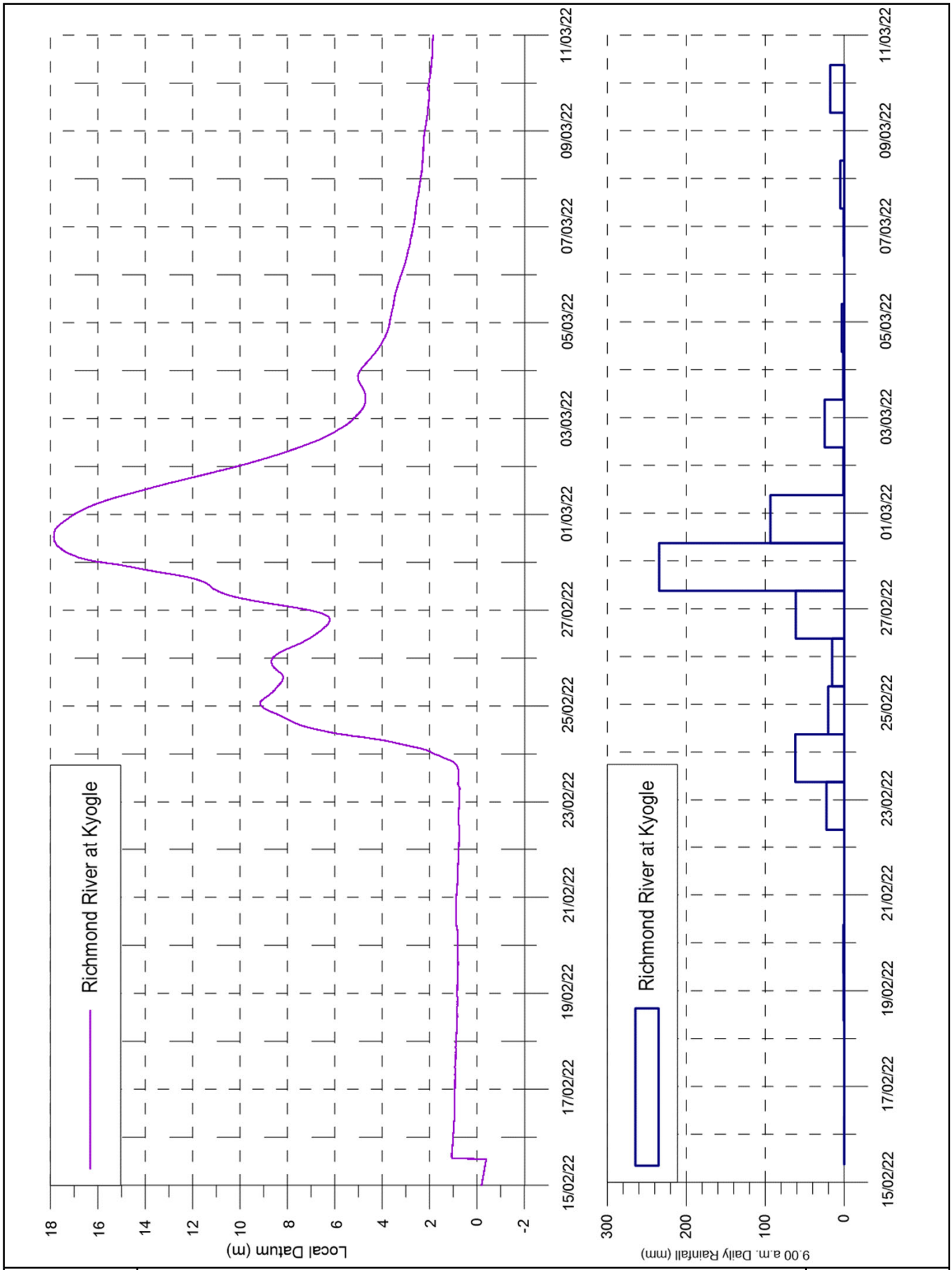
Report MHL2880
Figure
6.13

6.13.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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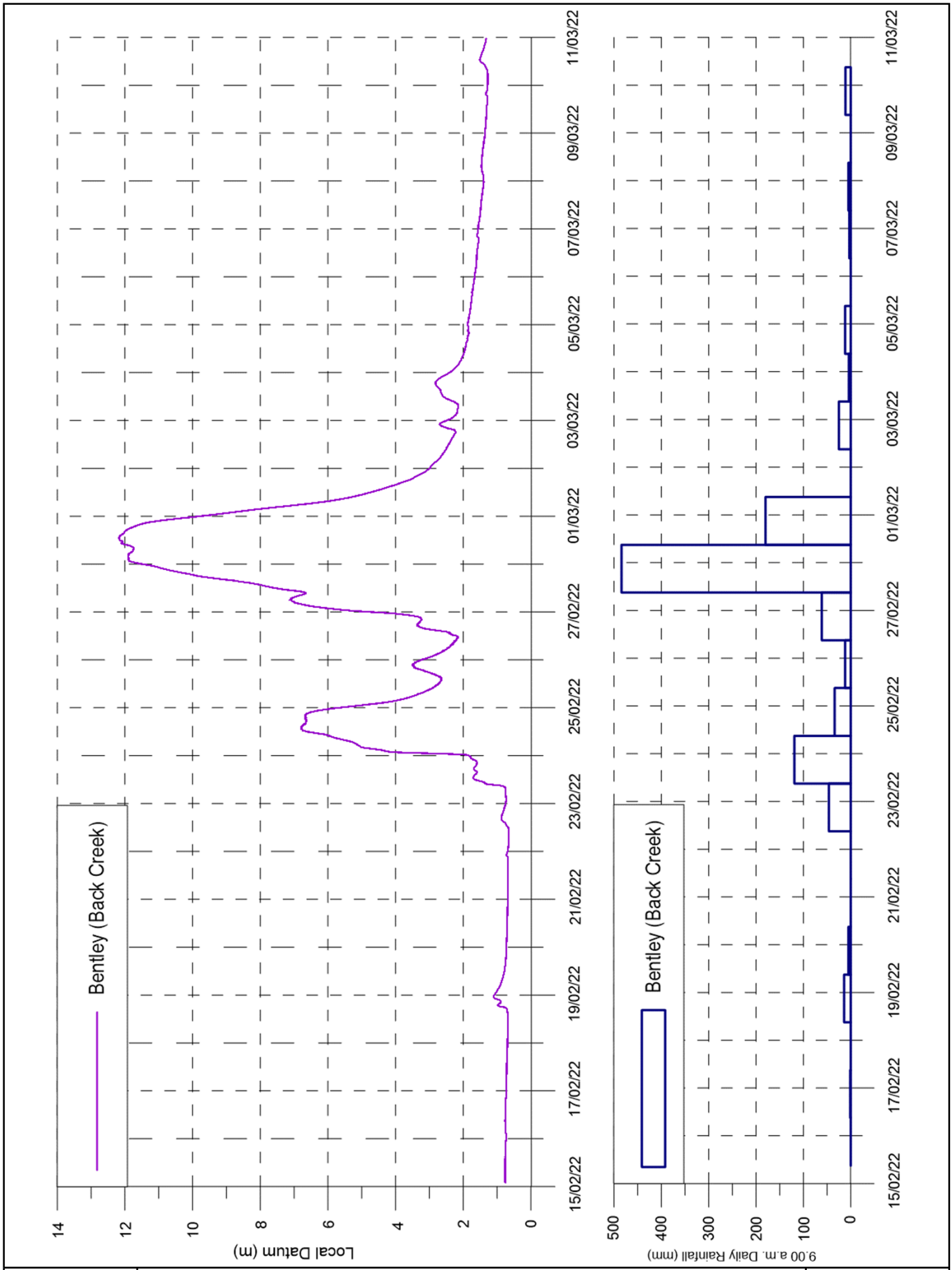
Report MHL2880
Figure
6.14

6.14.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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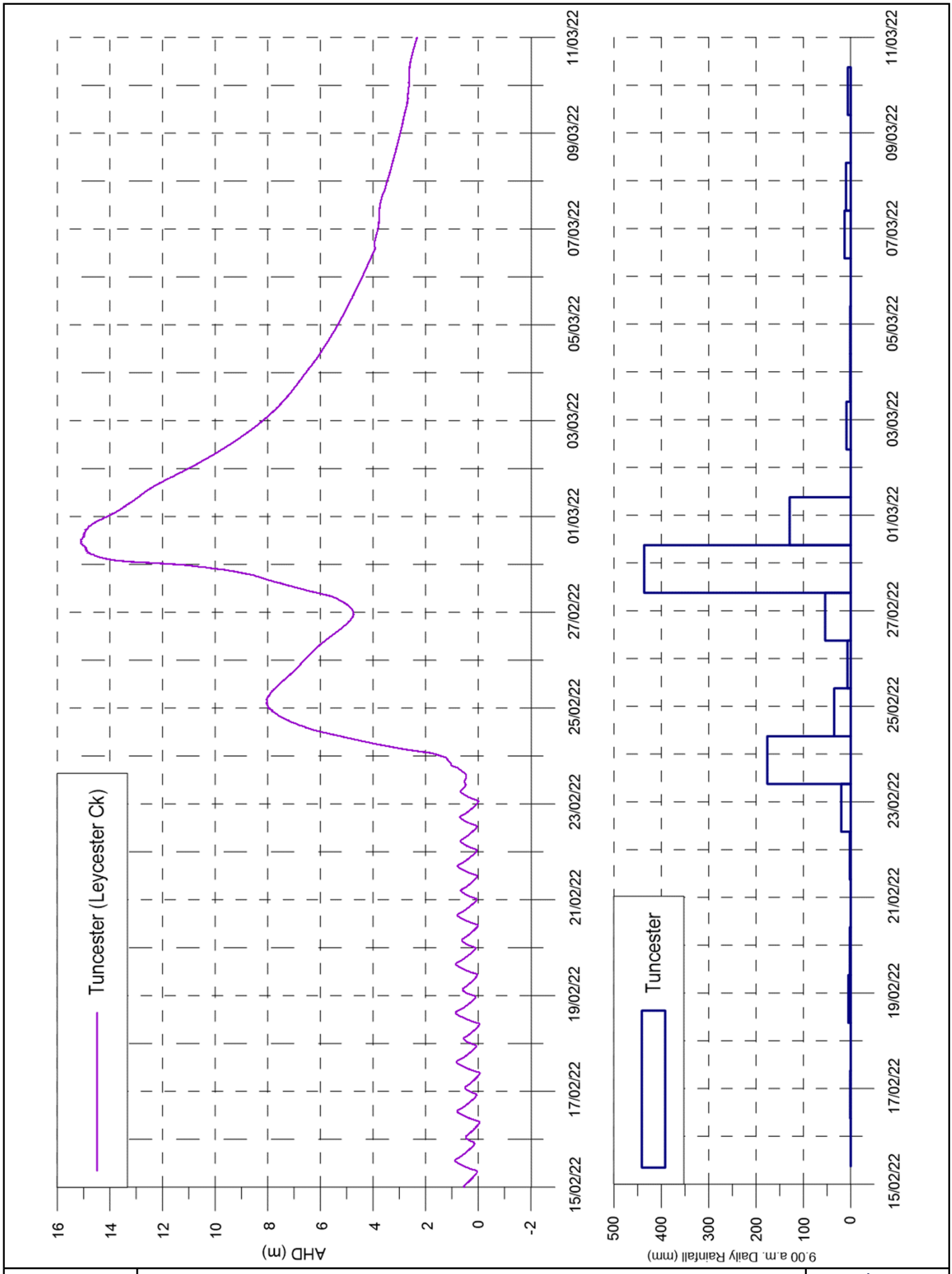
Report MHL2880
Figure
6.15

6.15.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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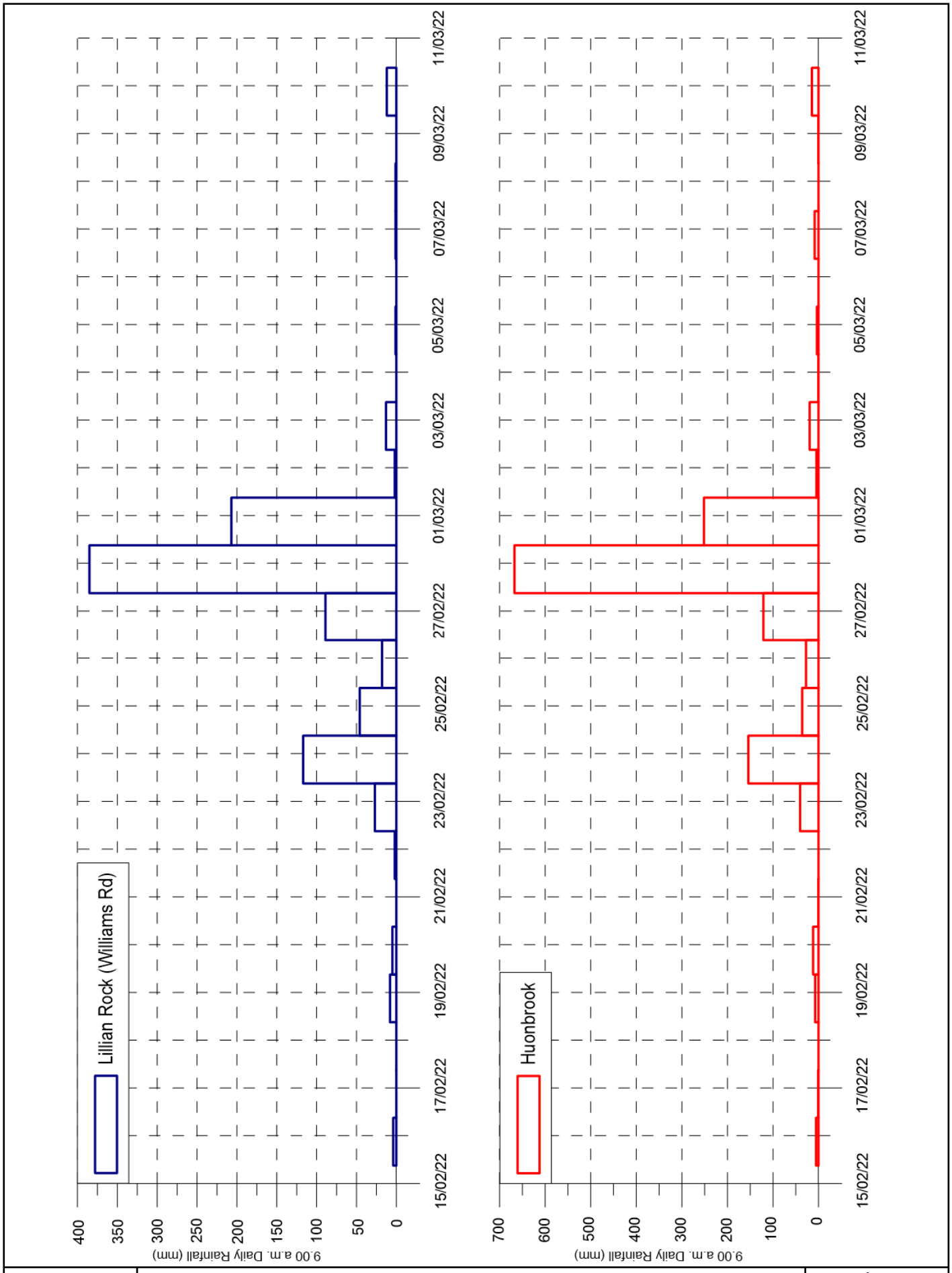
Report MHL2880
Figure
6.16

6.16.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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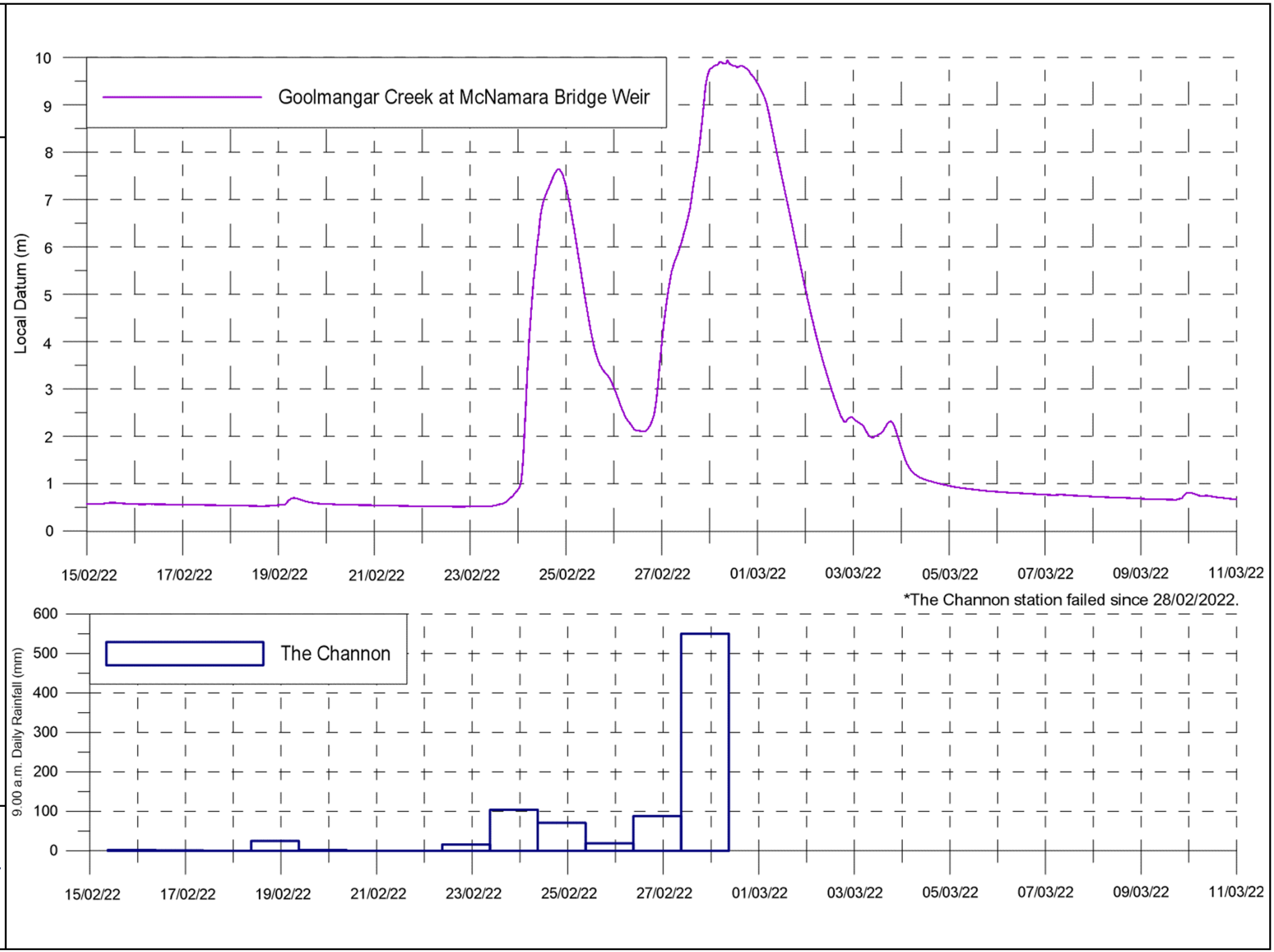
Report MHL2880
Figure
6.17

6.17.GRF



WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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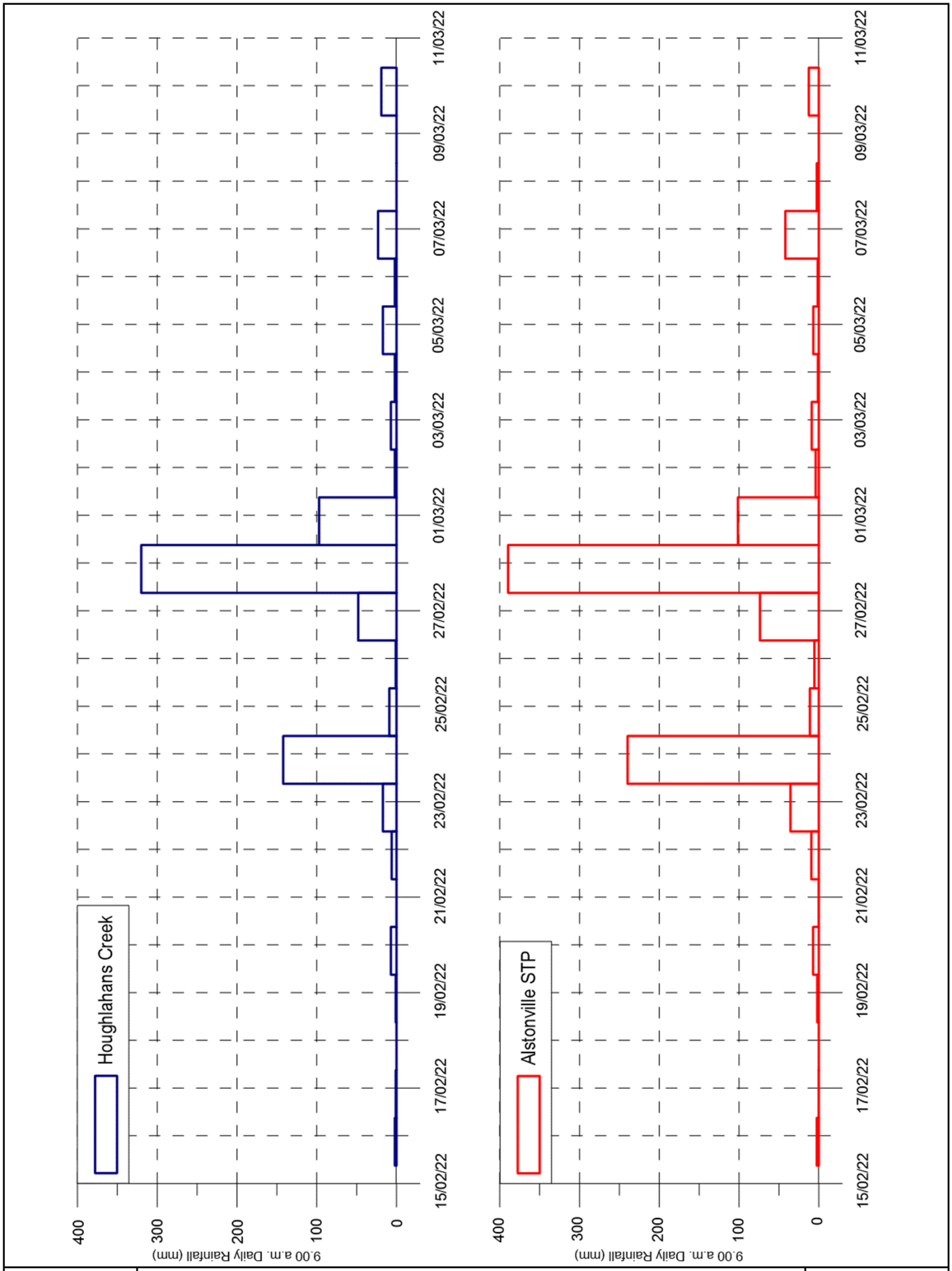
Report MHL2880
Figure 6.18

6.18.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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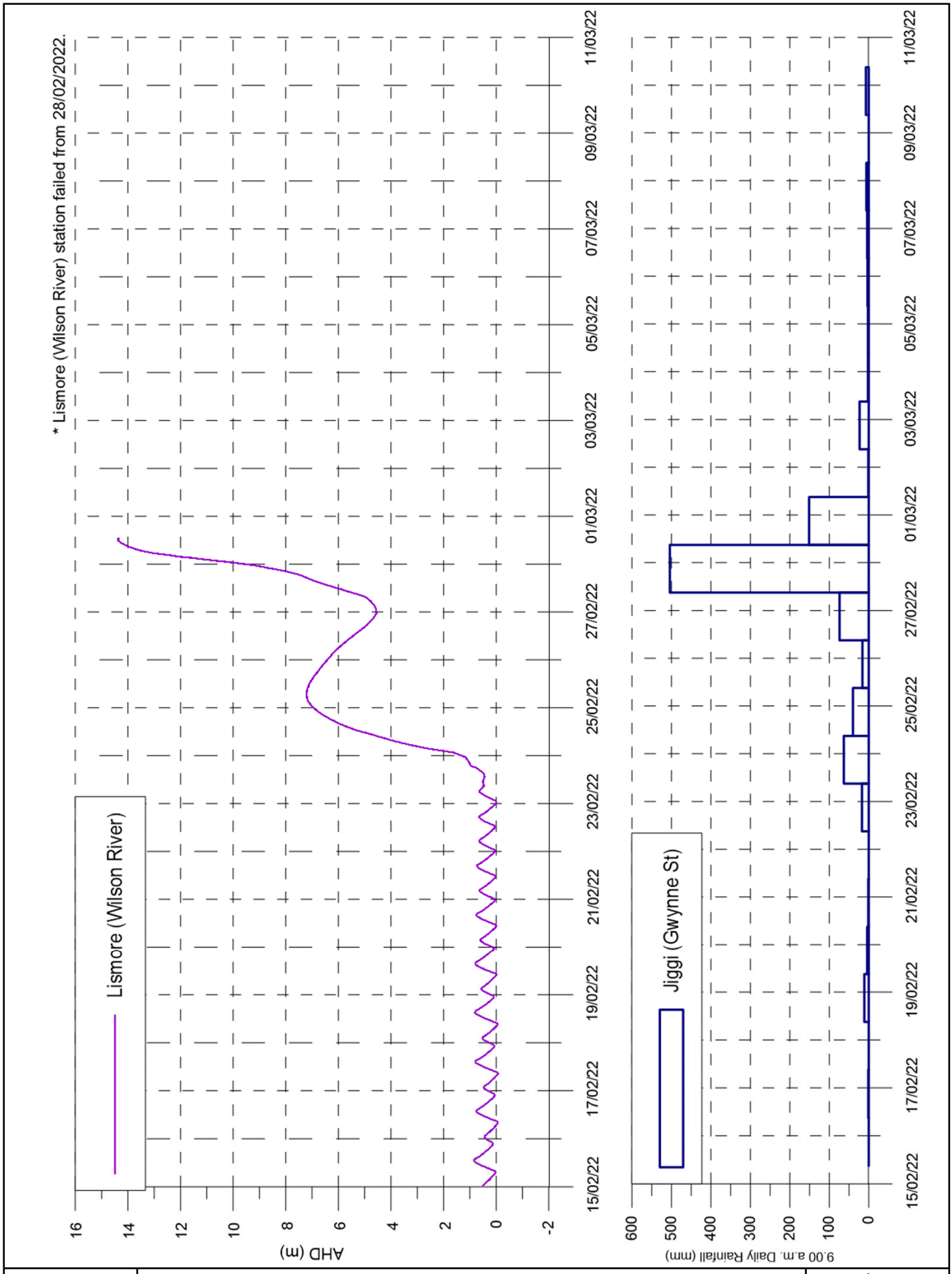
Report MHL2880
Figure
6.19

6.19.GRF



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WILSONS RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

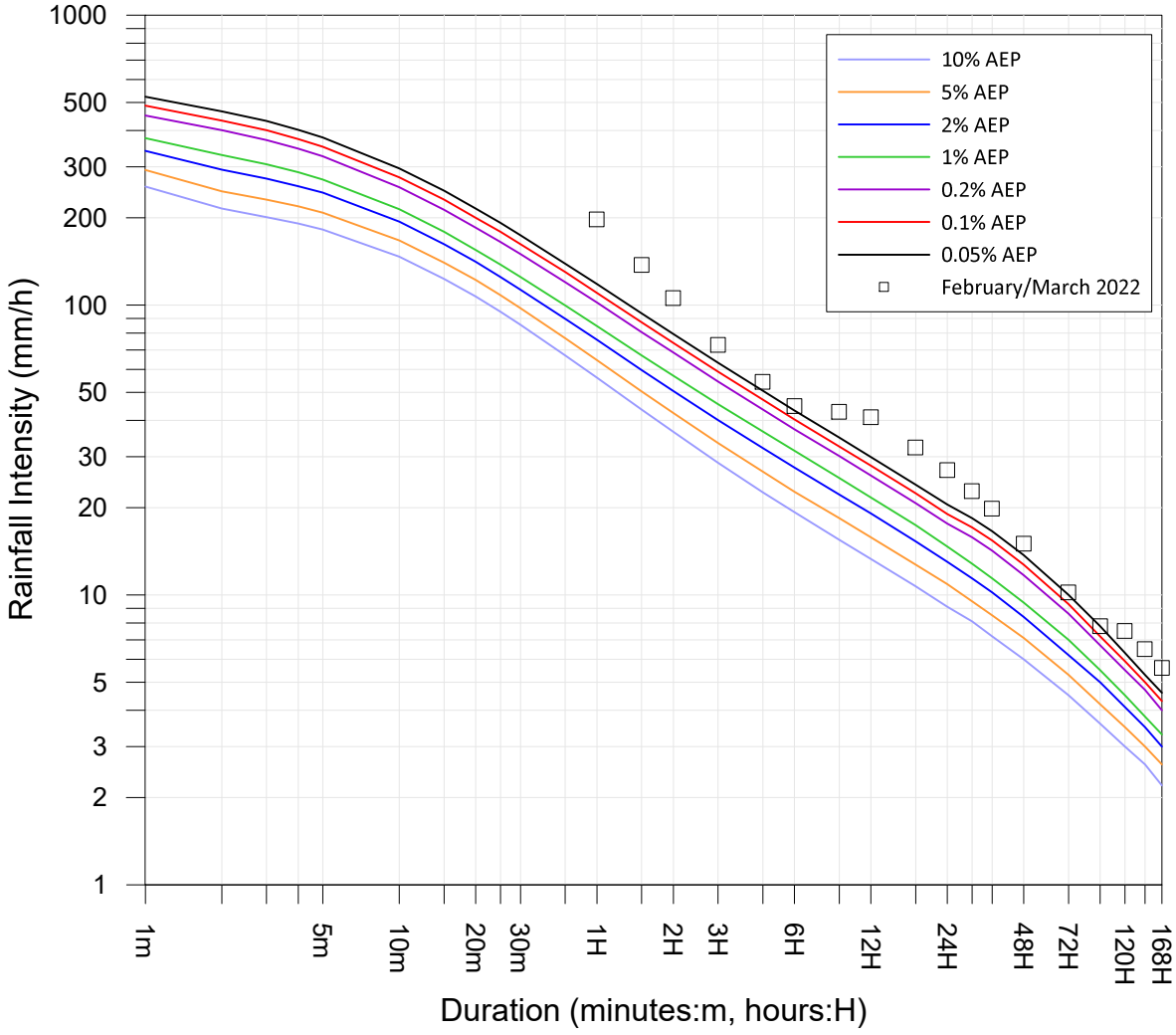
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.20

6.20.GRF

Site Owner: Lismore City Council
Latitude: -28.8081 Longitude:153.2818

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	197	08:26 28 Feb 2022
1.5H	137.3	08:23 28 Feb 2022
2H	105.5	08:29 28 Feb 2022
3H	72.7	08:22 28 Feb 2022
5H	54.2	08:25 28 Feb 2022
6H	44.8	08:23 28 Feb 2022
9H	42.8	08:24 28 Feb 2022
12H	41	08:10 28 Feb 2022
18H	32.2	08:26 28 Feb 2022
24H	26.9	08:24 28 Feb 2022
30H	22.8	10:01 28 Feb 2022
36H	19.8	08:27 28 Feb 2022
48H	15	18:28 28 Feb 2022
72H	10.2	08:53 28 Feb 2022
96H	7.8	08:33 28 Feb 2022
120H	7.5	08:28 28 Feb 2022
144H	6.5	00:41 01 Mar 2022
168H	5.6	00:41 02 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LISMORE DAWSON STREET (558087) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

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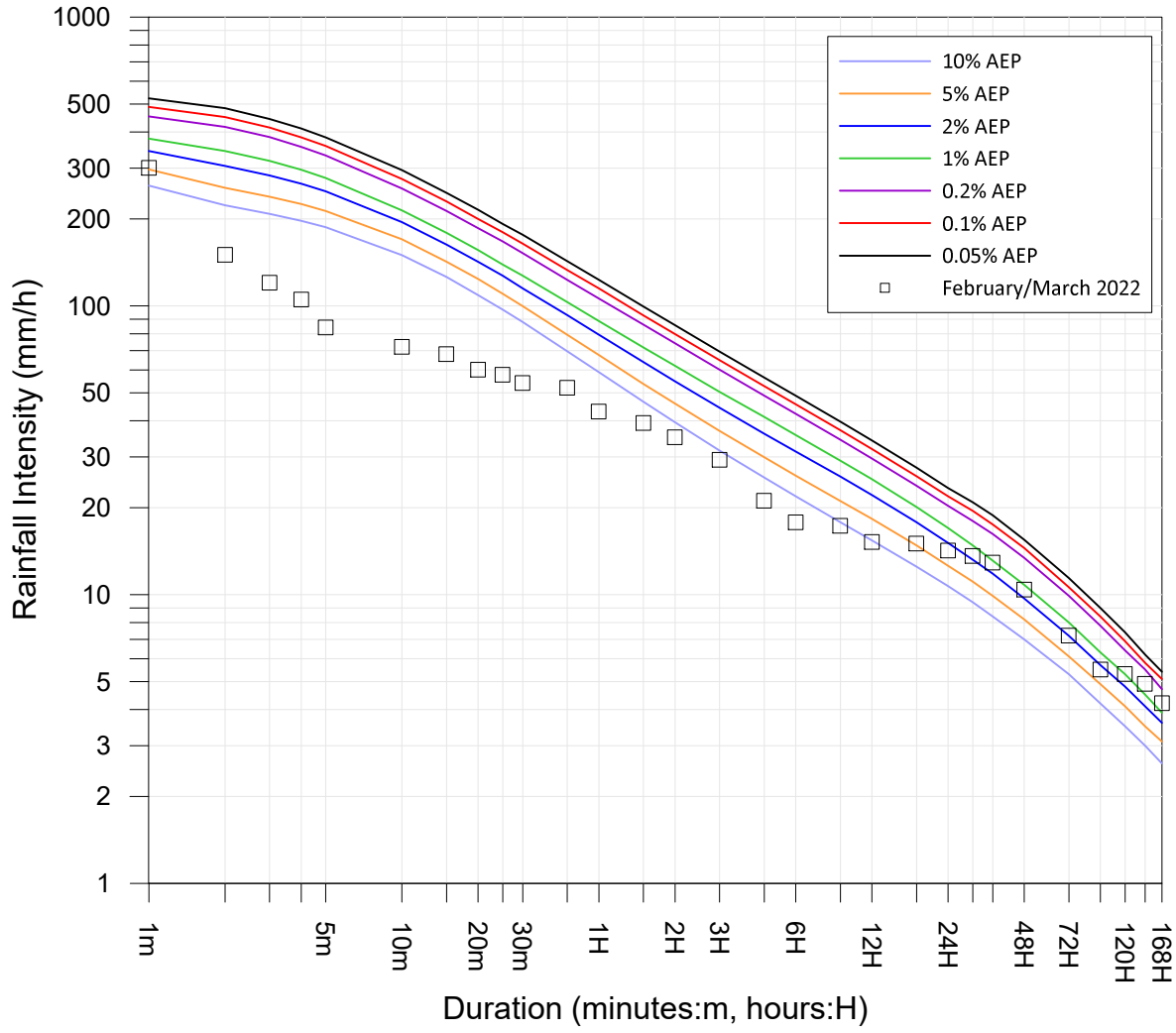
Report MHL2880
Figure
6.21

IFD_558087_Figure 6.21.pdf

Site Owner: Lismore City Council
Latitude: -28.728 Longitude:153.458

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	01:13 28 Feb 2022
2m	150	01:14 28 Feb 2022
3m	120	06:18 24 Feb 2022
4m	105	06:19 24 Feb 2022
5m	84	07:04 28 Feb 2022
10m	72	07:08 28 Feb 2022
15m	68	23:47 27 Feb 2022
20m	60	07:08 28 Feb 2022
25m	57.6	07:10 28 Feb 2022
30m	54	07:10 28 Feb 2022
45m	52	07:12 28 Feb 2022
1H	43	07:27 28 Feb 2022
1.5H	39.3	18:57 27 Feb 2022
2H	35	19:21 27 Feb 2022
3H	29.3	20:21 27 Feb 2022
5H	21.1	21:10 27 Feb 2022
6H	17.8	10:32 28 Feb 2022
9H	17.3	15:14 28 Feb 2022
12H	15.2	16:13 28 Feb 2022
18H	15	11:04 28 Feb 2022
24H	14.2	17:04 28 Feb 2022
30H	13.6	16:03 28 Feb 2022
36H	12.9	18:11 28 Feb 2022
48H	10.4	17:22 28 Feb 2022
72H	7.2	15:10 01 Mar 2022
96H	5.5	08:10 01 Mar 2022
120H	5.3	15:38 28 Feb 2022
144H	4.9	21:56 28 Feb 2022
168H	4.2	21:56 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

WILSONS RIVER AT NASHUA (58162)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

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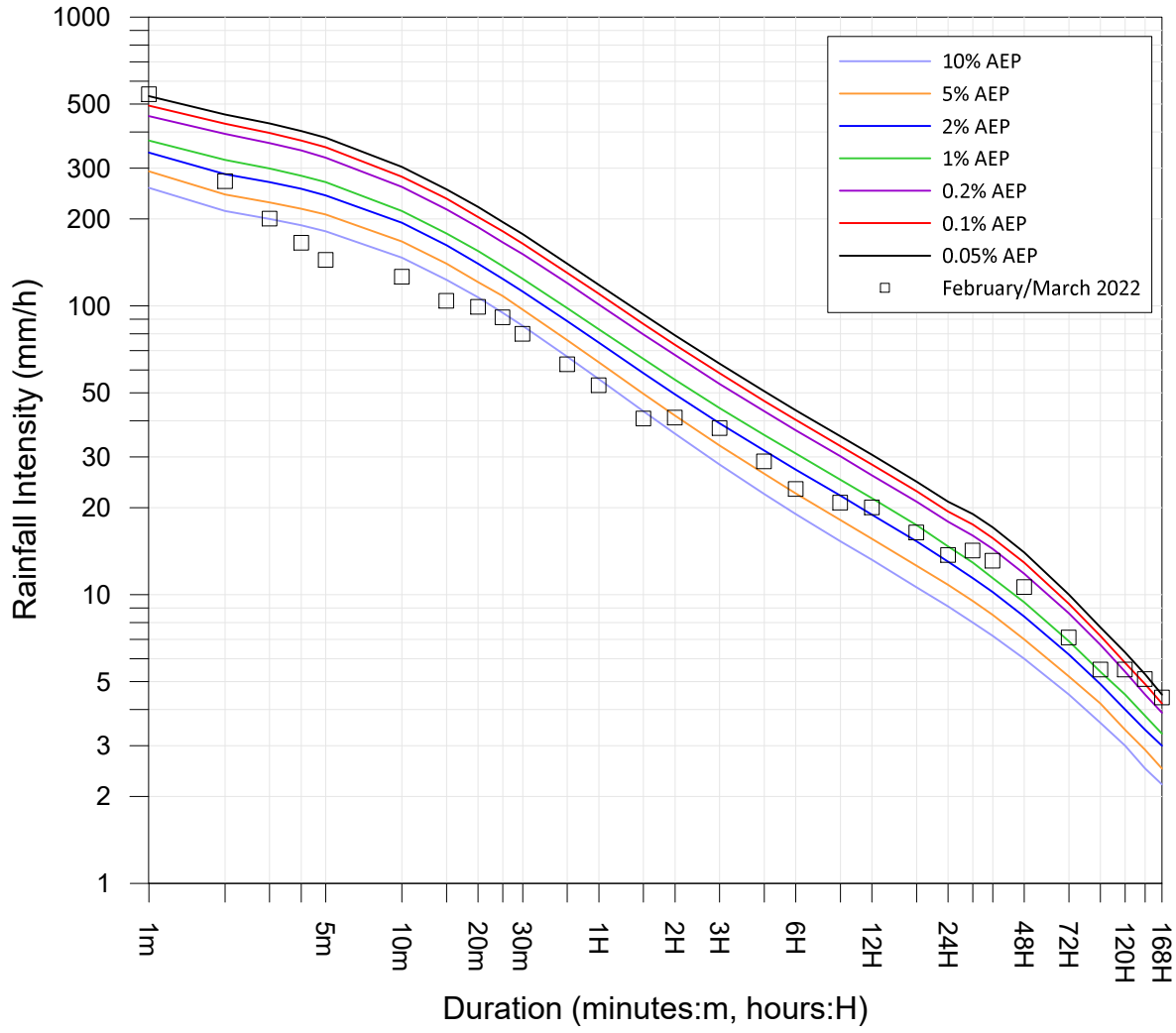
Report MHL2880
Figure
6.22

IFD_58162_Figure 6.22.pdf

Site Owner: Lismore City Council
Latitude: -28.962 Longitude:153.307

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	540	15:44 06 Mar 2022
2m	270	15:45 06 Mar 2022
3m	200	15:46 06 Mar 2022
4m	165	21:50 07 Mar 2022
5m	144	15:44 06 Mar 2022
10m	126	15:44 06 Mar 2022
15m	104	15:44 06 Mar 2022
20m	99	15:44 06 Mar 2022
25m	91.2	15:46 06 Mar 2022
30m	80	15:47 06 Mar 2022
45m	62.7	18:48 23 Feb 2022
1H	53	18:54 23 Feb 2022
1.5H	40.7	23:00 27 Feb 2022
2H	41	23:10 27 Feb 2022
3H	37.7	23:33 27 Feb 2022
5H	28.9	23:41 27 Feb 2022
6H	23.2	23:54 27 Feb 2022
9H	20.8	23:22 27 Feb 2022
12H	20	00:19 28 Feb 2022
18H	16.4	02:01 28 Feb 2022
24H	13.7	10:02 28 Feb 2022
30H	14.2	17:28 28 Feb 2022
36H	13.1	19:16 28 Feb 2022
48H	10.6	22:16 28 Feb 2022
72H	7.1	05:45 01 Mar 2022
96H	5.5	10:18 01 Mar 2022
120H	5.5	17:54 28 Feb 2022
144H	5.1	09:00 01 Mar 2022
168H	4.4	04:40 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

WILSONS RIVER AT TUCKURIMBA (558076)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

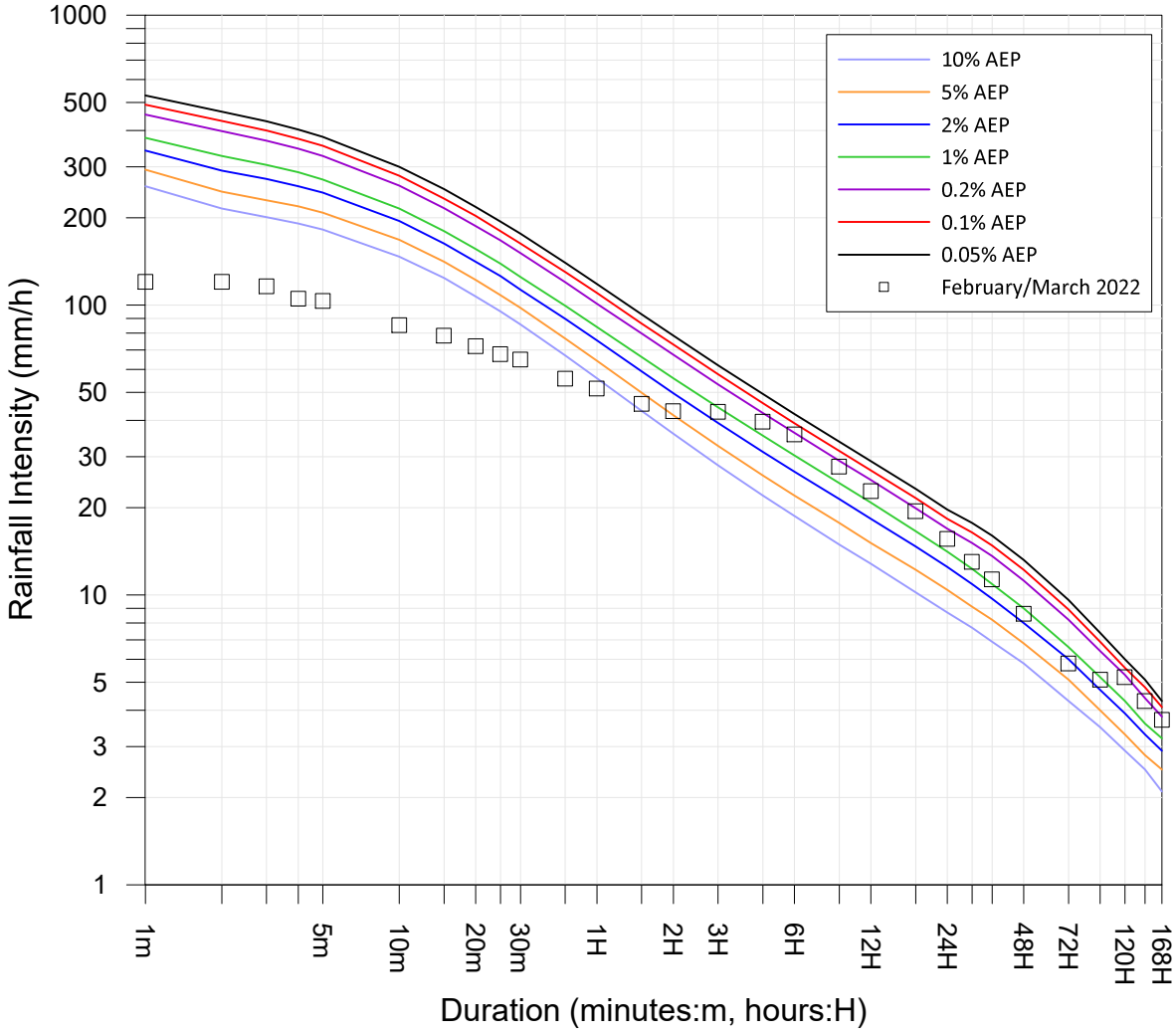
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.23

IFD_558076_Figure 6.23.pdf

Site Owner: BoM
Latitude: -28.83 Longitude:153.26

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	120	01:35 24 Feb 2022
2m	120	23:48 27 Feb 2022
3m	116	23:48 27 Feb 2022
4m	105	23:49 27 Feb 2022
5m	103.2	23:50 27 Feb 2022
10m	85.2	23:54 27 Feb 2022
15m	78.4	00:00 28 Feb 2022
20m	72	00:05 28 Feb 2022
25m	67.7	00:10 28 Feb 2022
30m	64.8	00:14 28 Feb 2022
45m	55.7	00:26 28 Feb 2022
1H	51.4	00:43 28 Feb 2022
1.5H	45.6	22:46 27 Feb 2022
2H	43	23:14 27 Feb 2022
3H	42.8	00:20 28 Feb 2022
5H	39.5	00:52 28 Feb 2022
6H	35.7	01:25 28 Feb 2022
9H	27.7	01:59 28 Feb 2022
12H	22.8	01:31 28 Feb 2022
18H	19.4	01:29 28 Feb 2022
24H	15.6	01:30 28 Feb 2022
30H	13	02:22 28 Feb 2022
36H	11.3	02:26 28 Feb 2022
48H	8.6	02:23 28 Feb 2022
72H	5.8	06:23 28 Feb 2022
96H	5.1	01:25 28 Feb 2022
120H	5.2	06:18 28 Feb 2022
144H	4.3	08:55 28 Feb 2022
168H	3.7	08:55 01 Mar 2022

Rainfall station failed at 02:40 28 February 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LISMORE AIRPORT AWS (58214)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

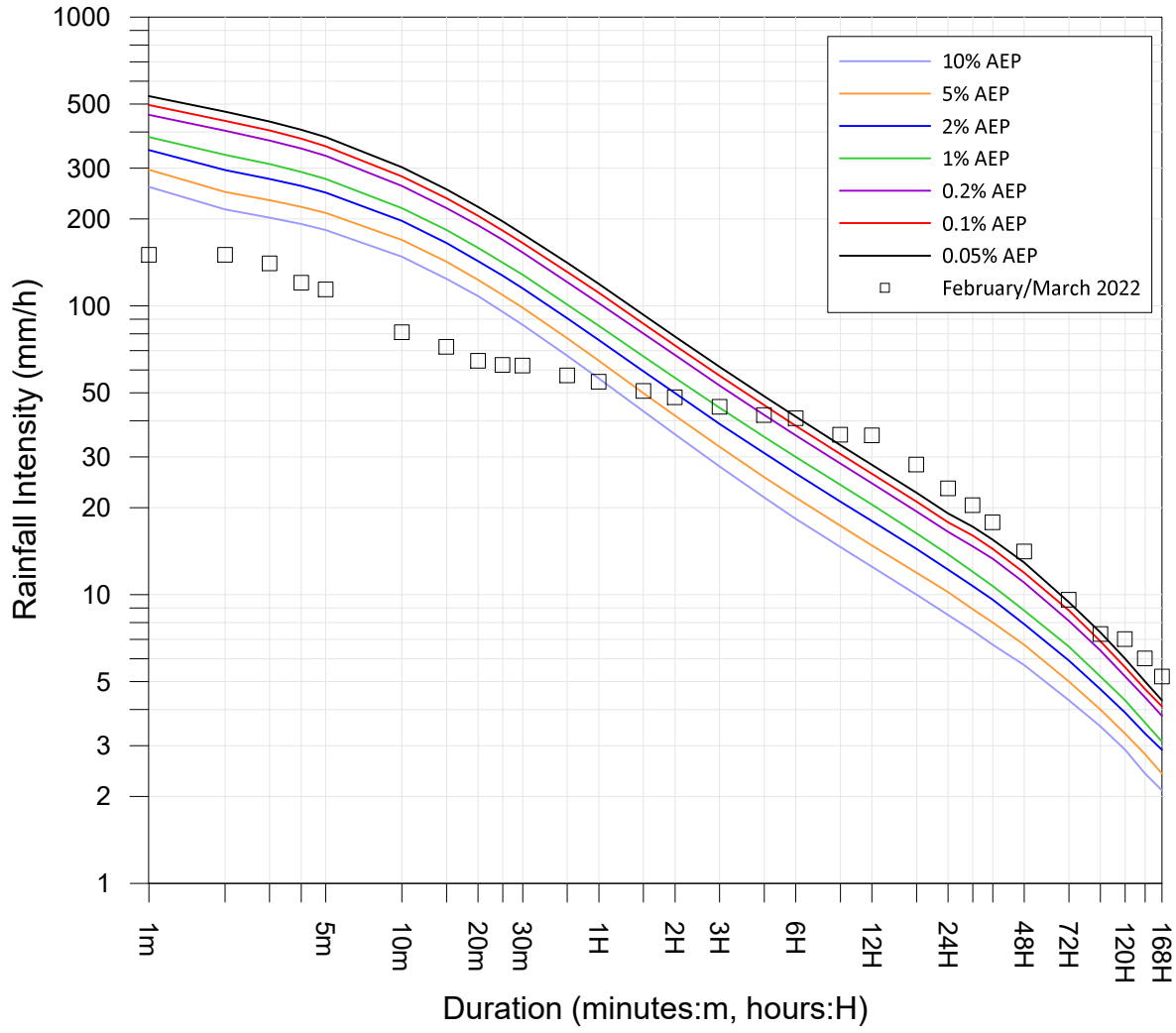
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.24

IFD_58214_Figure 6.24.pdf

Site Owner: WaterNSW
Latitude: -28.7365 Longitude:153.164

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	150	17:39 02 Mar 2022
2m	150	17:39 02 Mar 2022
3m	140	17:39 02 Mar 2022
4m	120	17:40 02 Mar 2022
5m	114	17:41 02 Mar 2022
10m	81	04:53 28 Feb 2022
15m	72	04:56 28 Feb 2022
20m	64.5	08:28 28 Feb 2022
25m	62.4	08:31 28 Feb 2022
30m	62	08:28 28 Feb 2022
45m	57.3	08:38 28 Feb 2022
1H	54.5	08:38 28 Feb 2022
1.5H	50.7	08:51 28 Feb 2022
2H	48.2	02:56 28 Feb 2022
3H	44.7	03:43 28 Feb 2022
5H	41.8	02:50 28 Feb 2022
6H	40.8	03:26 28 Feb 2022
9H	35.7	05:41 28 Feb 2022
12H	35.6	09:17 28 Feb 2022
18H	28.2	11:12 28 Feb 2022
24H	23.3	14:12 28 Feb 2022
30H	20.4	14:30 28 Feb 2022
36H	17.8	16:11 28 Feb 2022
48H	14.1	18:20 28 Feb 2022
72H	9.6	14:56 01 Mar 2022
96H	7.3	18:07 02 Mar 2022
120H	7	17:03 28 Feb 2022
144H	6	01:53 01 Mar 2022
168H	5.2	10:42 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LEYCESTER ROCK VALLEY (203010)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

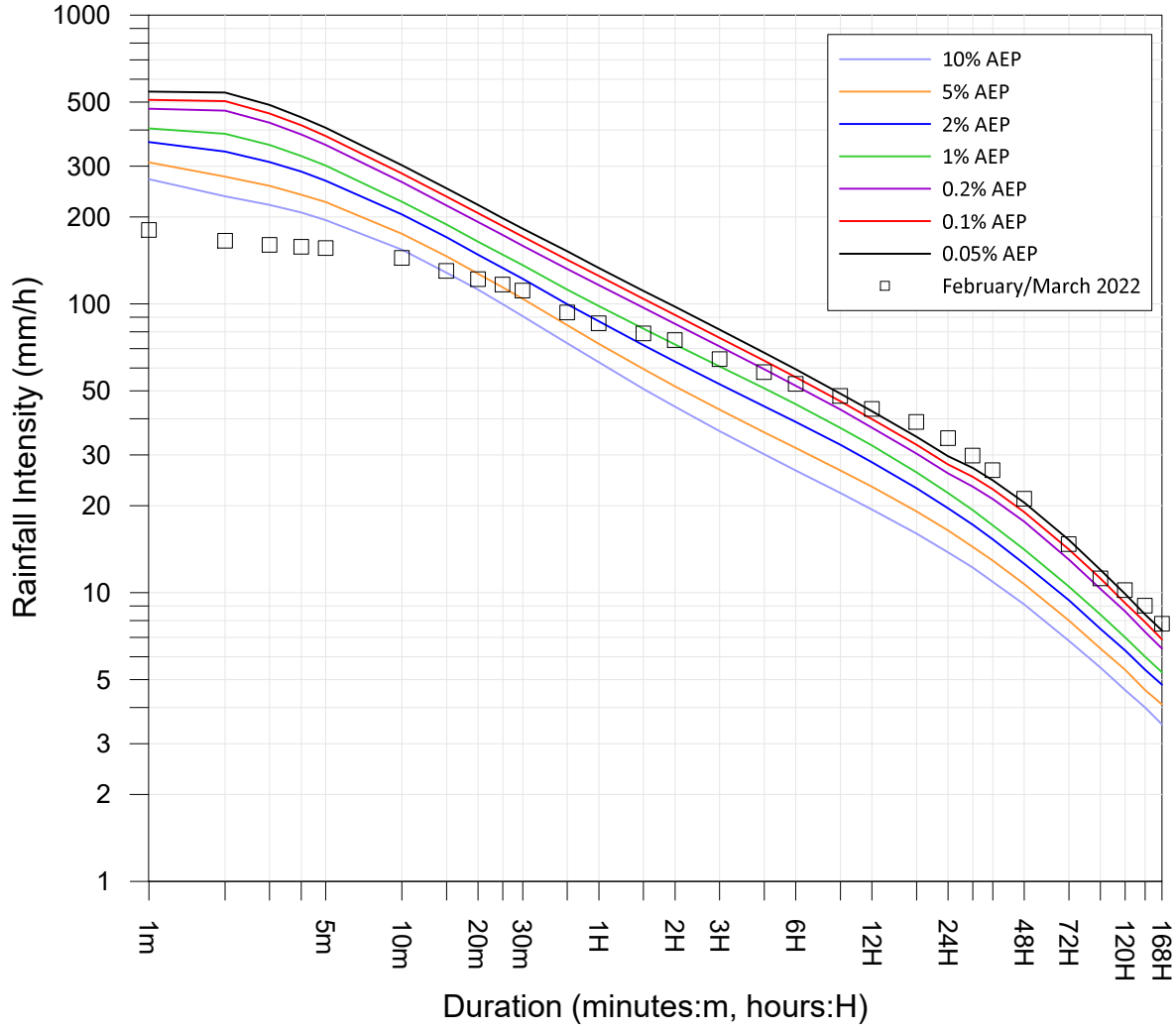
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.25

IFD_203010_Figure 6.25.pdf

Site Owner: DPE BCD
Latitude: -28.5521 Longitude:153.3856

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	180	03:35 28 Feb 2022
2m	165	01:49 28 Feb 2022
3m	160	01:50 28 Feb 2022
4m	157.5	01:51 28 Feb 2022
5m	156	01:52 28 Feb 2022
10m	144	01:56 28 Feb 2022
15m	130	01:56 28 Feb 2022
20m	121.5	02:01 28 Feb 2022
25m	116.4	01:58 28 Feb 2022
30m	111	02:03 28 Feb 2022
45m	93.3	07:33 28 Feb 2022
1H	85.5	02:28 28 Feb 2022
1.5H	79	02:58 28 Feb 2022
2H	74.8	03:37 28 Feb 2022
3H	64.3	02:59 28 Feb 2022
5H	58	03:52 28 Feb 2022
6H	52.8	07:33 28 Feb 2022
9H	47.9	07:39 28 Feb 2022
12H	43.2	11:53 28 Feb 2022
18H	39	14:46 28 Feb 2022
24H	34.2	16:18 28 Feb 2022
30H	29.8	16:20 28 Feb 2022
36H	26.5	16:06 28 Feb 2022
48H	21.1	16:38 28 Feb 2022
72H	14.7	23:06 28 Feb 2022
96H	11.2	22:58 28 Feb 2022
120H	10.2	15:37 28 Feb 2022
144H	9	22:46 28 Feb 2022
168H	7.8	17:14 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

HUONBROOK (558049)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

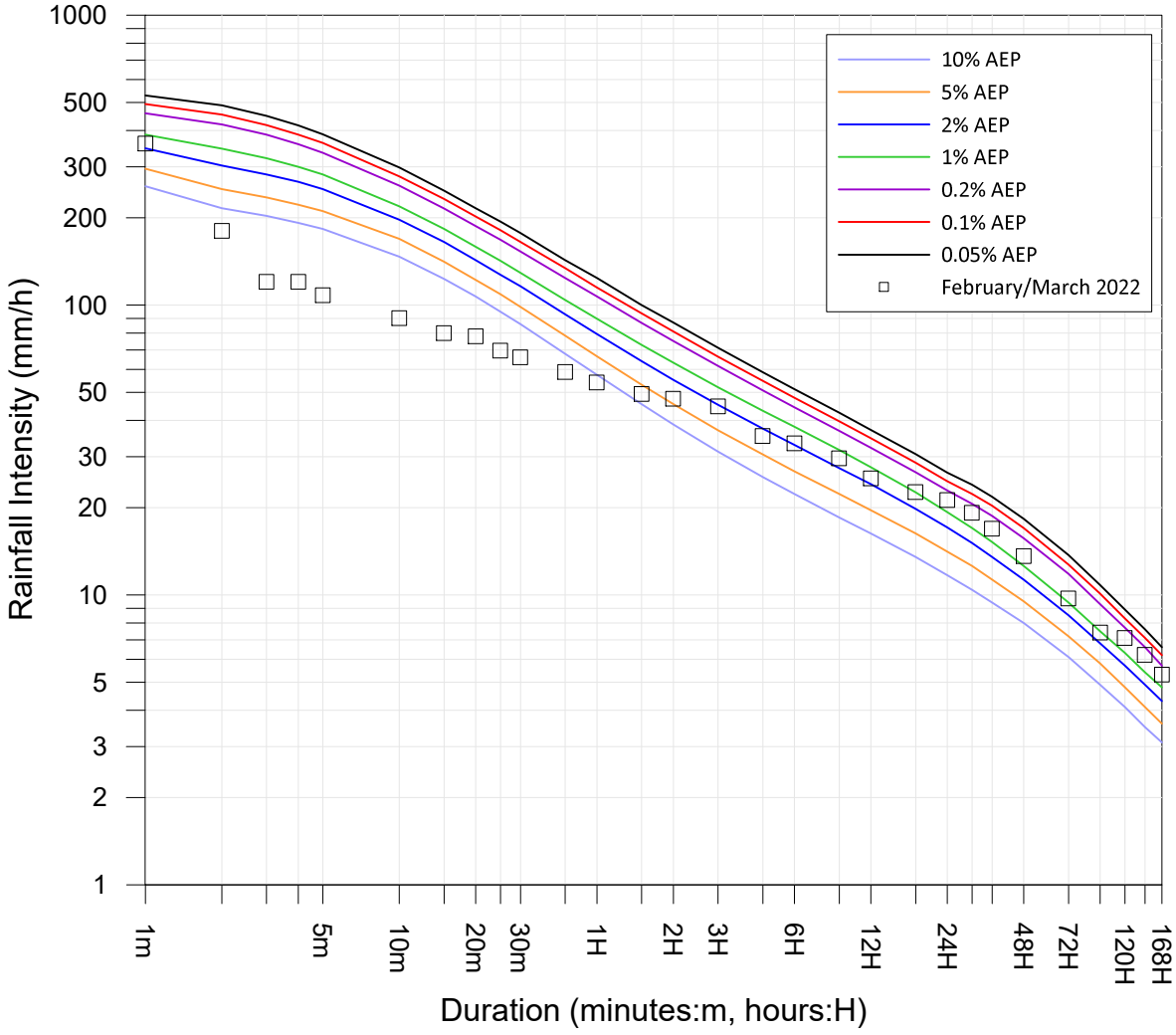
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.26

IFD_558049_Figure 6.26.pdf

Site Owner: BoM
Latitude: -28.528 Longitude:153.152

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	360	17:47 27 Feb 2022
2m	180	11:30 28 Feb 2022
3m	120	11:31 28 Feb 2022
4m	120	11:32 28 Feb 2022
5m	108	11:33 28 Feb 2022
10m	90	09:36 28 Feb 2022
15m	80	09:36 28 Feb 2022
20m	78	09:36 28 Feb 2022
25m	69.6	09:41 28 Feb 2022
30m	66	09:37 28 Feb 2022
45m	58.7	09:36 28 Feb 2022
1H	54	09:42 28 Feb 2022
1.5H	49.3	10:37 28 Feb 2022
2H	47.5	10:34 28 Feb 2022
3H	44.7	11:34 28 Feb 2022
5H	35.3	11:42 28 Feb 2022
6H	33.3	14:34 28 Feb 2022
9H	29.6	14:31 28 Feb 2022
12H	25.2	14:04 28 Feb 2022
18H	22.6	15:49 28 Feb 2022
24H	21.2	14:45 28 Feb 2022
30H	19.2	16:13 28 Feb 2022
36H	16.9	18:06 28 Feb 2022
48H	13.6	15:45 28 Feb 2022
72H	9.7	04:50 01 Mar 2022
96H	7.4	22:16 28 Feb 2022
120H	7.1	21:46 28 Feb 2022
144H	6.2	05:34 01 Mar 2022
168H	5.3	01:50 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LILLIAN ROCK (WILLIAMS RD) (58148)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

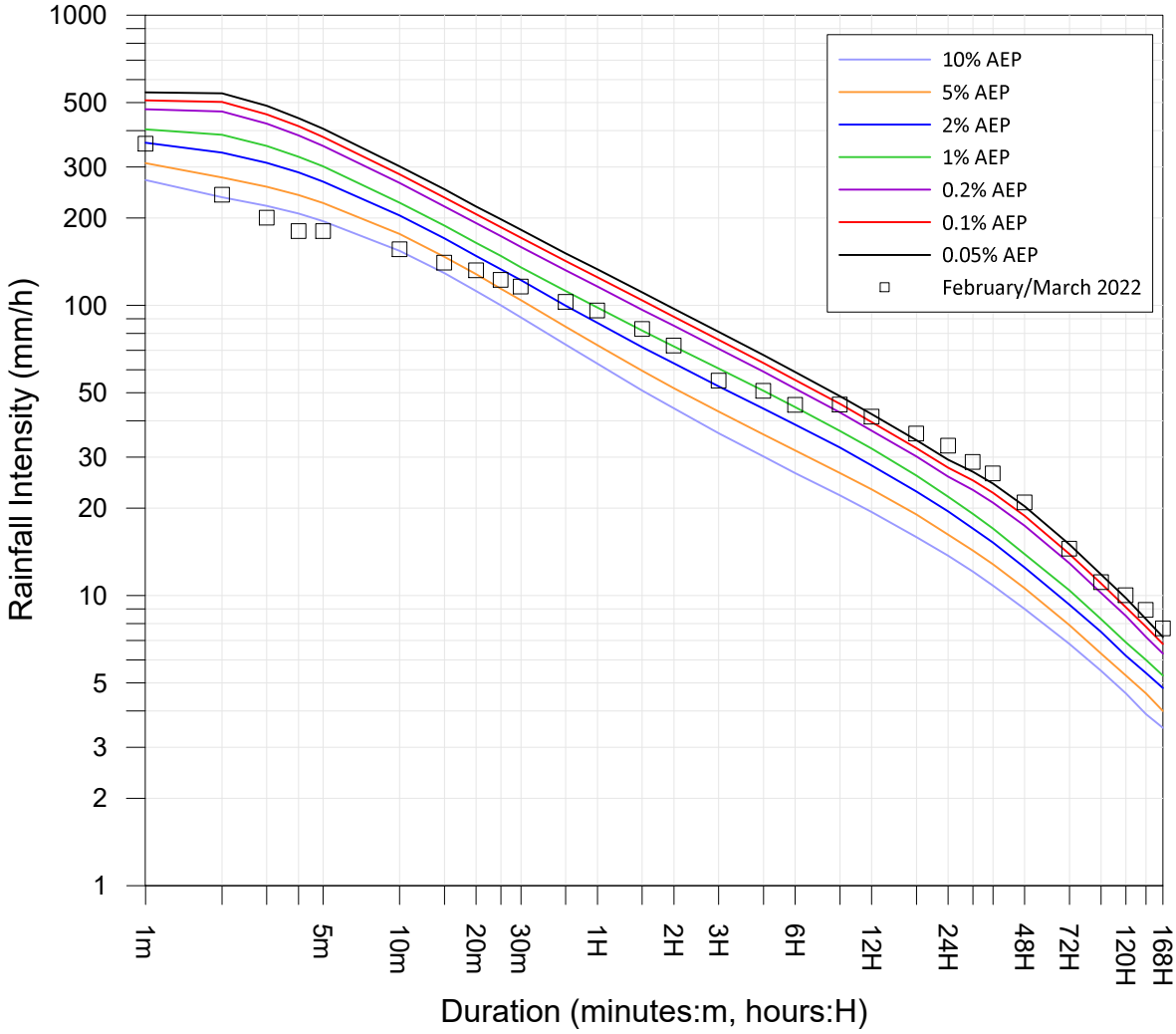
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.27

IFD_58148_Figure 6.27.pdf

Site Owner: Byron Shire Council
Latitude: -28.594 Longitude:153.417

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	360	02:36 28 Feb 2022
2m	240	08:33 28 Feb 2022
3m	200	08:33 28 Feb 2022
4m	180	08:35 28 Feb 2022
5m	180	08:36 28 Feb 2022
10m	156	08:38 28 Feb 2022
15m	140	08:43 28 Feb 2022
20m	132	08:45 28 Feb 2022
25m	122.4	08:53 28 Feb 2022
30m	116	08:53 28 Feb 2022
45m	102.7	08:53 28 Feb 2022
1H	96	08:51 28 Feb 2022
1.5H	82.7	08:55 28 Feb 2022
2H	72.5	08:57 28 Feb 2022
3H	55	09:19 28 Feb 2022
5H	50.7	04:21 28 Feb 2022
6H	45.3	08:55 28 Feb 2022
9H	45.4	08:51 28 Feb 2022
12H	41.3	09:11 28 Feb 2022
18H	36.1	12:52 28 Feb 2022
24H	32.8	17:05 28 Feb 2022
30H	28.8	17:25 28 Feb 2022
36H	26.3	18:07 28 Feb 2022
48H	20.9	17:58 28 Feb 2022
72H	14.5	22:54 28 Feb 2022
96H	11.1	22:54 01 Mar 2022
120H	10	16:33 28 Feb 2022
144H	8.9	22:52 28 Feb 2022
168H	7.7	22:52 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

GOONENGERRY (ALERT) (558033)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

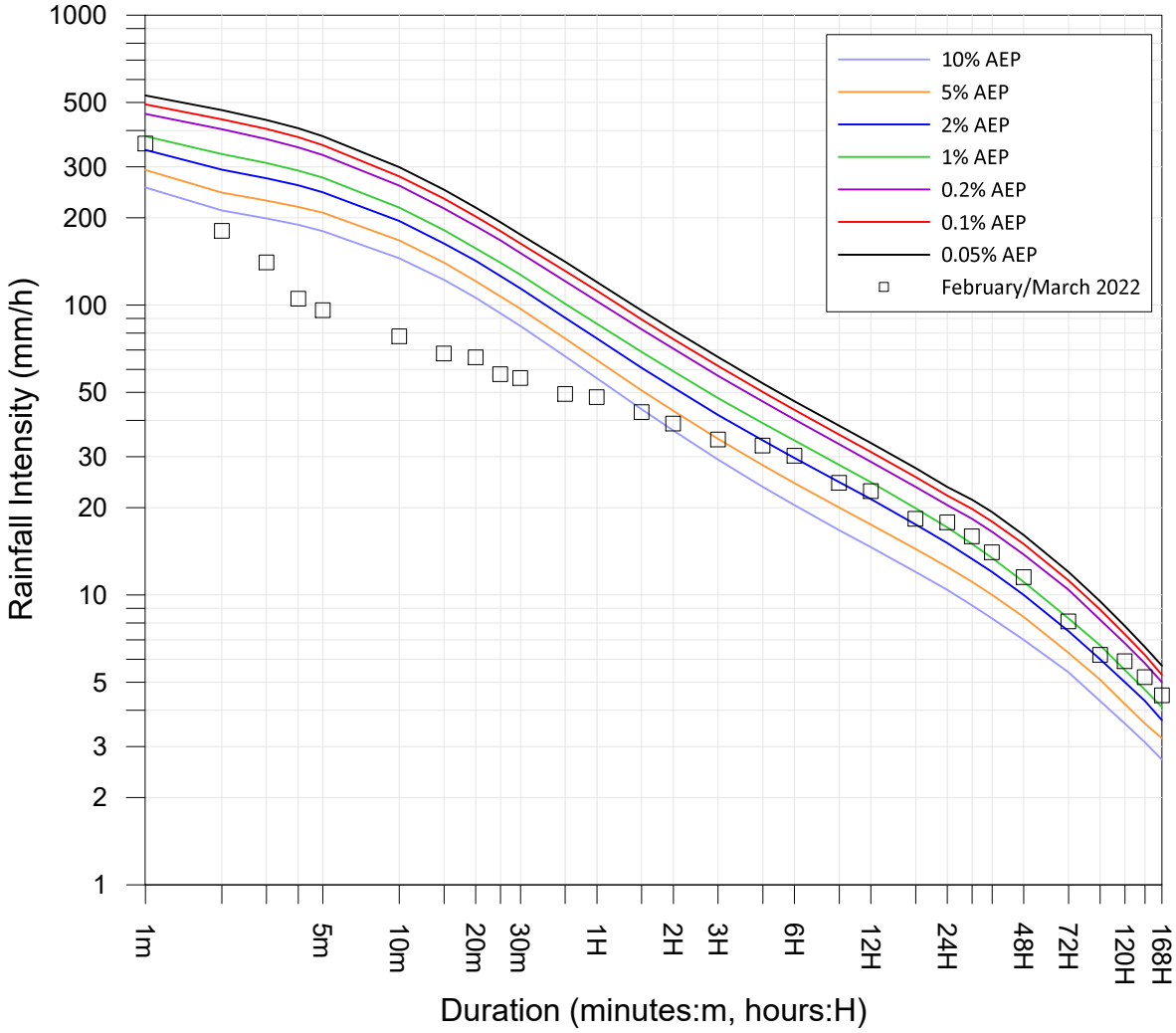
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.28

IFD_558033_Figure 6.28.pdf

Site Owner: Lismore City Council
Latitude: -28.605 Longitude:153.091

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	360	18:45 27 Feb 2022
2m	180	18:46 27 Feb 2022
3m	140	18:47 27 Feb 2022
4m	105	18:48 27 Feb 2022
5m	96	10:48 28 Feb 2022
10m	78	10:53 28 Feb 2022
15m	68	10:57 28 Feb 2022
20m	66	10:57 28 Feb 2022
25m	57.6	11:00 28 Feb 2022
30m	56	11:07 28 Feb 2022
45m	49.3	11:22 28 Feb 2022
1H	48	11:37 28 Feb 2022
1.5H	42.7	11:49 28 Feb 2022
2H	39	12:02 28 Feb 2022
3H	34.3	12:52 28 Feb 2022
5H	32.7	12:05 28 Feb 2022
6H	30.2	12:51 28 Feb 2022
9H	24.3	14:13 28 Feb 2022
12H	22.8	13:38 28 Feb 2022
18H	18.3	16:48 28 Feb 2022
24H	17.8	14:13 28 Feb 2022
30H	15.9	14:14 28 Feb 2022
36H	14	18:00 28 Feb 2022
48H	11.5	16:44 28 Feb 2022
72H	8.1	03:35 01 Mar 2022
96H	6.2	23:59 28 Feb 2022
120H	5.9	22:53 28 Feb 2022
144H	5.2	00:40 01 Mar 2022
168H	4.5	13:57 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CAWONGLA (ALERT) (558024)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

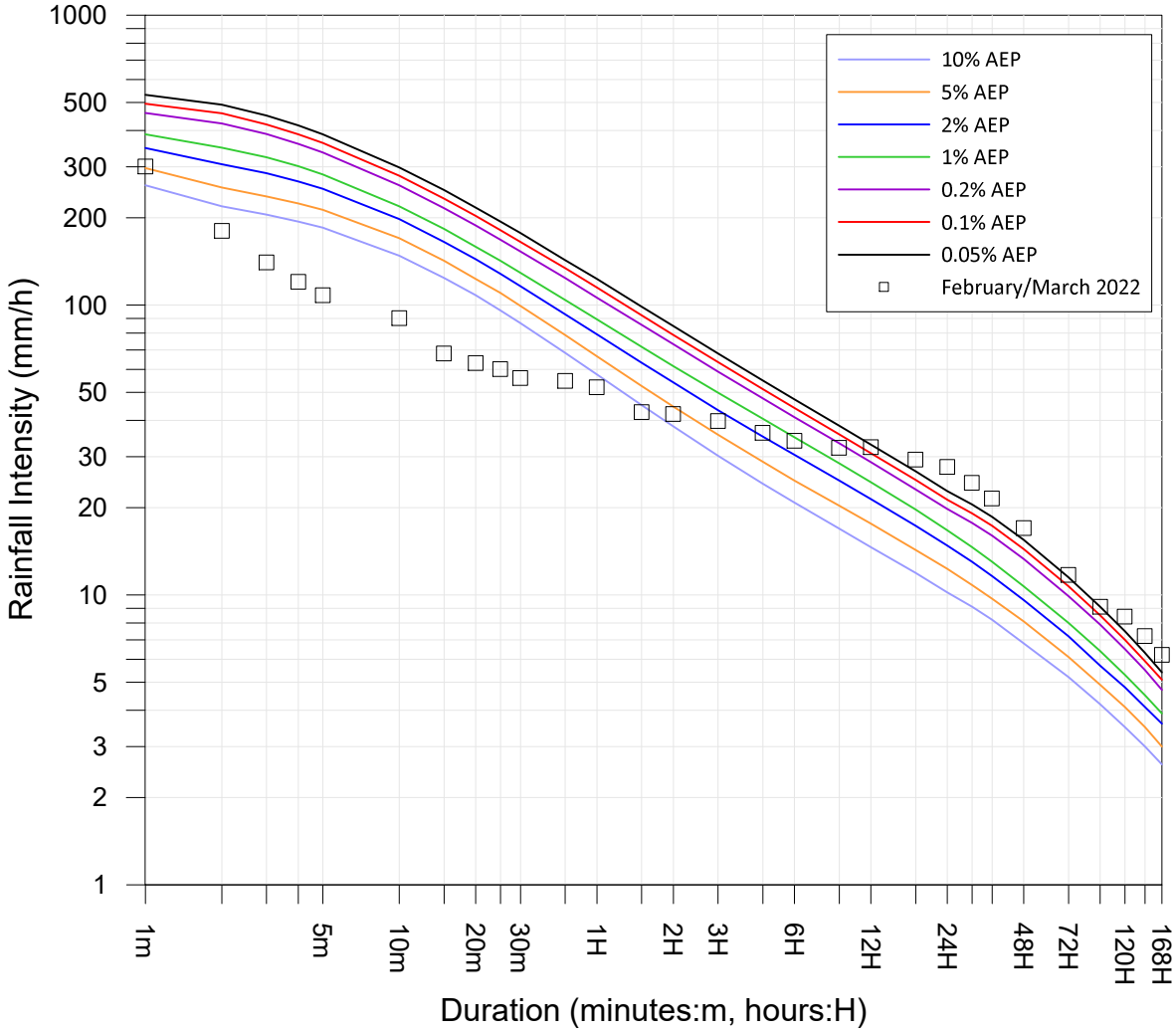
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.29

IFD_558024_Figure 6.29.pdf

Site Owner: Lismore City Council
Latitude: -28.608 Longitude:153.213

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	02:12 28 Feb 2022
2m	180	02:13 28 Feb 2022
3m	140	02:14 28 Feb 2022
4m	120	02:15 28 Feb 2022
5m	108	01:46 24 Feb 2022
10m	90	01:51 24 Feb 2022
15m	68	17:45 27 Feb 2022
20m	63	03:26 28 Feb 2022
25m	60	03:31 28 Feb 2022
30m	56	11:12 28 Feb 2022
45m	54.7	03:51 28 Feb 2022
1H	52	03:57 28 Feb 2022
1.5H	42.7	03:49 28 Feb 2022
2H	42	03:59 28 Feb 2022
3H	39.7	13:27 28 Feb 2022
5H	36.2	14:29 28 Feb 2022
6H	34	13:24 28 Feb 2022
9H	32.1	14:27 28 Feb 2022
12H	32.3	13:24 28 Feb 2022
18H	29.3	16:06 28 Feb 2022
24H	27.6	15:10 28 Feb 2022
30H	24.3	16:28 28 Feb 2022
36H	21.5	17:58 28 Feb 2022
48H	17	16:33 28 Feb 2022
72H	11.7	07:06 01 Mar 2022
96H	9.1	16:41 28 Feb 2022
120H	8.4	22:35 28 Feb 2022
144H	7.2	23:35 28 Feb 2022
168H	6.2	11:26 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

NIMBIN (GOOLMANGAR CREEK) (58180) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

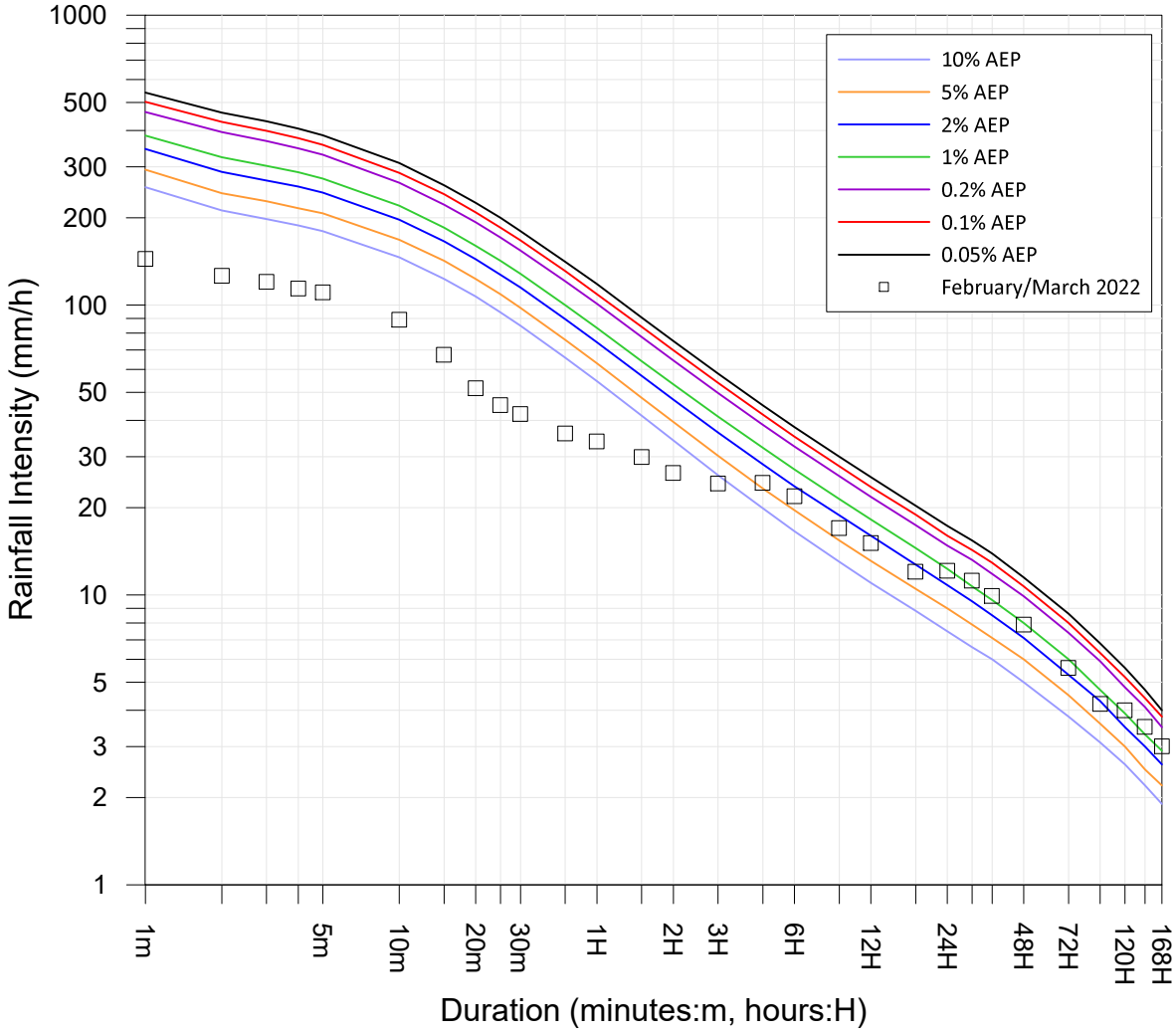
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.30

IFD_58180_Figure 6.30.pdf

Site Owner: WaterNSW
Latitude: -28.621 Longitude:152.9948

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	144	18:03 02 Mar 2022
2m	126	19:45 09 Mar 2022
3m	120	19:45 09 Mar 2022
4m	114	19:45 09 Mar 2022
5m	110.4	19:45 09 Mar 2022
10m	88.8	19:48 09 Mar 2022
15m	67.2	19:52 09 Mar 2022
20m	51.6	19:58 09 Mar 2022
25m	45.1	07:49 28 Feb 2022
30m	42	07:47 28 Feb 2022
45m	36	08:02 28 Feb 2022
1H	33.8	07:47 28 Feb 2022
1.5H	29.9	08:12 28 Feb 2022
2H	26.3	08:24 28 Feb 2022
3H	24.2	10:24 28 Feb 2022
5H	24.3	11:16 28 Feb 2022
6H	21.9	11:57 28 Feb 2022
9H	17	13:36 28 Feb 2022
12H	15.1	13:01 28 Feb 2022
18H	12	10:48 28 Feb 2022
24H	12.1	13:36 28 Feb 2022
30H	11.2	12:54 28 Feb 2022
36H	9.9	16:02 28 Feb 2022
48H	7.9	15:59 28 Feb 2022
72H	5.6	06:43 01 Mar 2022
96H	4.2	04:00 01 Mar 2022
120H	4	18:41 28 Feb 2022
144H	3.5	06:13 01 Mar 2022
168H	3	00:08 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

RICHMOND RIVER AT KYOGLE (203900)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

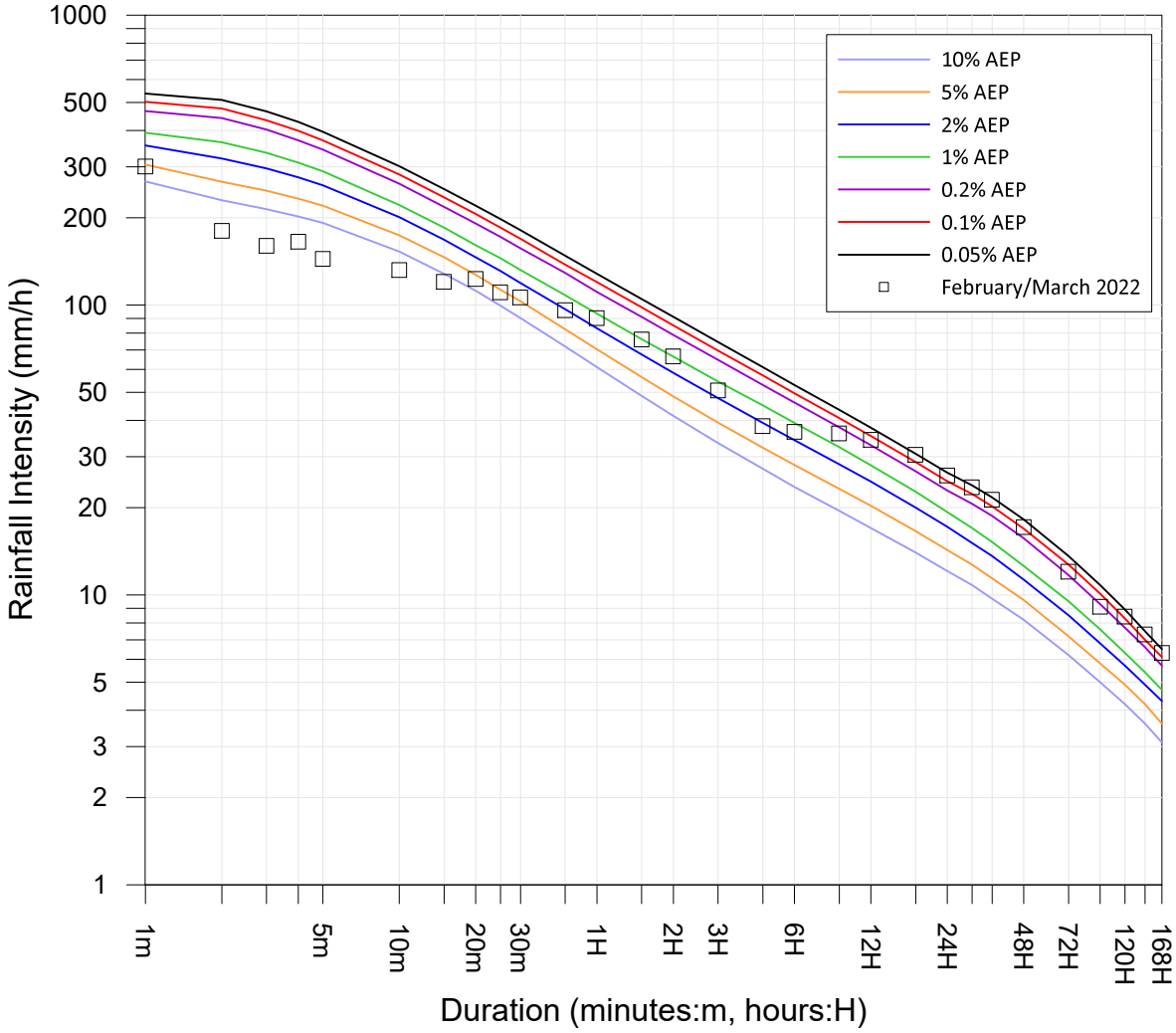
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.31

IFD_203900_Figure 6.31.pdf

Site Owner: Lismore City Council
Latitude: -28.643 Longitude:153.417

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	08:55 28 Feb 2022
2m	180	09:05 28 Feb 2022
3m	160	09:01 28 Feb 2022
4m	165	09:02 28 Feb 2022
5m	144	08:50 28 Feb 2022
10m	132	09:04 28 Feb 2022
15m	120	09:02 28 Feb 2022
20m	123	09:05 28 Feb 2022
25m	110.4	09:10 28 Feb 2022
30m	106	09:12 28 Feb 2022
45m	96	09:05 28 Feb 2022
1H	90	09:10 28 Feb 2022
1.5H	76	09:21 28 Feb 2022
2H	66.5	09:22 28 Feb 2022
3H	50.7	09:51 28 Feb 2022
5H	38.2	11:21 28 Feb 2022
6H	36.5	09:12 28 Feb 2022
9H	36	09:17 28 Feb 2022
12H	34.2	09:12 28 Feb 2022
18H	30.4	11:16 28 Feb 2022
24H	25.8	17:16 28 Feb 2022
30H	23.5	13:03 28 Feb 2022
36H	21.3	17:29 28 Feb 2022
48H	17.1	17:41 28 Feb 2022
72H	12	06:40 01 Mar 2022
96H	9.1	15:23 01 Mar 2022
120H	8.4	21:54 28 Feb 2022
144H	7.3	05:55 01 Mar 2022
168H	6.3	22:48 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

REPENTENCE (COOPERS CK) (558000)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

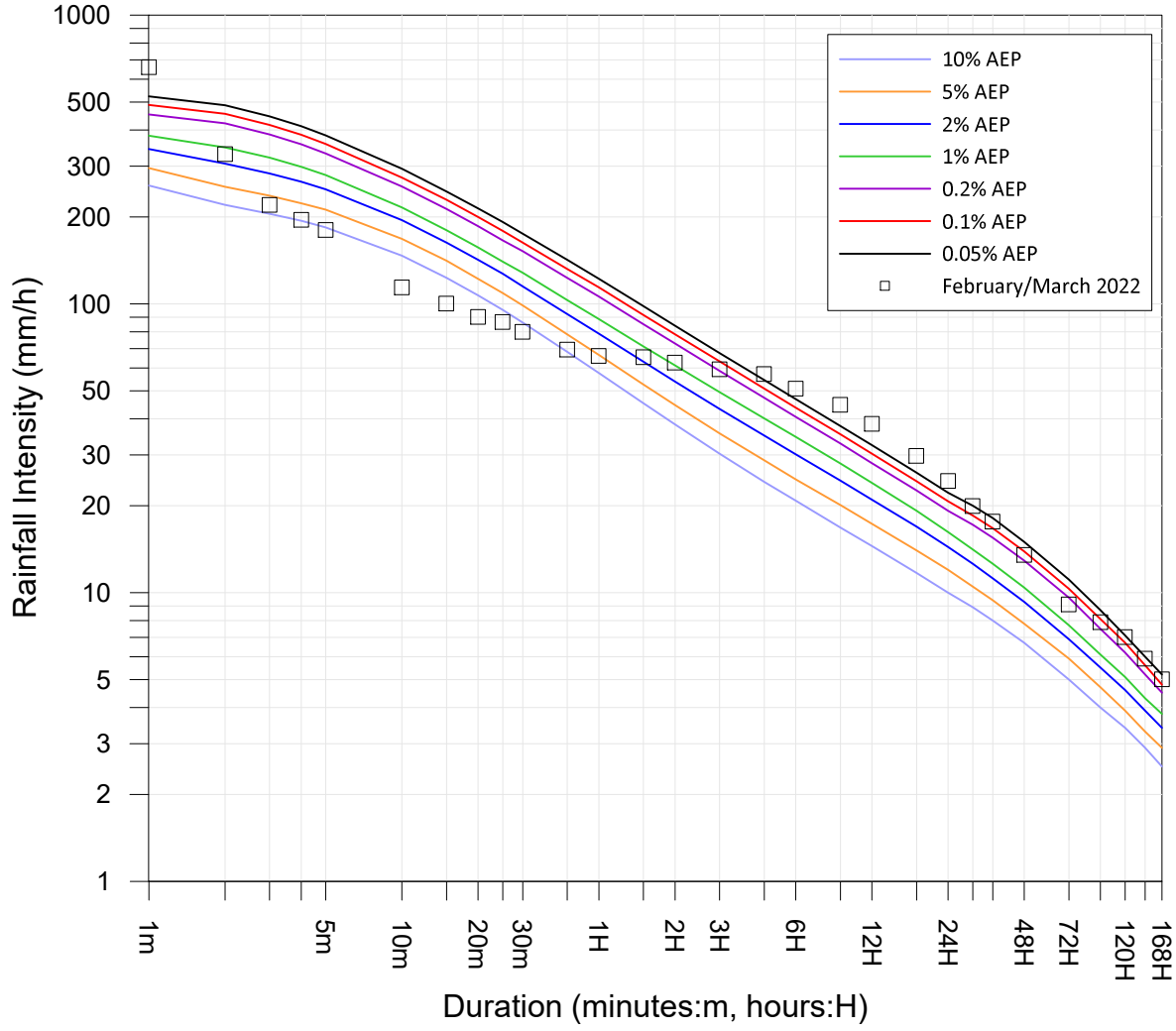
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.32

IFD_558000_Figure 6.32.pdf

Site Owner: Lismore City Council
Latitude: -28.672 Longitude:153.278

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	660	04:23 28 Feb 2022
2m	330	04:24 28 Feb 2022
3m	220	04:25 28 Feb 2022
4m	195	04:23 28 Feb 2022
5m	180	04:23 28 Feb 2022
10m	114	04:23 28 Feb 2022
15m	100	02:37 28 Feb 2022
20m	90	02:34 28 Feb 2022
25m	86.4	02:39 28 Feb 2022
30m	80	02:44 28 Feb 2022
45m	69.3	02:50 28 Feb 2022
1H	66	03:14 28 Feb 2022
1.5H	65.3	02:45 28 Feb 2022
2H	62.5	03:15 28 Feb 2022
3H	59.3	04:23 28 Feb 2022
5H	57.1	04:23 28 Feb 2022
6H	50.8	04:23 28 Feb 2022
9H	44.7	04:30 28 Feb 2022
12H	38.4	04:25 28 Feb 2022
18H	29.7	04:25 28 Feb 2022
24H	24.3	04:29 28 Feb 2022
30H	19.9	04:55 28 Feb 2022
36H	17.6	04:34 28 Feb 2022
48H	13.5	08:10 28 Feb 2022
72H	9.1	06:52 28 Feb 2022
96H	7.9	04:38 28 Feb 2022
120H	7	05:50 28 Feb 2022
144H	5.9	01:02 01 Mar 2022
168H	5	01:02 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

THE CHANNON (58147)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

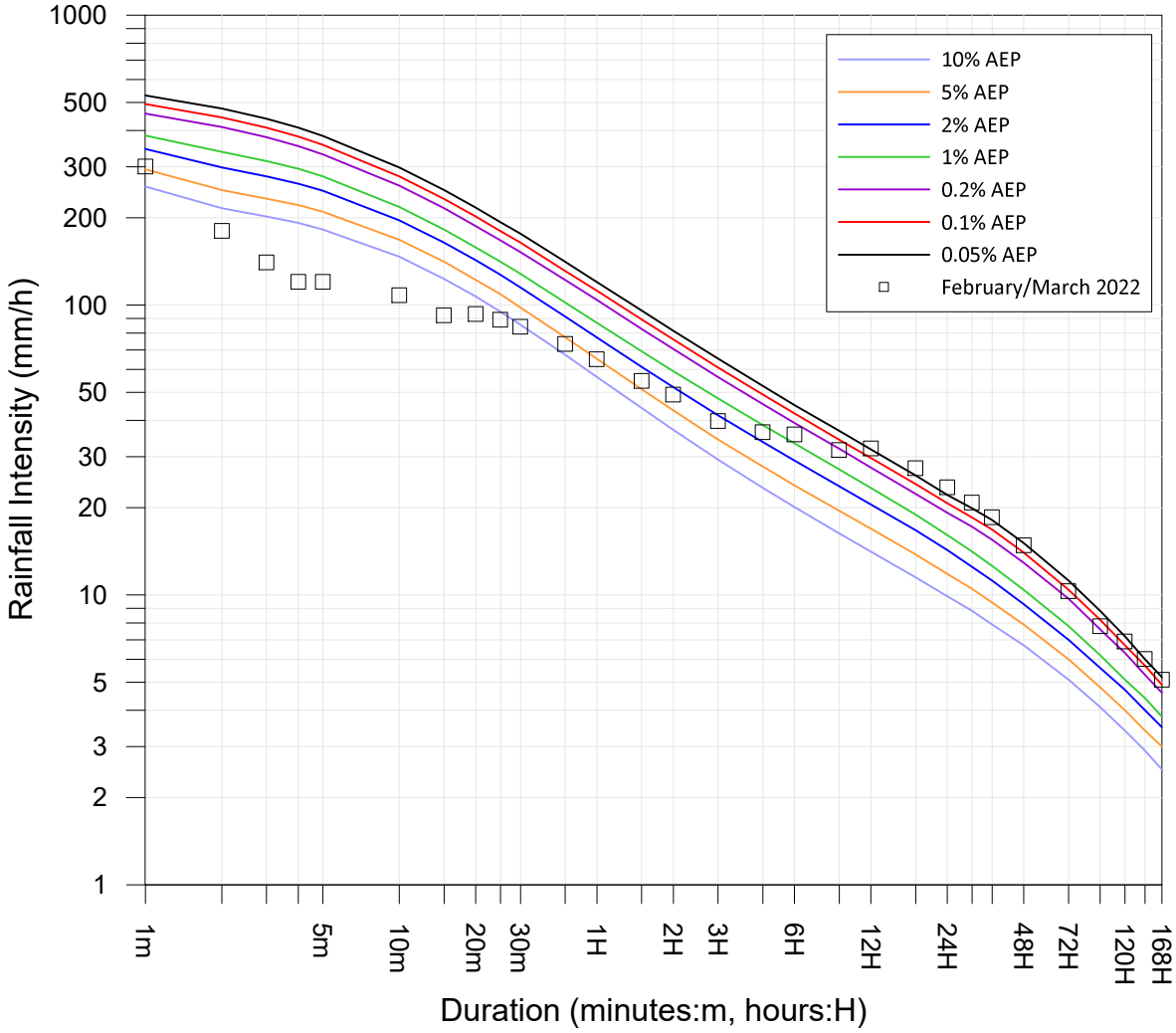
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.33

IFD_58147_Figure 6.33.pdf

Site Owner: Lismore City Council
Latitude: -28.676 Longitude:153.154

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	300	02:14 28 Feb 2022
2m	180	08:59 28 Feb 2022
3m	140	18:43 02 Mar 2022
4m	120	18:44 02 Mar 2022
5m	120	09:02 28 Feb 2022
10m	108	09:07 28 Feb 2022
15m	92	09:12 28 Feb 2022
20m	93	09:10 28 Feb 2022
25m	88.8	09:11 28 Feb 2022
30m	84	09:11 28 Feb 2022
45m	73.3	09:11 28 Feb 2022
1H	65	09:13 28 Feb 2022
1.5H	54.7	09:11 28 Feb 2022
2H	49	00:40 28 Feb 2022
3H	39.7	09:14 28 Feb 2022
5H	36.4	02:59 28 Feb 2022
6H	35.7	04:29 28 Feb 2022
9H	31.6	09:11 28 Feb 2022
12H	32	10:40 28 Feb 2022
18H	27.3	12:24 28 Feb 2022
24H	23.5	15:43 28 Feb 2022
30H	20.8	14:07 28 Feb 2022
36H	18.5	16:53 28 Feb 2022
48H	14.8	19:07 28 Feb 2022
72H	10.3	05:27 01 Mar 2022
96H	7.8	03:18 01 Mar 2022
120H	6.9	22:19 28 Feb 2022
144H	6	06:30 01 Mar 2022
168H	5.1	11:26 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

JIGGI (GWYNNE ST) (558086)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

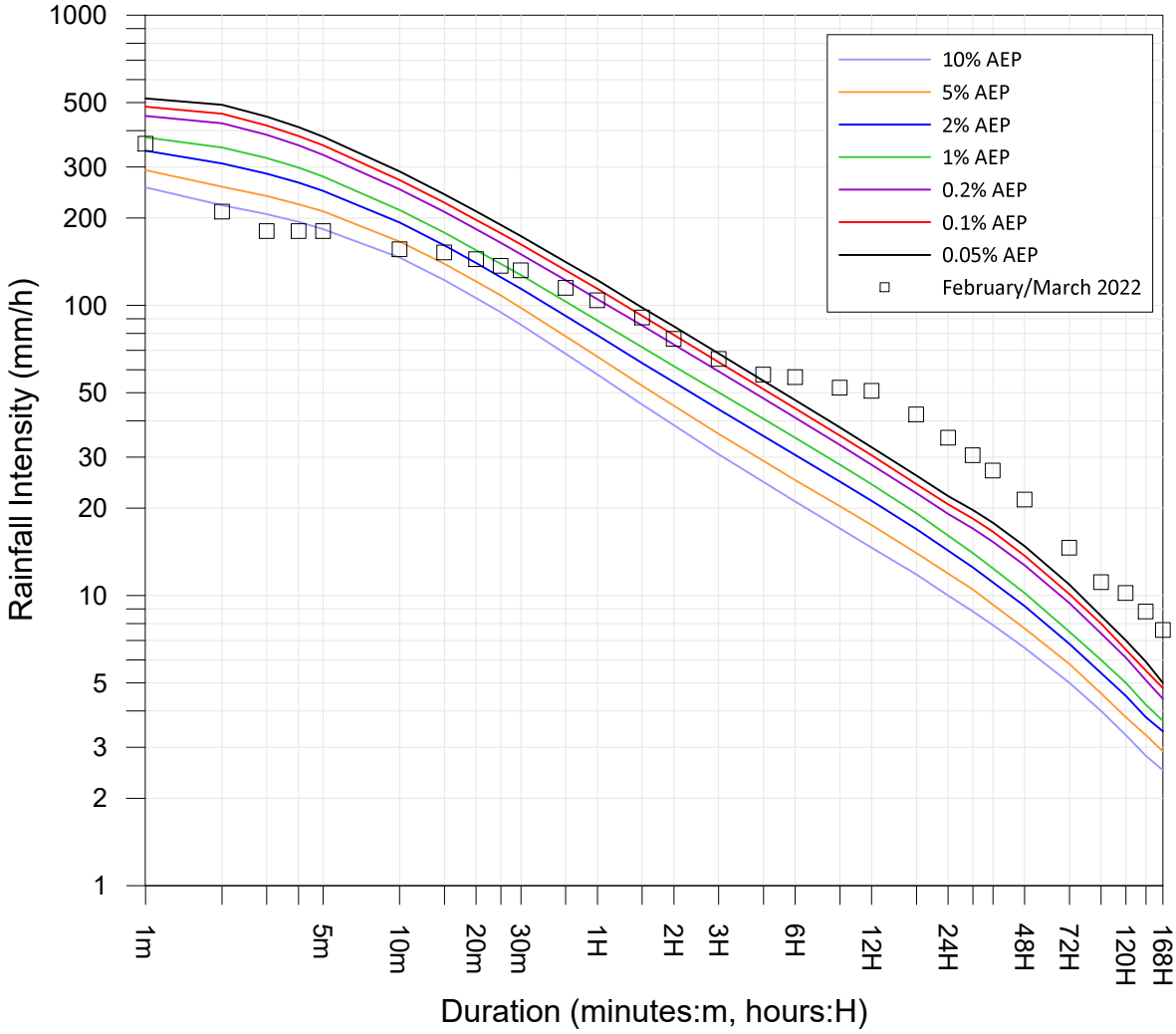
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.34

IFD_558086_Figure 6.34.pdf

Site Owner: BoM
Latitude: -28.677 Longitude:153.322

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	360	02:12 28 Feb 2022
2m	210	09:05 28 Feb 2022
3m	180	09:09 28 Feb 2022
4m	180	09:08 28 Feb 2022
5m	180	09:09 28 Feb 2022
10m	156	09:10 28 Feb 2022
15m	152	09:10 28 Feb 2022
20m	144	09:10 28 Feb 2022
25m	136.8	09:14 28 Feb 2022
30m	132	09:14 28 Feb 2022
45m	114.7	09:24 28 Feb 2022
1H	104	09:24 28 Feb 2022
1.5H	90.7	09:27 28 Feb 2022
2H	76.5	09:27 28 Feb 2022
3H	65.3	03:00 28 Feb 2022
5H	57.6	04:54 28 Feb 2022
6H	56.5	05:19 28 Feb 2022
9H	52	05:14 28 Feb 2022
12H	50.7	09:23 28 Feb 2022
18H	42	11:32 28 Feb 2022
24H	34.9	17:32 28 Feb 2022
30H	30.4	16:36 28 Feb 2022
36H	26.9	16:28 28 Feb 2022
48H	21.4	18:29 28 Feb 2022
72H	14.6	07:27 01 Mar 2022
96H	11.1	15:02 01 Mar 2022
120H	10.2	22:56 28 Feb 2022
144H	8.8	23:04 28 Feb 2022
168H	7.6	23:04 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

DUNOON (558031)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

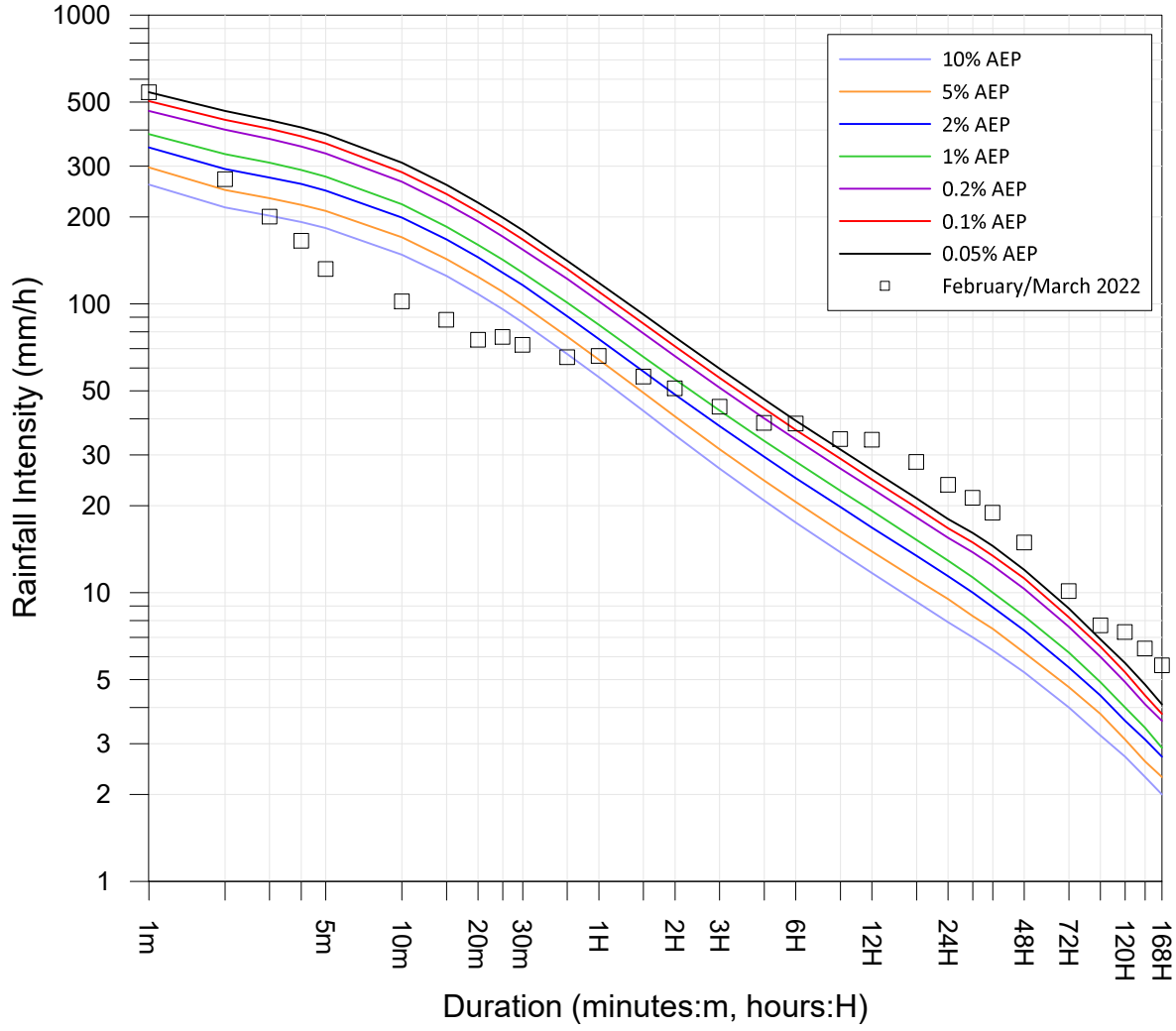
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.35

IFD_558031_Figure 6.35.pdf

Site Owner: Lismore City Council
Latitude: -28.7406 Longitude:153.075

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	540	02:28 24 Feb 2022
2m	270	02:29 24 Feb 2022
3m	200	18:32 02 Mar 2022
4m	165	18:32 02 Mar 2022
5m	132	18:33 02 Mar 2022
10m	102	04:31 28 Feb 2022
15m	88	09:40 28 Feb 2022
20m	75	09:45 28 Feb 2022
25m	76.8	04:32 28 Feb 2022
30m	72	09:16 28 Feb 2022
45m	65.3	09:41 28 Feb 2022
1H	66	09:43 28 Feb 2022
1.5H	56	10:08 28 Feb 2022
2H	51	09:43 28 Feb 2022
3H	44	11:38 28 Feb 2022
5H	38.7	12:13 28 Feb 2022
6H	38.5	04:39 28 Feb 2022
9H	34	11:32 28 Feb 2022
12H	33.8	10:46 28 Feb 2022
18H	28.3	15:52 28 Feb 2022
24H	23.6	16:02 28 Feb 2022
30H	21.3	14:26 28 Feb 2022
36H	18.9	17:26 28 Feb 2022
48H	14.9	16:56 28 Feb 2022
72H	10.1	00:47 01 Mar 2022
96H	7.7	09:51 01 Mar 2022
120H	7.3	18:23 28 Feb 2022
144H	6.4	00:07 01 Mar 2022
168H	5.6	12:01 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BENTLEY (BACK CREEK) (58202)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

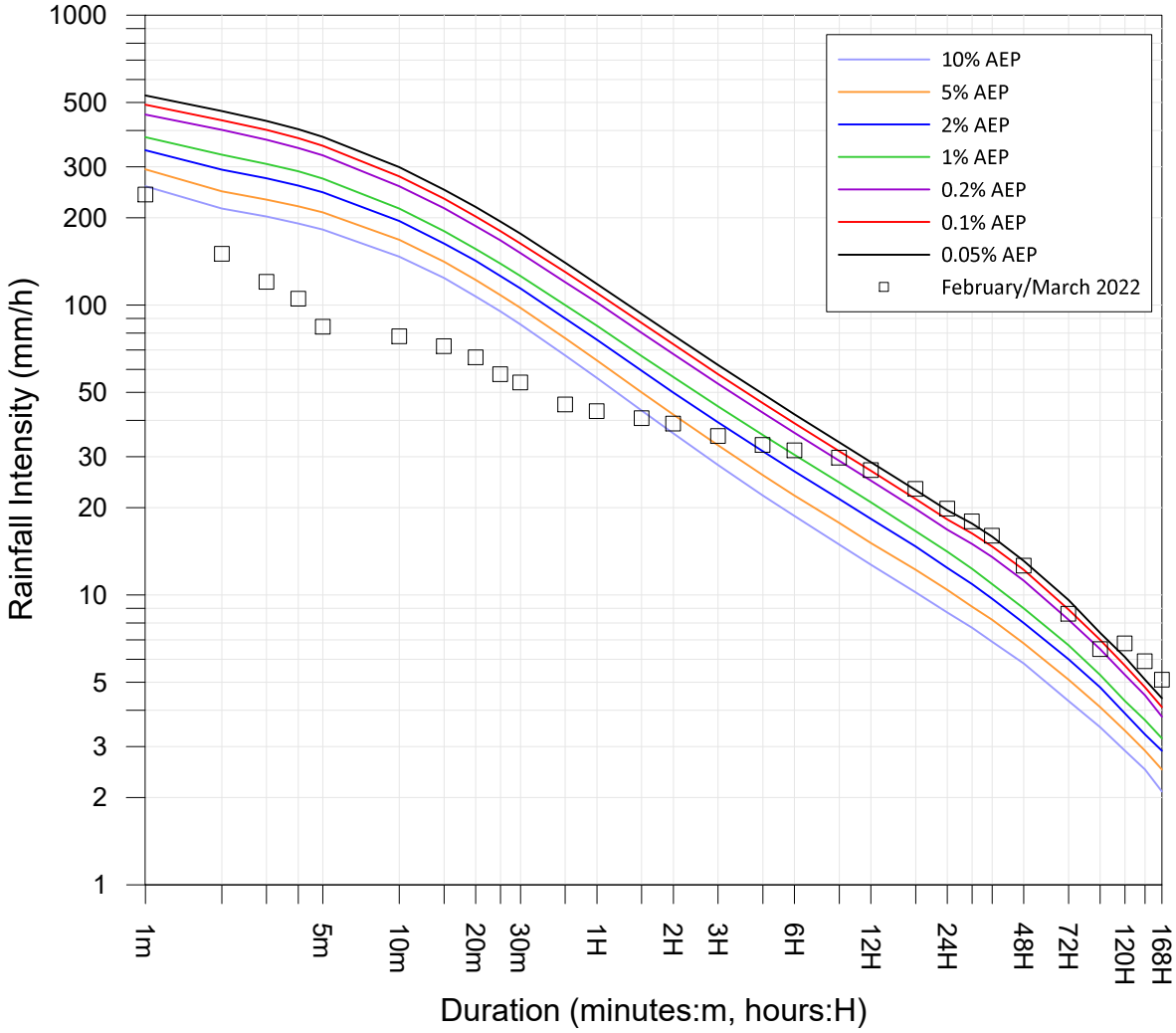
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.36

IFD_58202_Figure 6.36.pdf

Site Owner: Lismore City Council
Latitude: -28.7967 Longitude:153.2386

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	240	03:37 28 Feb 2022
2m	150	03:38 28 Feb 2022
3m	120	03:39 28 Feb 2022
4m	105	03:40 28 Feb 2022
5m	84	05:22 28 Feb 2022
10m	78	00:28 24 Feb 2022
15m	72	00:28 24 Feb 2022
20m	66	00:30 24 Feb 2022
25m	57.6	22:03 27 Feb 2022
30m	54	22:06 27 Feb 2022
45m	45.3	22:26 27 Feb 2022
1H	43	22:39 27 Feb 2022
1.5H	40.7	23:09 27 Feb 2022
2H	39	23:38 27 Feb 2022
3H	35.3	00:40 28 Feb 2022
5H	32.9	01:43 28 Feb 2022
6H	31.5	03:40 28 Feb 2022
9H	29.7	06:22 28 Feb 2022
12H	26.9	09:41 28 Feb 2022
18H	23.2	15:16 28 Feb 2022
24H	19.8	15:11 28 Feb 2022
30H	17.9	15:03 28 Feb 2022
36H	16	17:12 28 Feb 2022
48H	12.6	18:41 28 Feb 2022
72H	8.6	16:17 01 Mar 2022
96H	6.5	00:12 01 Mar 2022
120H	6.8	17:43 28 Feb 2022
144H	5.9	07:20 01 Mar 2022
168H	5.1	06:09 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

TUNCESTER (58201)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

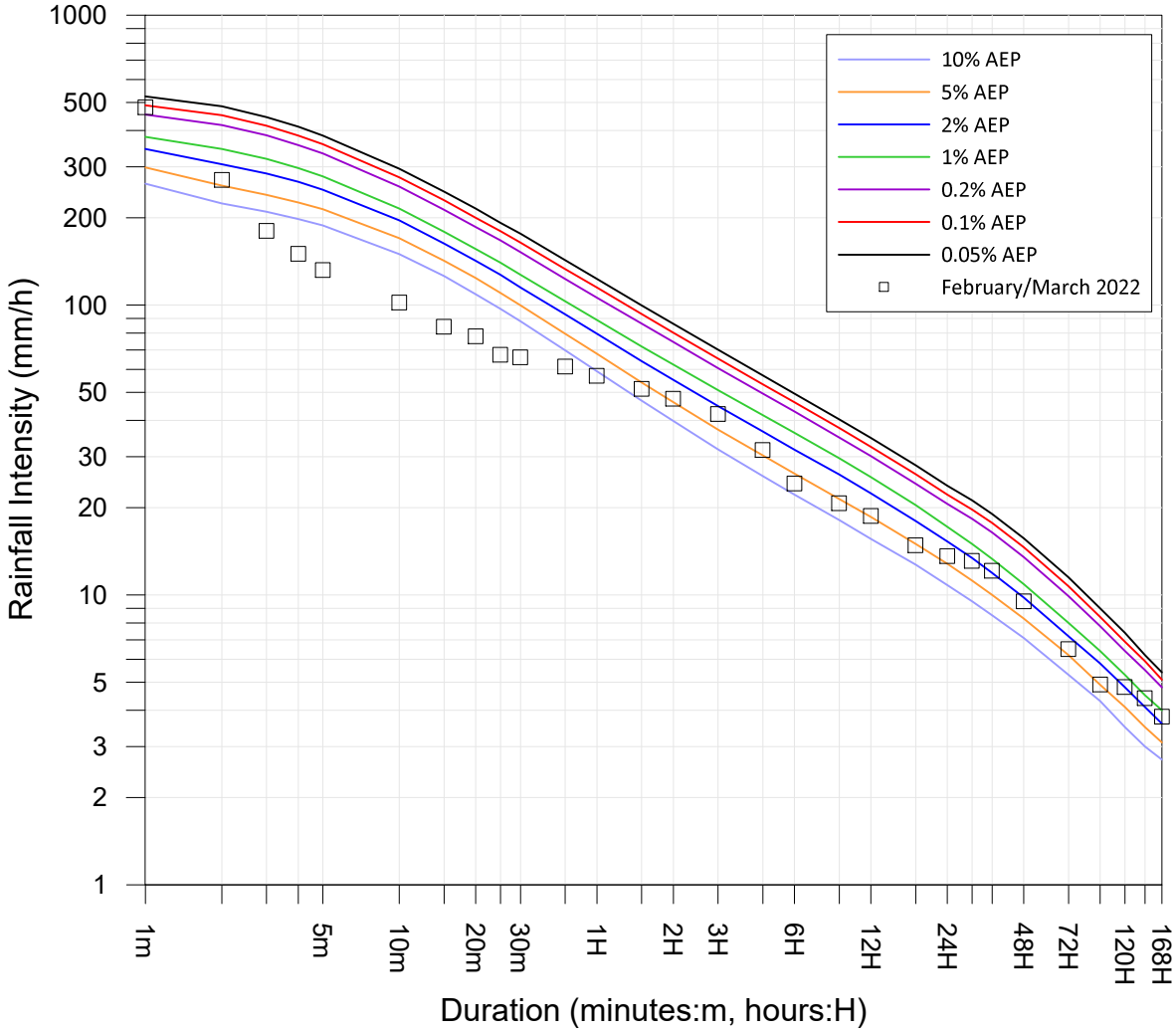
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.37

IFD_58201_Figure 6.37.pdf

Site Owner: Ballina Shire Council
Latitude: -28.785 Longitude:153.474

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	480	20:12 27 Feb 2022
2m	270	20:13 27 Feb 2022
3m	180	03:42 28 Feb 2022
4m	150	03:43 28 Feb 2022
5m	132	20:16 27 Feb 2022
10m	102	02:36 24 Feb 2022
15m	84	02:39 24 Feb 2022
20m	78	02:43 24 Feb 2022
25m	67.2	18:41 27 Feb 2022
30m	66	18:50 27 Feb 2022
45m	61.3	18:59 27 Feb 2022
1H	57	19:00 27 Feb 2022
1.5H	51.3	19:23 27 Feb 2022
2H	47.5	19:44 27 Feb 2022
3H	42	20:32 27 Feb 2022
5H	31.6	22:02 27 Feb 2022
6H	24.2	23:29 27 Feb 2022
9H	20.7	20:31 27 Feb 2022
12H	18.7	21:02 27 Feb 2022
18H	14.8	01:26 28 Feb 2022
24H	13.6	11:08 28 Feb 2022
30H	13.1	14:19 28 Feb 2022
36H	12.1	19:26 28 Feb 2022
48H	9.5	19:41 28 Feb 2022
72H	6.5	13:31 01 Mar 2022
96H	4.9	13:31 02 Mar 2022
120H	4.8	16:57 28 Feb 2022
144H	4.4	07:11 01 Mar 2022
168H	3.8	04:09 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

HOUGHLAHANS CREEK (558069)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

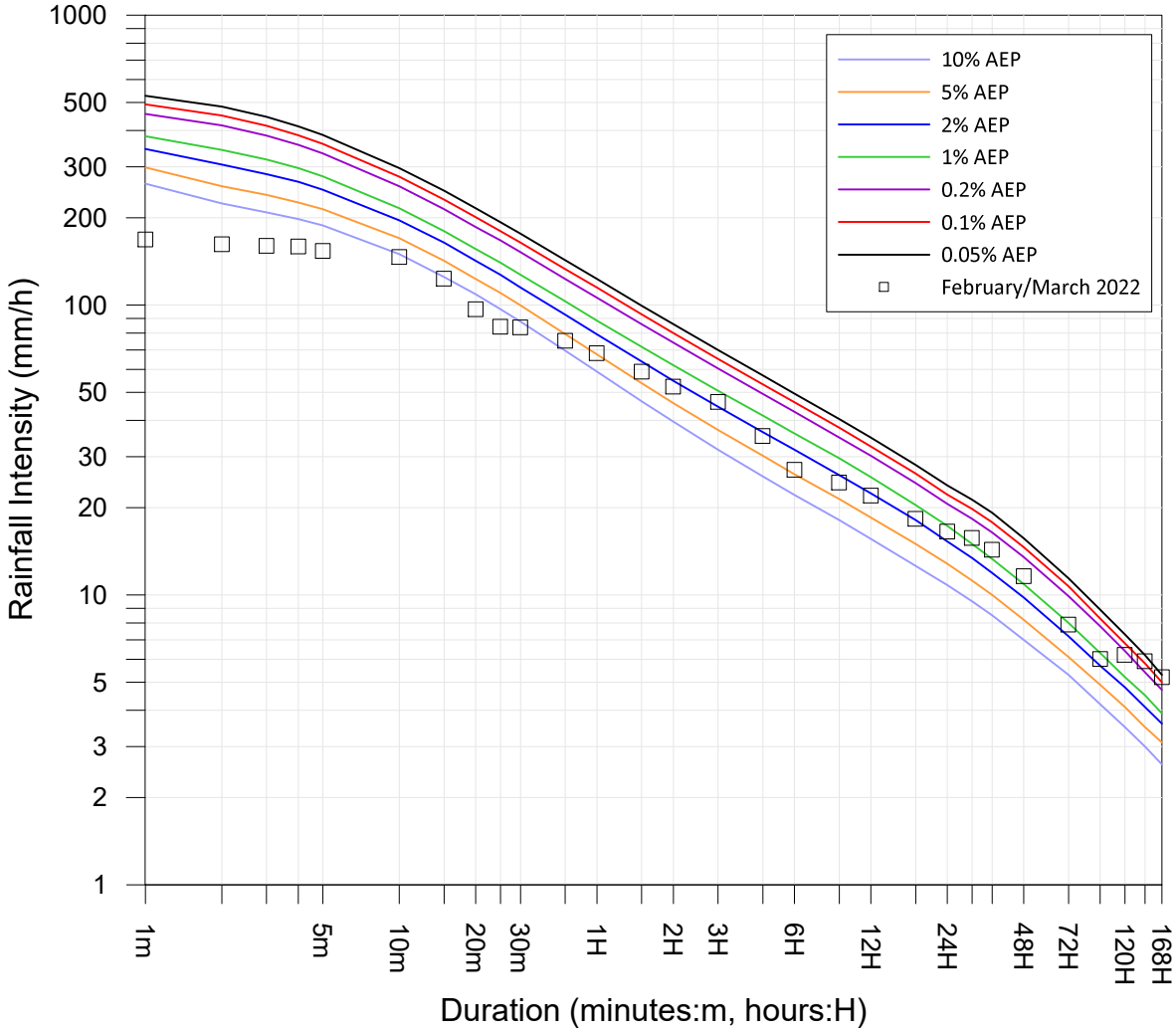
Manly Hydraulics Laboratory

Report MHL2880
Figure
6.38

IFD_558069_Figure 6.38.pdf

Site Owner: Ballina Shire Council
Latitude: -28.831 Longitude:153.444

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	168	15:45 06 Mar 2022
2m	162	15:46 06 Mar 2022
3m	160	15:43 06 Mar 2022
4m	159	15:43 06 Mar 2022
5m	153.6	15:46 06 Mar 2022
10m	146.4	15:47 06 Mar 2022
15m	123.2	15:51 06 Mar 2022
20m	96.6	15:55 06 Mar 2022
25m	84	19:59 27 Feb 2022
30m	83.6	20:02 27 Feb 2022
45m	75.2	20:11 27 Feb 2022
1H	68.2	20:11 27 Feb 2022
1.5H	58.8	20:37 27 Feb 2022
2H	52.2	21:05 27 Feb 2022
3H	46.3	21:01 27 Feb 2022
5H	35.3	22:25 27 Feb 2022
6H	27	22:59 27 Feb 2022
9H	24.4	21:17 27 Feb 2022
12H	22	21:17 27 Feb 2022
18H	18.3	01:29 28 Feb 2022
24H	16.5	11:33 28 Feb 2022
30H	15.7	13:29 28 Feb 2022
36H	14.3	18:24 28 Feb 2022
48H	11.6	20:26 28 Feb 2022
72H	7.9	15:15 01 Mar 2022
96H	6	15:57 01 Mar 2022
120H	6.2	16:52 28 Feb 2022
144H	5.9	06:27 01 Mar 2022
168H	5.2	03:52 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

ALSTONVILLE STP (558072)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
6.39

IFD_558072_Figure 6.39.pdf

7 Richmond River region

7.1 Richmond River region – water level

The peak observed water levels for the Richmond River region are listed in **Table 7.1**. **Table 7.2** lists the SES flood classifications for Wiangaree, Casino, Coraki, Bungawalbin and Woodburn (BoM, 2013). The locations of water level stations within the Wilsons River region are shown in **Figure 7.1**. The water level data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 7.2** to **Figure 7.11**.

Table 7.1 Richmond River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Wiangaree Bridge (Richmond River)	558001	WaterNSW	Local	14.68	28/02/2022 00:30
Eden Creek at Doubtful	558037	WaterNSW	Local	16.43	28/02/2022 15:00
Lake Ainsworth	203455	DPE BCD	AHD	3.25	11/03/2022 19:45
Casino (Richmond River)^	558013	WaterNSW	Local	17.87	28/02/2022 19:30
Missingham Bridge	203465	DPE BCD	AHD	1.63	02/03/2022 08:15
Byrnes Point	203461	DPE BCD	AHD	2.20	02/03/2022 09:00
Ballina Breakwall	203425	DPE BCD	AHD	1.40	01/03/2022 07:15
Shannon Brook at Yorklea	558038	WaterNSW	Local	10.90	28/02/2022 15:00
Wardell	203468	DPE BCD	AHD	3.75	02/03/2022 07:45
Coraki	203403	DPE BCD	AHD	6.83	01/03/2022 01:00
Bungawalbin	203450	DPE BCD	AHD	6.51	01/03/2022 20:15
Woodburn	2034134	DPE BCD	AHD	6.36	01/03/2022 22:45
Tucombil Highway Bridge	203480	DPE BCD	AHD	6.38	01/03/2022 22:00
Rocky Mouth Creek*	203432	DPE BCD	AHD	-	-
Rappville (Myrtle Creek)	558015	WaterNSW	Local	6.57	28/02/2022 12:15
Evans River Fishing Co-op	203462	DPE BCD	AHD	2.66	debris line survey
Iron Gates[#]	203475	DPE BCD	AHD	4.42	01/03/2022 22:30
Bungawalbin Creek	2034133	DPE BCD	AHD	11.31	debris line survey

^Sensor over-ranged during the event, data adjusted using peak trend data and debris line survey result.

*Flood peak not captured due to inundation by flood waters.

[#]Water level trace uncertainty is +/-0.1m due to siltation of orifice.

Table 7.2 SES flood classification for Richmond River region stations

Station name	Station number		Flood classification			Flood peak (m)	Datum	Flood event classification
	Bureau number	AWRC number	Minor	Moderate	Major			
			Water level (m)					
Wiangaree	558001	203005	11.0	15.5	n/a	14.68	Local	Minor
Casino	558013	203004	11.9	14.9	17.7	17.87	Local	Major
Coraki	58175	203403	2.59	4.19	4.89	6.83	AHD	Major
Bungawalbin	58184	203450	2.19	3.69	4.19	6.51	AHD	Major
Woodburn	58061	2034134	2.39	2.89	3.39	6.36	AHD	Major

NSW GOVERNMENT

RICHMOND RIVER STATIONS

Manly Hydraulics Laboratory

Report MHL2880
Figure
7.1

Figures_MHL2880.qgs

7.2 Richmond River region – rainfall

The water level and rainfall data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 7.2** to **Figure 7.11**. 24-hour rainfall totals up until 9:00 a.m. are displayed in **Table 7.3** to **Table 7.5** for the period 15 February to 11 March 2022. The rainfall intensities are displayed graphically in **Figure 7.12** to **Figure 7.22**, in ARR2019 format. Appendix C provides ARR1987 format.

Table 7.3 Richmond River region daily rainfall totals

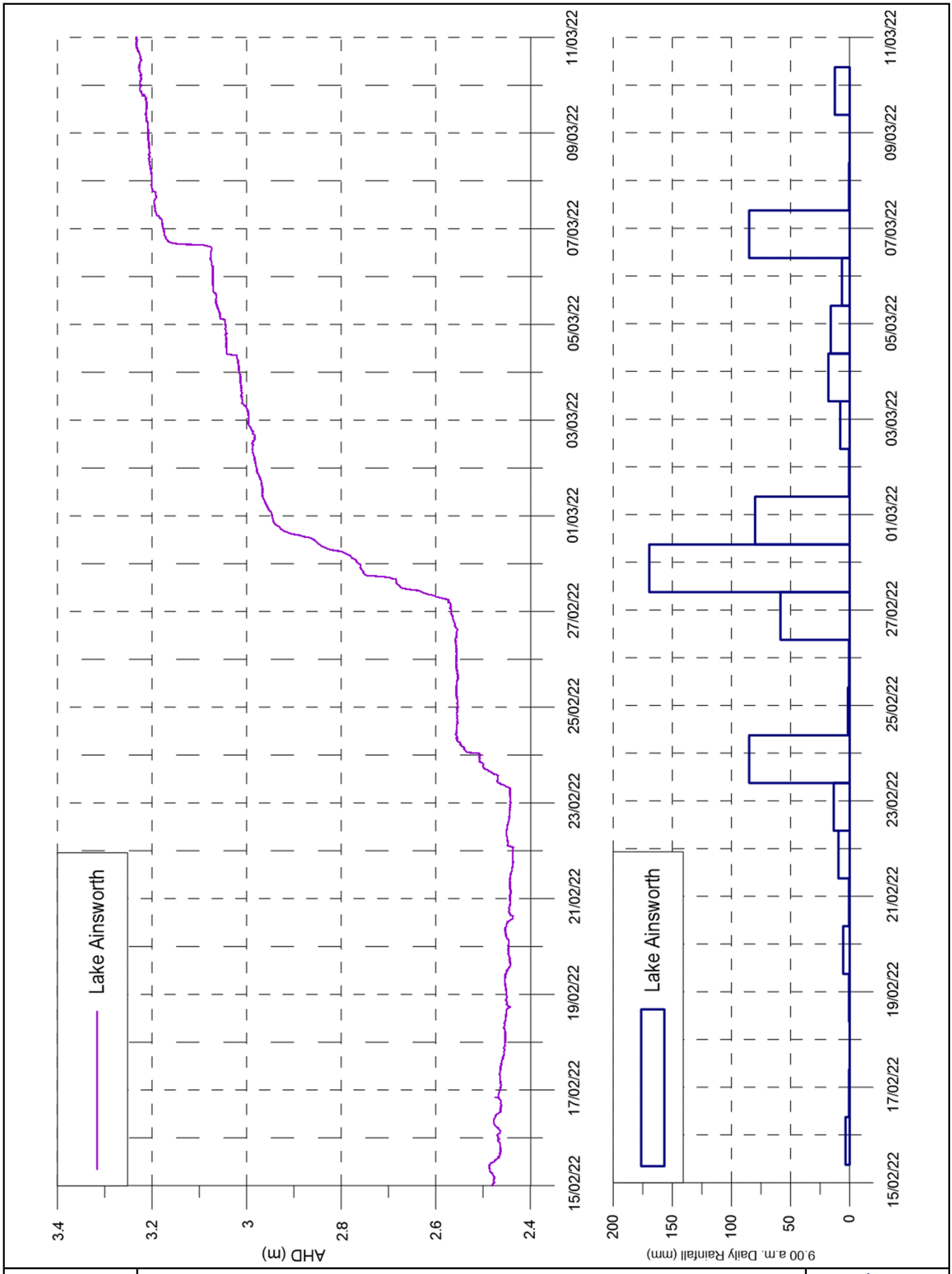
Date	Loadstone (High View)	Green Pigeon (Morning View)	Wiangaree Bridge (Richmond River)	Eden Creek at Doubtful	Lake Ainsworth
	58141 (mm)	58113 (mm)	558001 (mm)	558037 (mm)	203455 (mm)
	BoM	BoM	WaterNSW	WaterNSW	DPE BCD
15/02/2022	1.8	3.6	7.6	2.0	6.0
16/02/2022	0.6	2.0	1.8	0.0	3.5
17/02/2022	0.2	0.6	0.8	0.0	0.5
18/02/2022	0.0	0.0	0.0	0.5	0.0
19/02/2022	0.0	4.6	0.0	15.5	0.5
20/02/2022	12.8	7.2	3.4	0.5	5.5
21/02/2022	7.8	1.8	0.0	0.0	0.5
22/02/2022	20.0	0.2	0.0	0.0	9.5
23/02/2022	31.2	21.0	21.2	47.5	13.5
24/02/2022	44.2	98.8	51.0	48.5	85.0
25/02/2022	44.4	72.0	51.4	15.0	1.5
26/02/2022	15.8	12.0	10.2	20.0	0.5
27/02/2022	71.0	87.8	68.8	57.5	58.5
28/02/2022	158.8	287.8	193.2	239.5	169.5
01/03/2022	23.2	63.4	48.4	96.5	80.0
02/03/2022	0.8	3.6	2.8	1.5	0.5
03/03/2022	12.6	12.2	11.2	8.5	8.0
04/03/2022	0.4	0.6	0.4	3.5	18.0
05/03/2022	1.0	3.0	13.6	0.0	16.0
06/03/2022	0.0	0.2	0.2	0.0	6.5
07/03/2022	1.4	1.6	0.2	15.5	85.0
08/03/2022	2.8	1.4	5.2	18.5	0.5
09/03/2022	0.0	0.0	0.0	0.0	0.0
10/03/2022	1.4	2.2	0.0	4.0	12.5
11/03/2022	1.8	9.6	3.0	4.0	10.0

Table 7.4 Richmond River region daily rainfall totals (cont.)

Date	Ballina Airport AWS 58198 (mm)	Casino Airport AWS 58208 (mm)	Shannon Brook at Yorklea 558038 (mm)
	BoM	BoM	WaterNSW
15/02/2022	8.4	2.2	1.8
16/02/2022	1.8	0.0	0.8
17/02/2022	0.0	0.0	0.0
18/02/2022	0.0	0.0	0.0
19/02/2022	0.4	1.8	7.0
20/02/2022	3.8	1.2	4.6
21/02/2022	0.2	0.0	0.0
22/02/2022	10.2	0.0	0.0
23/02/2022	13.2	22.4	42.0
24/02/2022	107.8	121.8	208.8
25/02/2022	1.4	6.8	5.4
26/02/2022	0.8	12.6	18.2
27/02/2022	63.4	41.6	63.4
28/02/2022	183.0	242.6	430.0
01/03/2022	56.4	69.4	125.0
02/03/2022	0.8	2.8	0.8
03/03/2022	8.0	4.0	4.2
04/03/2022	8.8	2.6	2.2
05/03/2022	23.4	0.2	0.2
06/03/2022	2.0	0.2	0.0
07/03/2022	66.6	27.2	49.4
08/03/2022	0.4	0.0	15.6
09/03/2022	0.0	0.0	0.0
10/03/2022	3.8	0.0	6.6
11/03/2022	12.8	0.0	5.0

Table 7.5 Richmond River region daily rainfall totals (cont.)

Date	Rappville (Myrtle Creek) 558015 (mm)	Evans Head RAAF Bombing Range AWS 58212 (mm)	Whiporie Post Office 58099 (mm)
	WaterNSW	BoM	BoM
15/02/2022	5.8	0.8	0.0
16/02/2022	0.0	0.2	0.2
17/02/2022	0.0	0.2	0.0
18/02/2022	0.0	0.0	0.0
19/02/2022	13.6	0.6	2.2
20/02/2022	0.0	0.4	0.0
21/02/2022	0.0	0.0	0.0
22/02/2022	0.0	12.2	0.0
23/02/2022	14.2	0.0	9.8
24/02/2022	144.8	125.0	211.4
25/02/2022	8.8	4.0	16.8
26/02/2022	6.4	0.2	4.2
27/02/2022	50.4	29.2	39.0
28/02/2022	322.2	459.6	297.8
01/03/2022	83.4	117.0	63.8
02/03/2022	1.2	2.0	6.0
03/03/2022	0.0	0.0	0.8
04/03/2022	3.0	0.0	0.6
05/03/2022	0.4	16.0	6.2
06/03/2022	0.6	1.2	0.6
07/03/2022	50.0	29.2	86.2
08/03/2022	11.8	26.8	17.6
09/03/2022	0.0	0.0	0.2
10/03/2022	0.2	2.6	15.2
11/03/2022	2.4	4.2	0.4



NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

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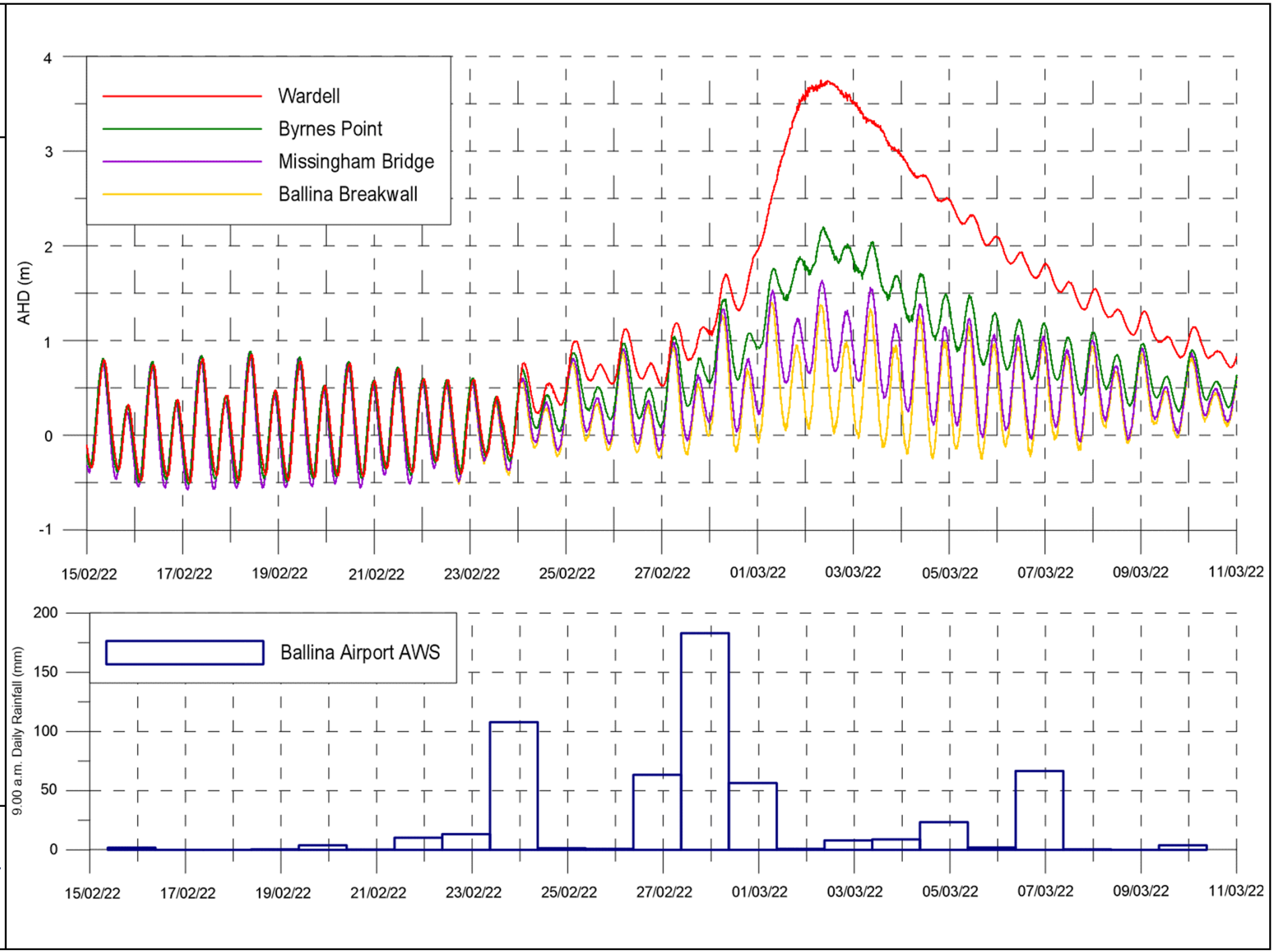
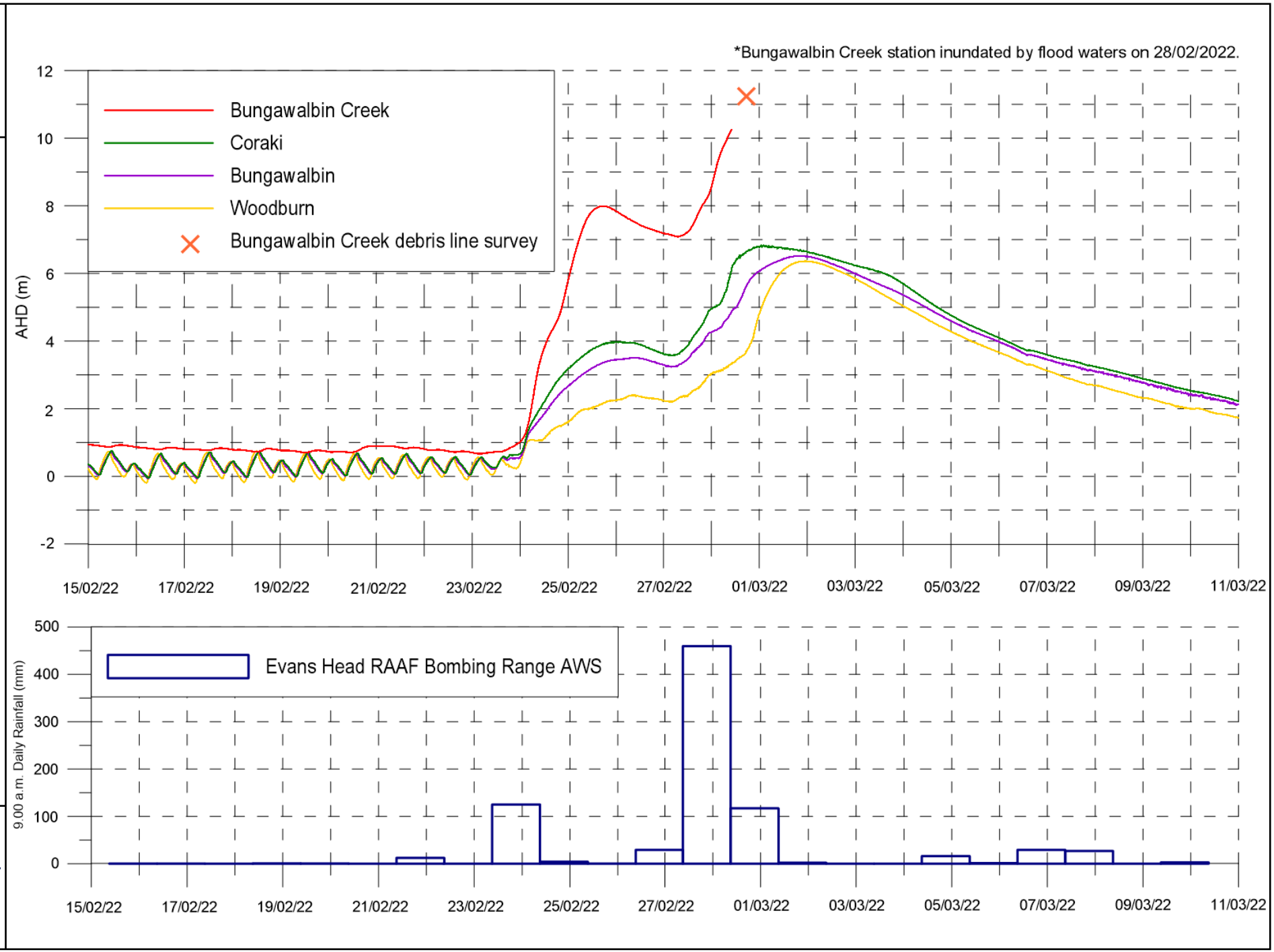
Report MHL2880
Figure
7.2

7.2.GRF



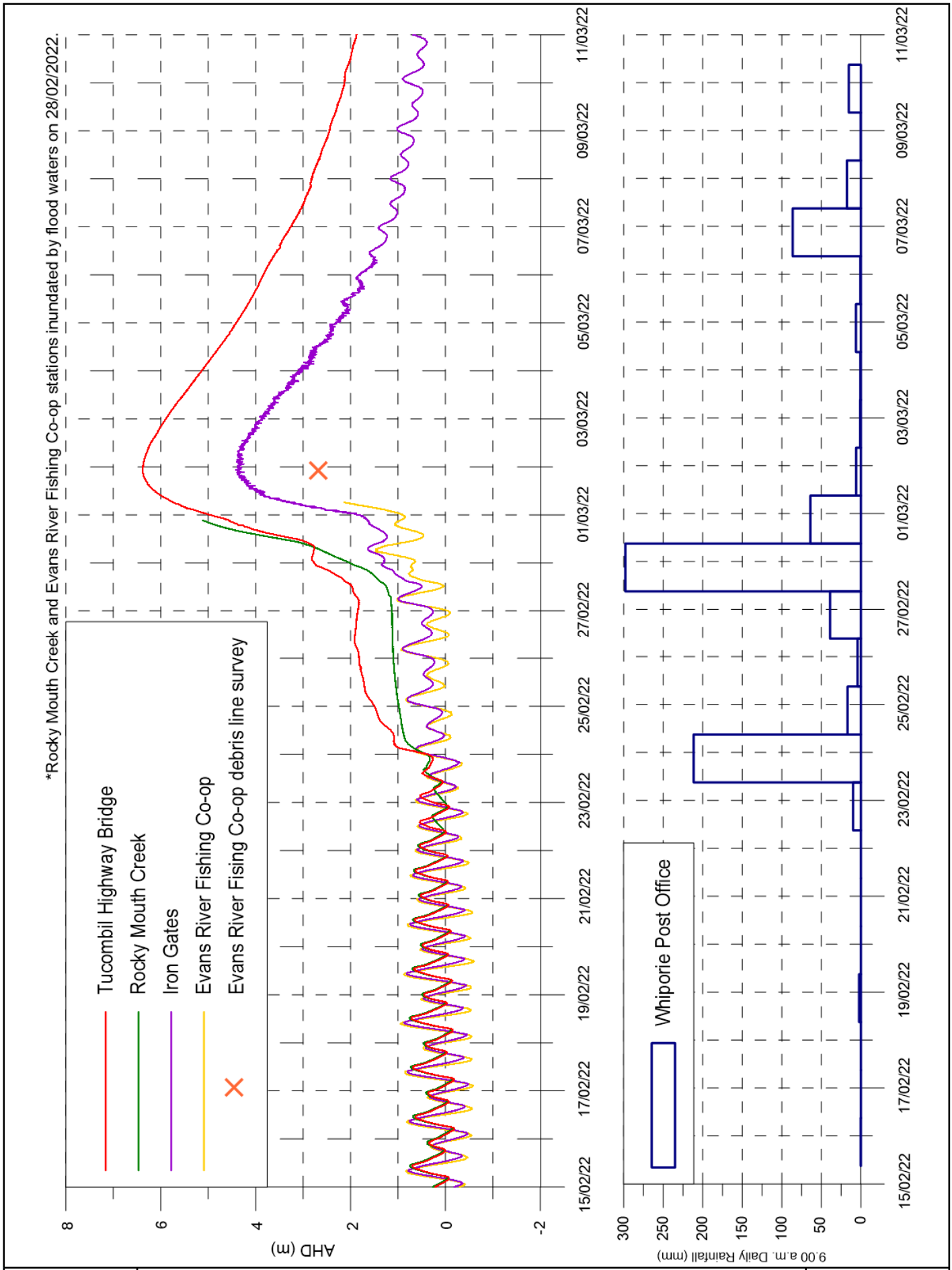
RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory
Report MHL2880
Figure 7.3
7.3.GRF



RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory
Report MHL2880
Figure 7.4
7.4.GRF



NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

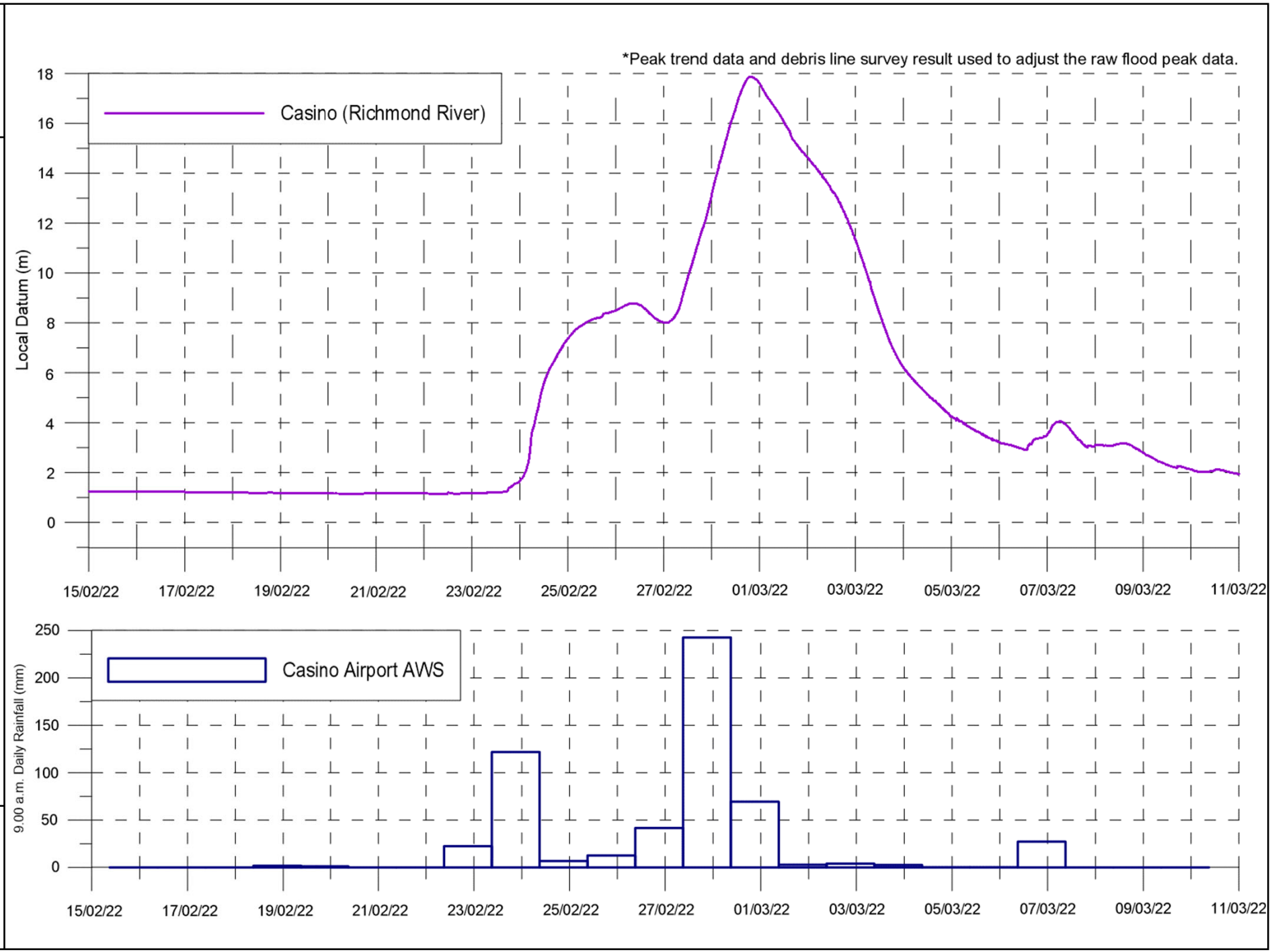
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.5

7.5.GRF

NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022



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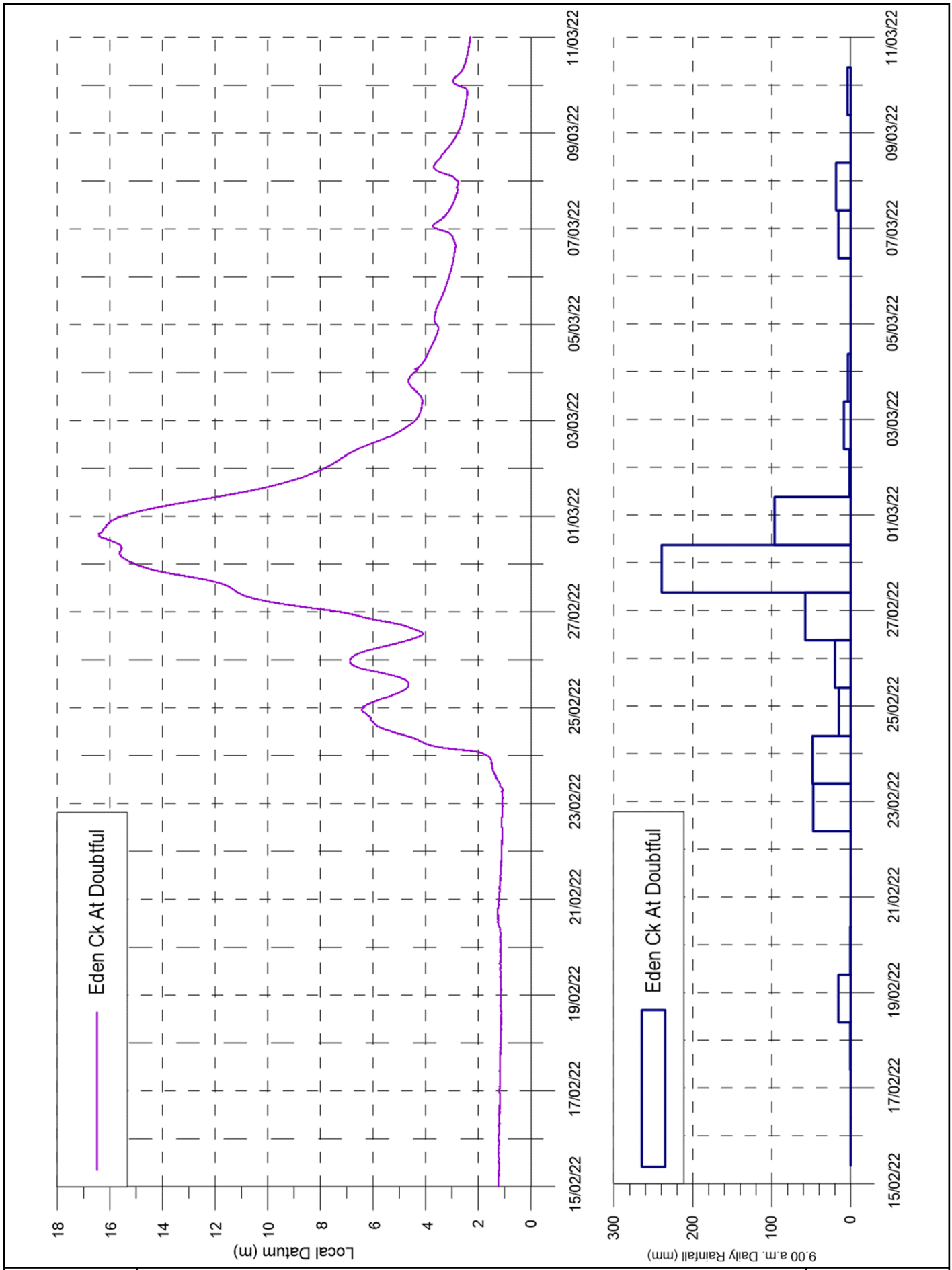
Report MHL2880
Figure 7.6

7.6.GRF



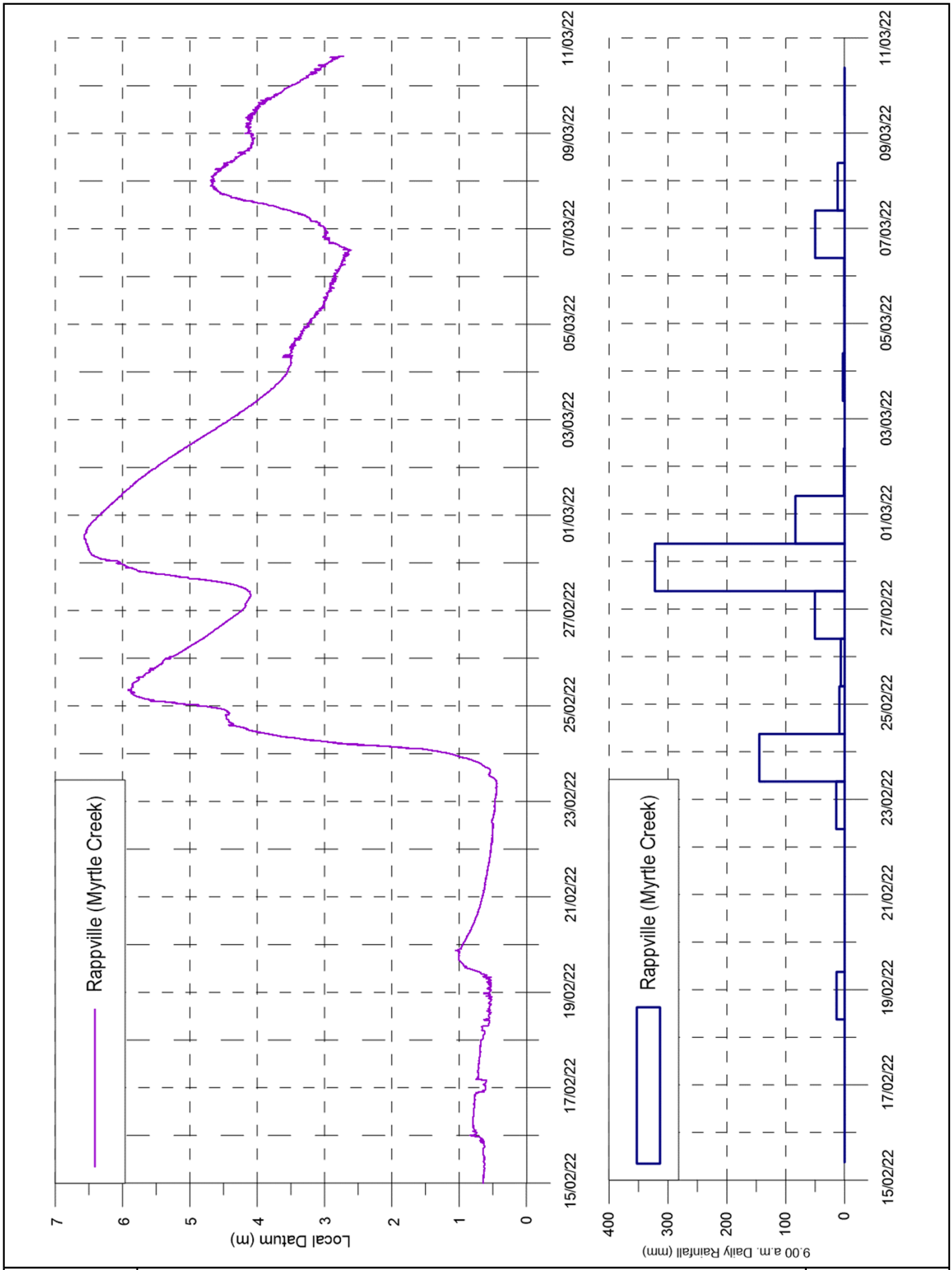
NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
7.7

7.7.GRF



NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

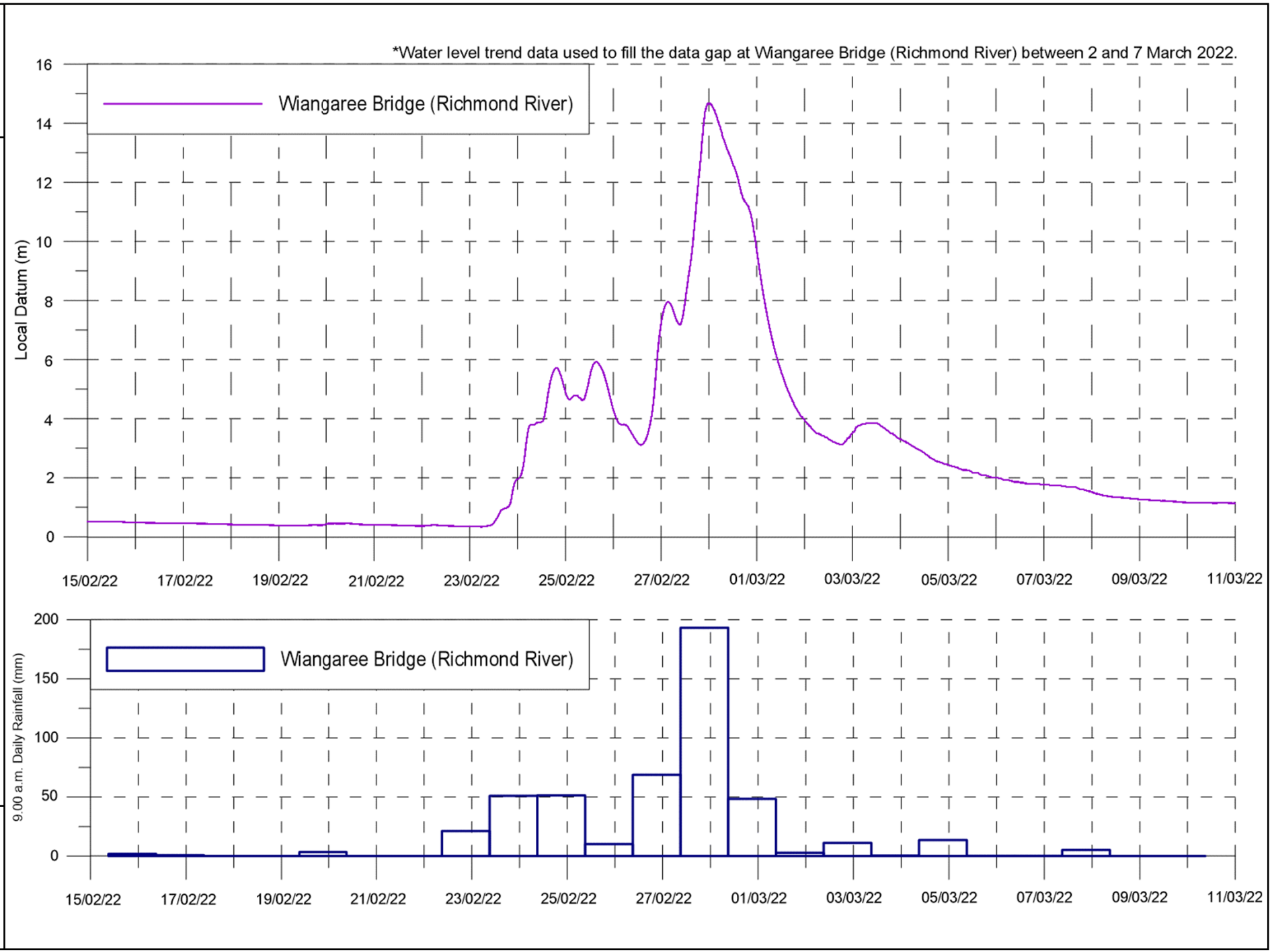
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.8

7.8.GRF

NSW GOVERNMENT

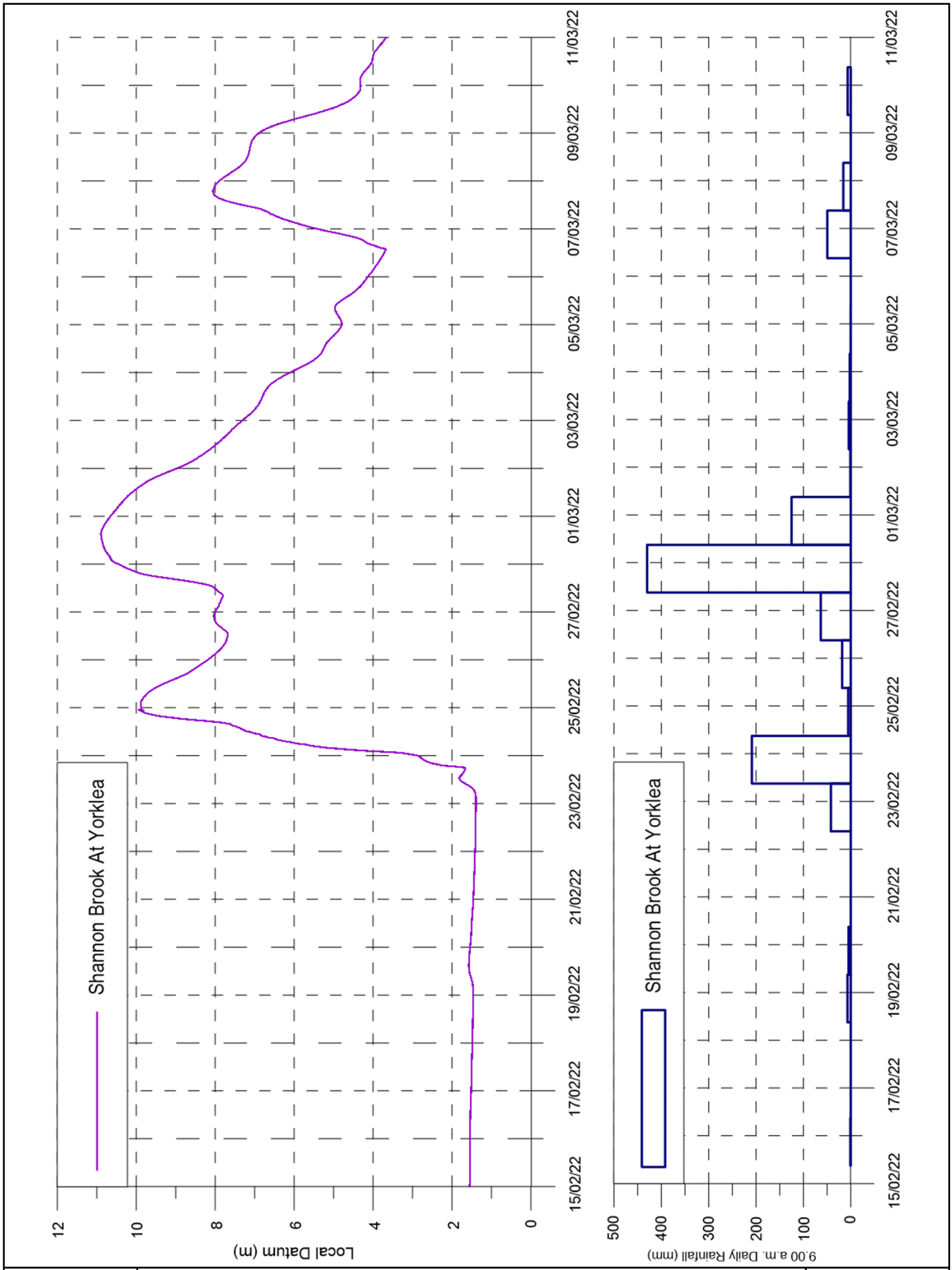
RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022



Manly Hydraulics Laboratory

Report MHL2880
Figure 7.9

7.9.GRF



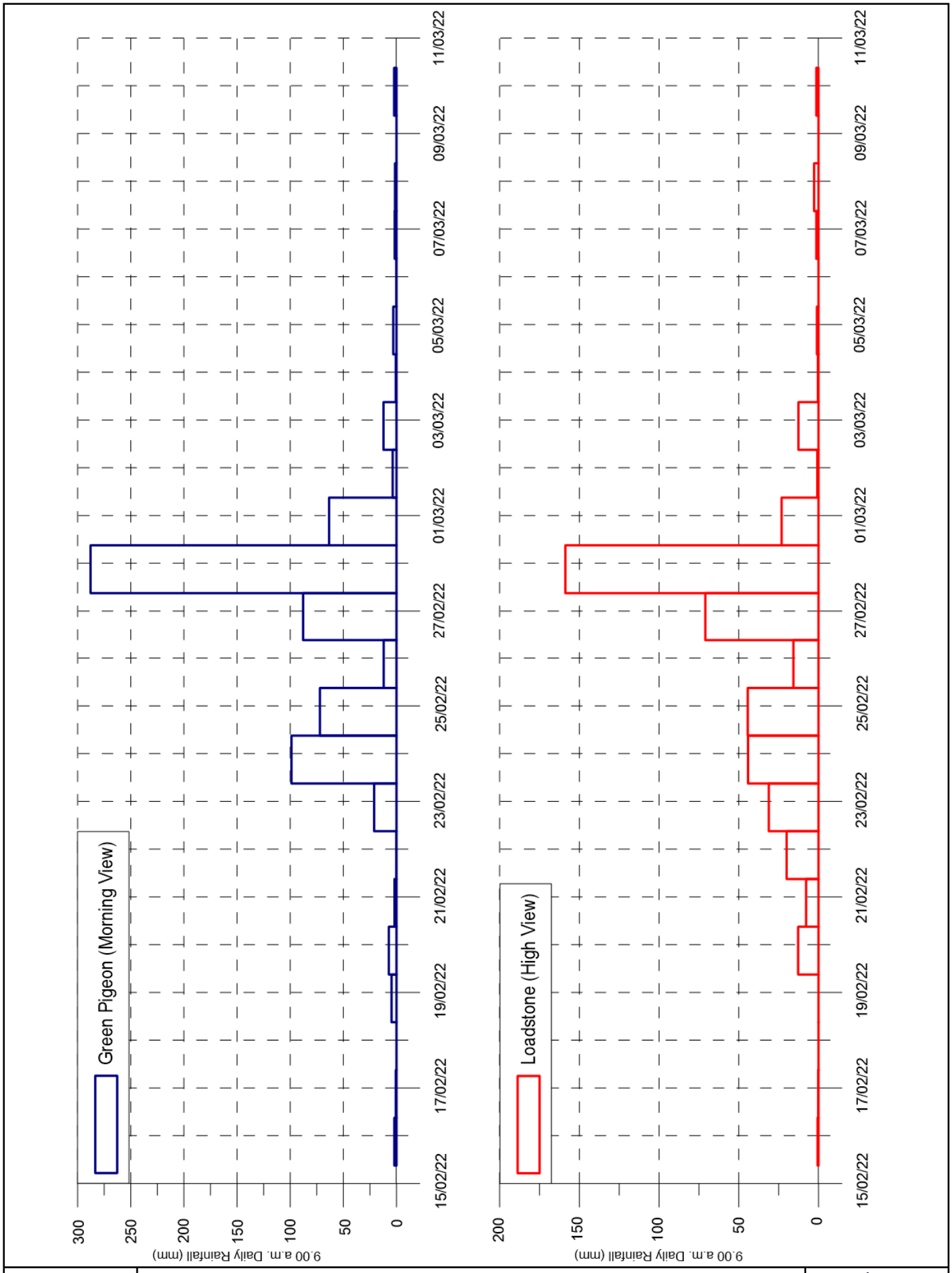
NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
7.10

7.10.GRF



NSW GOVERNMENT

RICHMOND RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

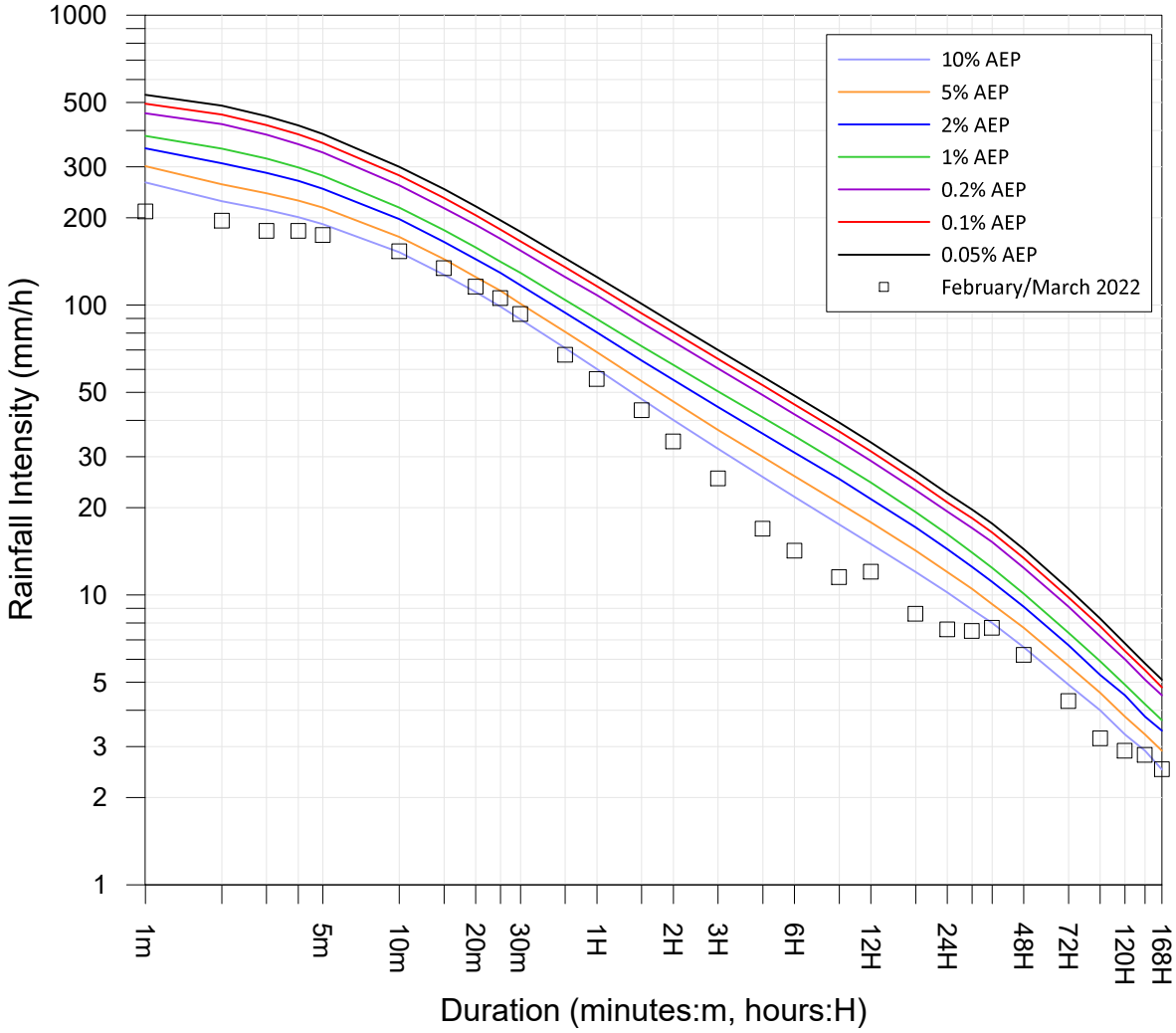
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.11

7.11.GRF

Site Owner: DPE BCD
Latitude: -28.7808 Longitude:153.5928

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	210	16:10 06 Mar 2022
2m	195	16:11 06 Mar 2022
3m	180	16:11 06 Mar 2022
4m	180	16:11 06 Mar 2022
5m	174	16:11 06 Mar 2022
10m	153	16:13 06 Mar 2022
15m	134	16:13 06 Mar 2022
20m	115.5	16:14 06 Mar 2022
25m	105.6	16:15 06 Mar 2022
30m	93	16:18 06 Mar 2022
45m	67.3	16:24 06 Mar 2022
1H	55.5	16:16 06 Mar 2022
1.5H	43.3	16:29 06 Mar 2022
2H	33.8	16:59 06 Mar 2022
3H	25.2	17:59 06 Mar 2022
5H	16.9	19:29 06 Mar 2022
6H	14.2	11:54 27 Feb 2022
9H	11.5	17:56 27 Feb 2022
12H	12	18:07 27 Feb 2022
18H	8.6	21:00 27 Feb 2022
24H	7.6	06:58 28 Feb 2022
30H	7.5	16:24 28 Feb 2022
36H	7.7	17:54 28 Feb 2022
48H	6.2	20:41 28 Feb 2022
72H	4.3	15:03 01 Mar 2022
96H	3.2	01:49 02 Mar 2022
120H	2.9	20:02 28 Feb 2022
144H	2.8	07:31 01 Mar 2022
168H	2.5	02:02 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LAKE AINSWORTH (203455)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

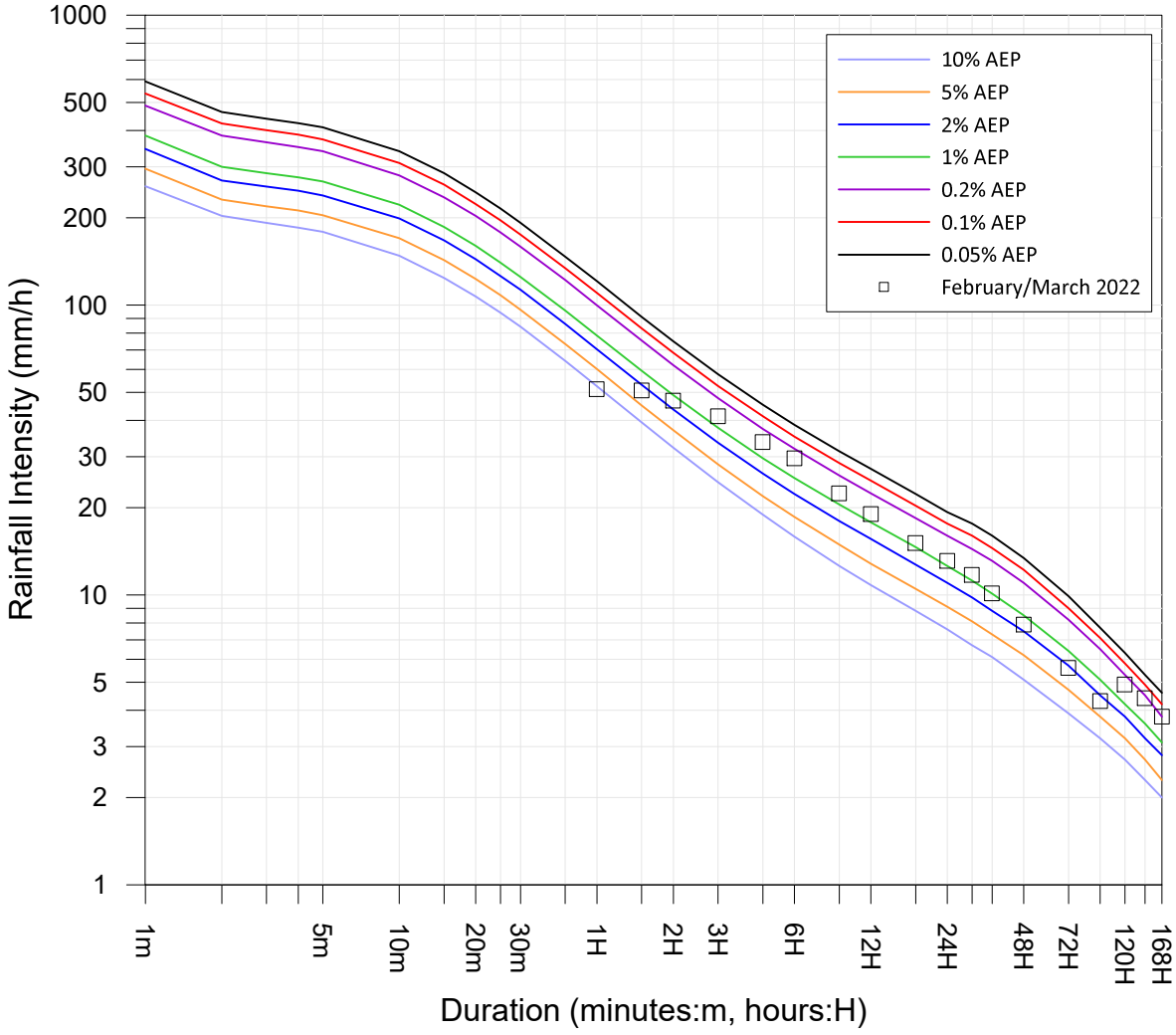
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.12

IFD_203455_Figure 7.12.pdf

Site Owner: BoM
Latitude: -29.2825 Longitude:152.9892

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	51.2	05:02 28 Feb 2022
1.5H	50.7	04:53 28 Feb 2022
2H	46.7	05:13 28 Feb 2022
3H	41.3	05:12 28 Feb 2022
5H	33.6	06:35 28 Feb 2022
6H	29.6	06:23 28 Feb 2022
9H	22.4	06:52 28 Feb 2022
12H	19	11:52 28 Feb 2022
18H	15.1	15:03 28 Feb 2022
24H	13.1	11:50 28 Feb 2022
30H	11.7	15:09 28 Feb 2022
36H	10.1	18:05 28 Feb 2022
48H	7.9	18:01 28 Feb 2022
72H	5.6	22:15 28 Feb 2022
96H	4.3	17:20 28 Feb 2022
120H	4.9	17:24 28 Feb 2022
144H	4.4	10:03 01 Mar 2022
168H	3.8	13:35 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

WHIPORIE POST OFFICE (58099) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

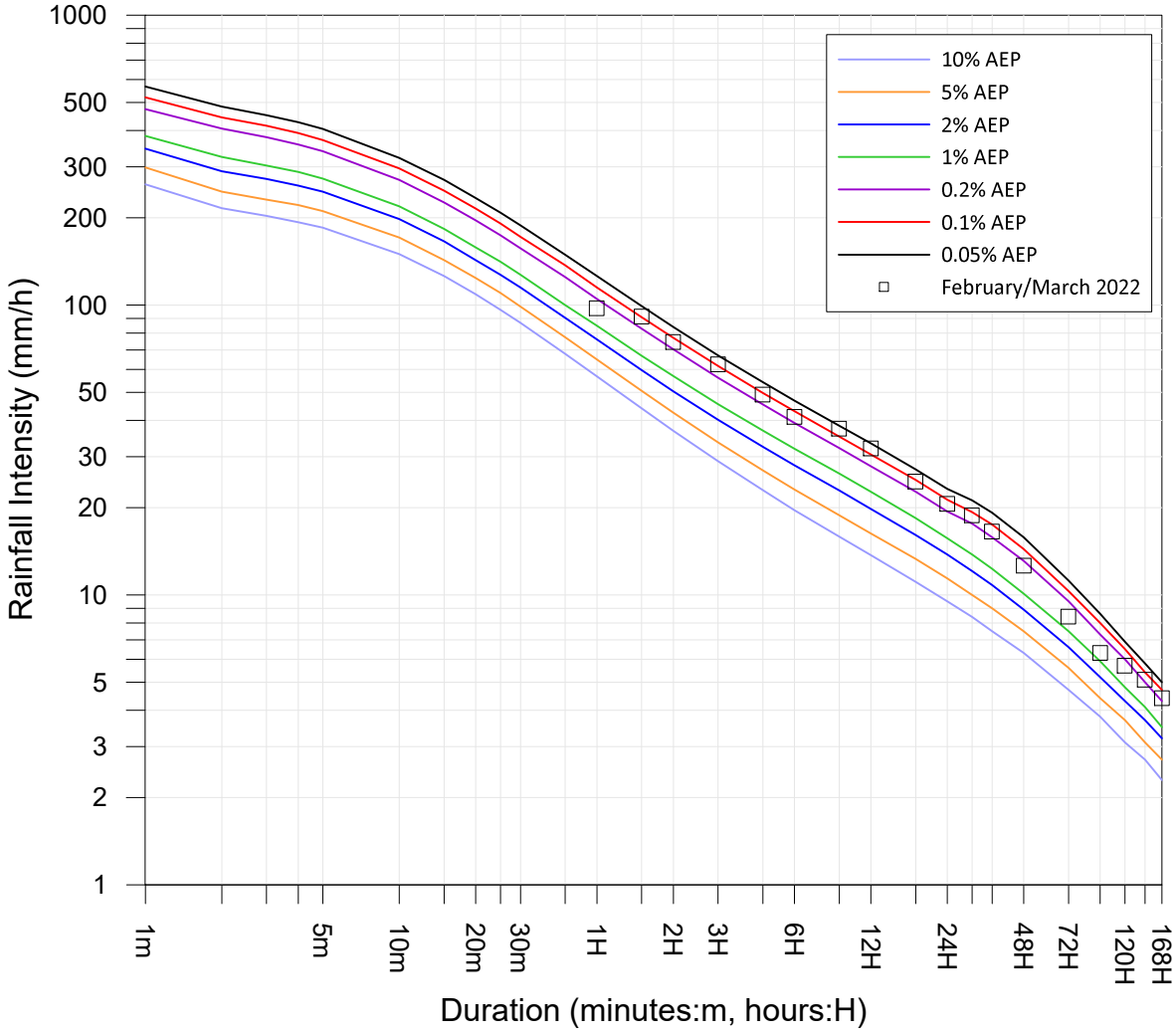
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.13

IFD_58099_Figure 7.13.pdf

Site Owner: BoM
Latitude: -29.183 Longitude:153.3964

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	97.4	14:35 27 Feb 2022
1.5H	91.1	15:05 27 Feb 2022
2H	74.4	15:35 27 Feb 2022
3H	62.4	15:28 27 Feb 2022
5H	49.1	16:58 27 Feb 2022
6H	41.1	18:28 27 Feb 2022
9H	37.4	22:35 27 Feb 2022
12H	32	00:28 28 Feb 2022
18H	24.6	00:36 28 Feb 2022
24H	20.6	12:28 28 Feb 2022
30H	18.8	15:28 28 Feb 2022
36H	16.5	18:36 28 Feb 2022
48H	12.6	22:26 28 Feb 2022
72H	8.4	14:17 01 Mar 2022
96H	6.3	14:17 02 Mar 2022
120H	5.7	15:48 28 Feb 2022
144H	5.1	09:20 01 Mar 2022
168H	4.4	02:42 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

EVANS HEAD RAAF BOMBING RANGE AWS (58212) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

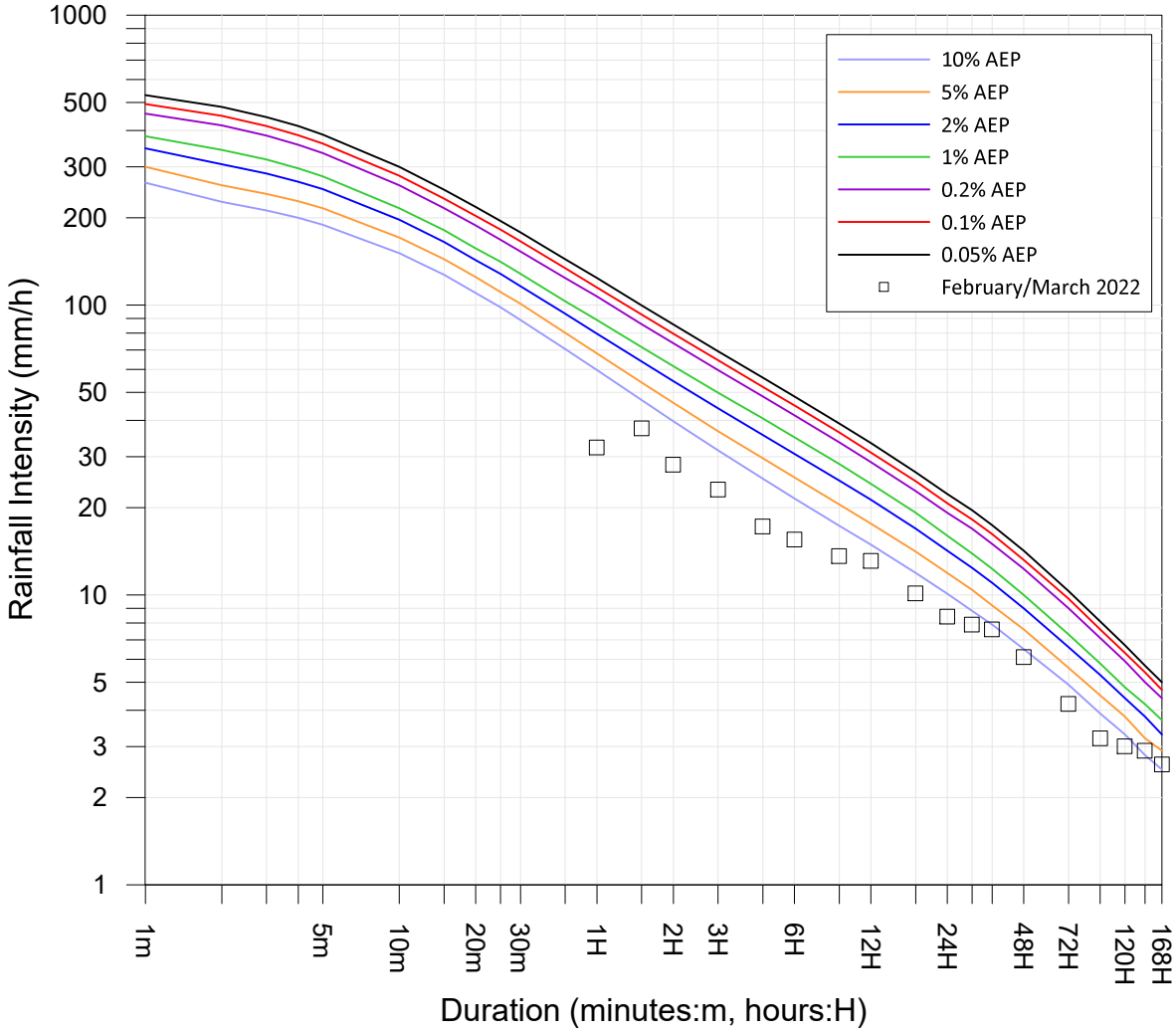
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.14

IFD_58212_Figure 7.14.pdf

Site Owner: BoM
Latitude: -28.8353 Longitude:153.5585

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	32.2	18:59 27 Feb 2022
1.5H	37.5	19:29 27 Feb 2022
2H	28.1	19:59 27 Feb 2022
3H	23.1	19:59 27 Feb 2022
5H	17.2	12:29 27 Feb 2022
6H	15.5	12:59 27 Feb 2022
9H	13.6	19:59 27 Feb 2022
12H	13.1	19:59 27 Feb 2022
18H	10.1	19:59 27 Feb 2022
24H	8.4	06:59 28 Feb 2022
30H	7.9	12:59 28 Feb 2022
36H	7.6	18:59 28 Feb 2022
48H	6.1	18:59 28 Feb 2022
72H	4.2	13:59 01 Mar 2022
96H	3.2	17:59 01 Mar 2022
120H	3	14:59 28 Feb 2022
144H	2.9	07:59 01 Mar 2022
168H	2.6	02:59 01 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

BALLINA AIRPORT AWS (58198)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

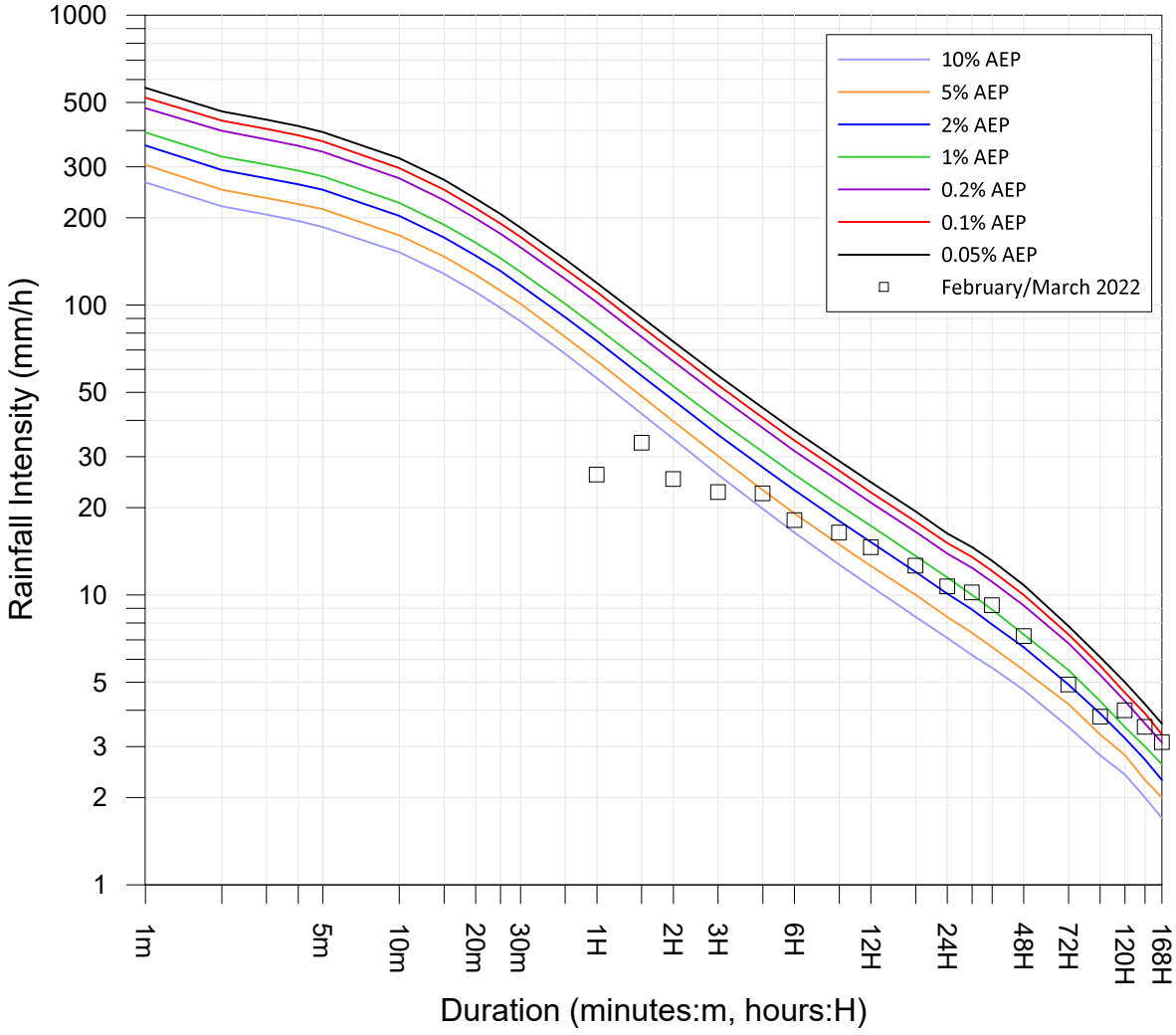
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.15

IFD_58198_Figure 7.15.pdf

Site Owner: BoM
Latitude: -28.8824 Longitude:153.0618

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	26	01:59 28 Feb 2022
1.5H	33.5	01:29 28 Feb 2022
2H	25.1	01:59 28 Feb 2022
3H	22.6	02:59 28 Feb 2022
5H	22.4	02:29 28 Feb 2022
6H	18.1	03:59 28 Feb 2022
9H	16.4	06:59 28 Feb 2022
12H	14.6	09:59 28 Feb 2022
18H	12.6	15:59 28 Feb 2022
24H	10.7	14:59 28 Feb 2022
30H	10.2	14:59 28 Feb 2022
36H	9.2	19:59 28 Feb 2022
48H	7.2	19:59 28 Feb 2022
72H	4.9	15:59 01 Mar 2022
96H	3.8	23:59 28 Feb 2022
120H	4	17:59 28 Feb 2022
144H	3.5	06:59 01 Mar 2022
168H	3.1	11:59 01 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CASINO AIRPORT AWS (58208)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

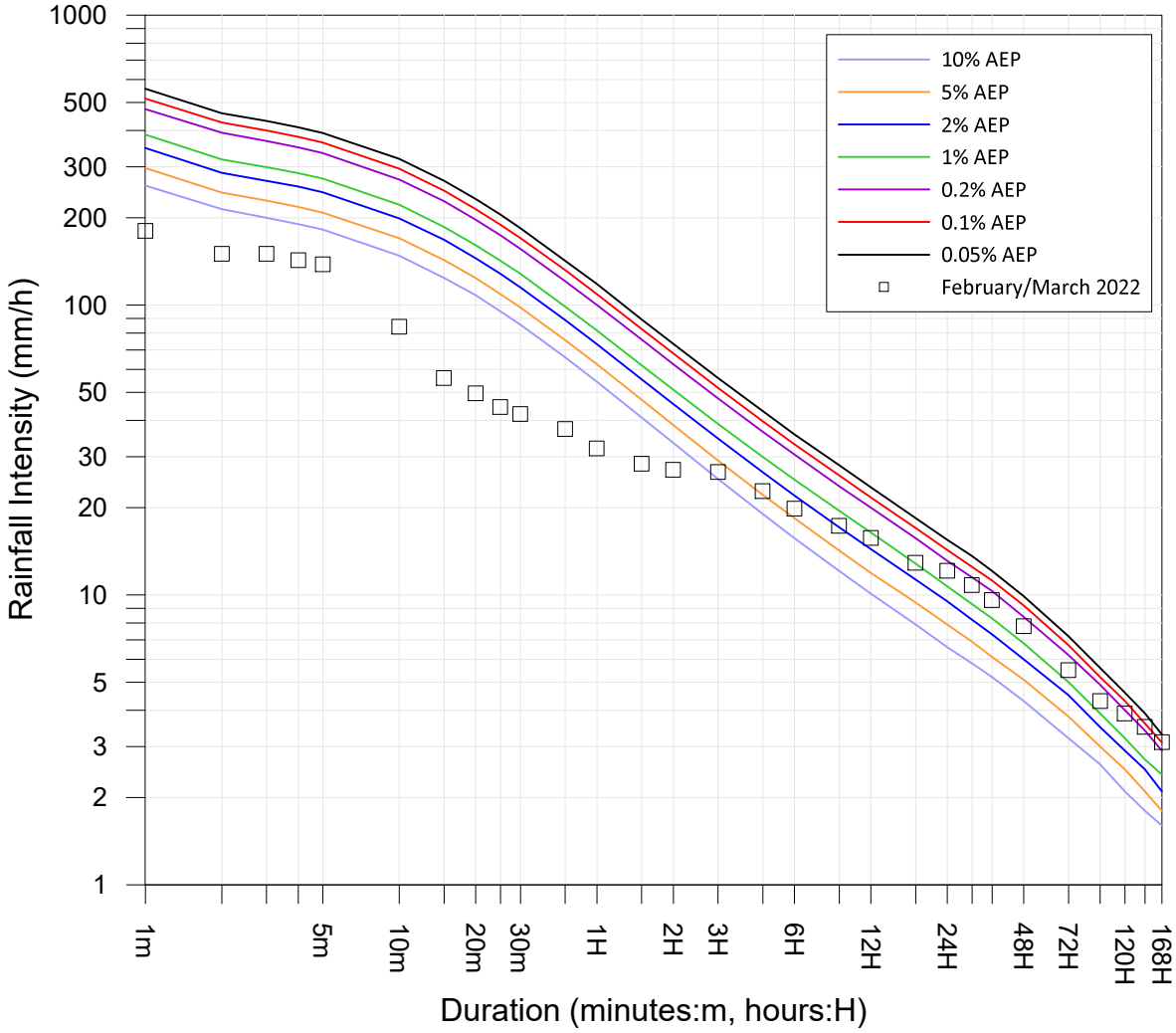
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.16

IFD_58208_Figure 7.16.pdf

Site Owner: WaterNSW
Latitude: -28.7591 Longitude:152.9222

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	180	19:47 07 Mar 2022
2m	150	19:47 07 Mar 2022
3m	150	19:47 07 Mar 2022
4m	142.5	19:47 07 Mar 2022
5m	138	19:47 07 Mar 2022
10m	84	19:51 07 Mar 2022
15m	56	19:56 07 Mar 2022
20m	49.5	10:41 28 Feb 2022
25m	44.4	10:50 28 Feb 2022
30m	42	10:51 28 Feb 2022
45m	37.3	09:04 28 Feb 2022
1H	32	09:13 28 Feb 2022
1.5H	28.3	09:46 28 Feb 2022
2H	27	10:38 28 Feb 2022
3H	26.5	11:08 28 Feb 2022
5H	22.8	11:38 28 Feb 2022
6H	19.8	12:03 28 Feb 2022
9H	17.3	12:04 28 Feb 2022
12H	15.7	12:26 28 Feb 2022
18H	12.9	10:52 28 Feb 2022
24H	12.1	12:08 28 Feb 2022
30H	10.8	13:49 28 Feb 2022
36H	9.6	19:33 28 Feb 2022
48H	7.8	17:28 28 Feb 2022
72H	5.5	00:09 01 Mar 2022
96H	4.3	09:12 01 Mar 2022
120H	3.9	22:28 28 Feb 2022
144H	3.5	23:19 28 Feb 2022
168H	3.1	11:29 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

EDEN CK AT DOUBTFUL (558037)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

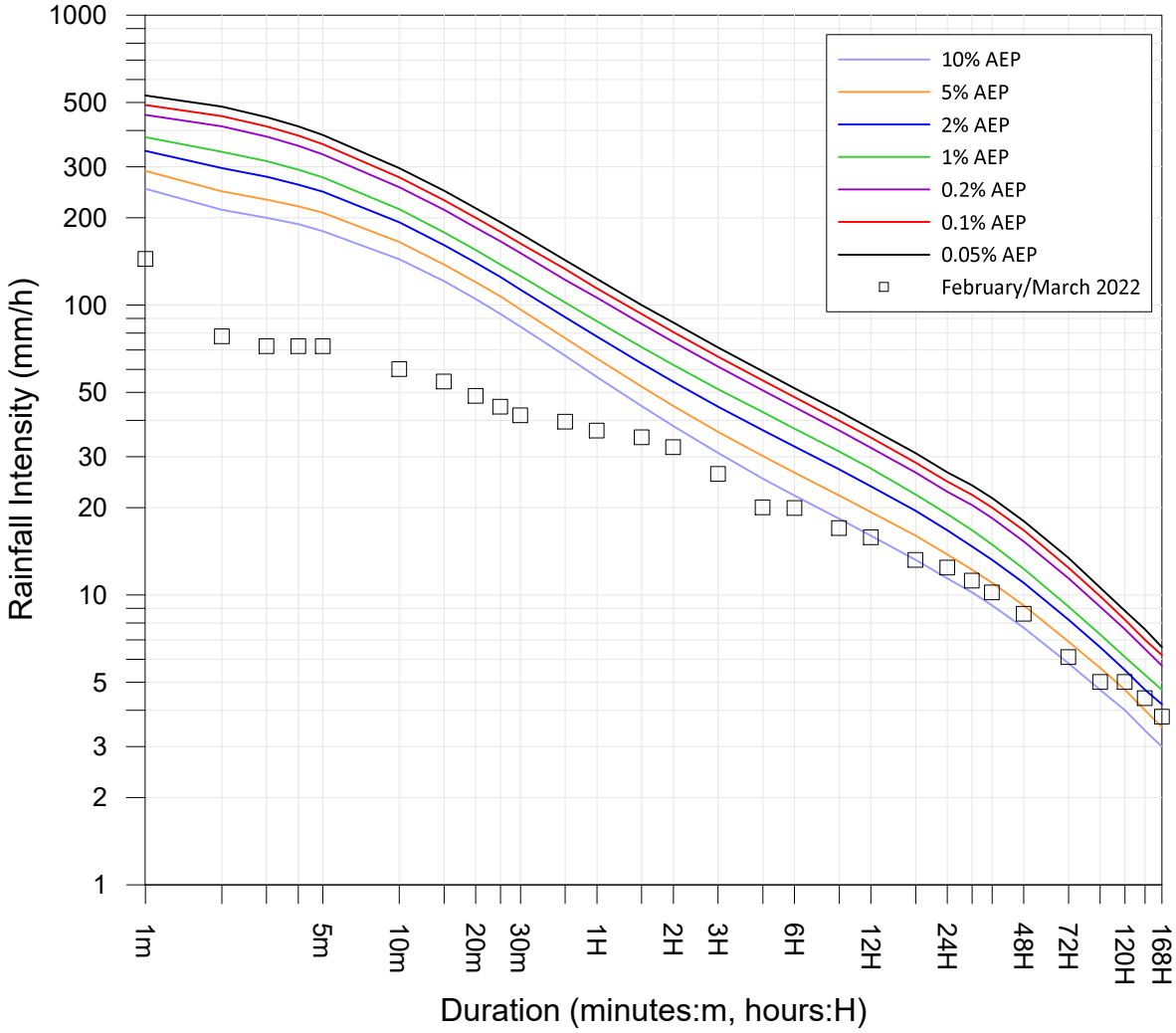
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.17

IFD_558037_Figure 7.17.pdf

Site Owner: BoM
Latitude: -28.4738 Longitude:153.0861

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	144	22:51 27 Feb 2022
2m	78	22:52 27 Feb 2022
3m	72	16:38 23 Feb 2022
4m	72	16:38 23 Feb 2022
5m	72	16:38 23 Feb 2022
10m	60	16:43 23 Feb 2022
15m	54.4	16:48 23 Feb 2022
20m	48.6	16:53 23 Feb 2022
25m	44.6	17:58 27 Feb 2022
30m	41.6	18:01 27 Feb 2022
45m	39.5	17:58 27 Feb 2022
1H	36.8	18:14 27 Feb 2022
1.5H	34.9	17:59 27 Feb 2022
2H	32.3	18:22 27 Feb 2022
3H	26.1	19:15 27 Feb 2022
5H	20	18:17 27 Feb 2022
6H	19.9	18:32 27 Feb 2022
9H	17	20:30 27 Feb 2022
12H	15.8	23:42 27 Feb 2022
18H	13.2	05:54 28 Feb 2022
24H	12.4	10:41 28 Feb 2022
30H	11.2	10:38 28 Feb 2022
36H	10.2	17:58 28 Feb 2022
48H	8.6	15:14 28 Feb 2022
72H	6.1	05:55 01 Mar 2022
96H	5	19:15 28 Feb 2022
120H	5	16:21 28 Feb 2022
144H	4.4	05:22 01 Mar 2022
168H	3.8	05:22 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

GREEN PIGEON (MORNING VIEW) (58113)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

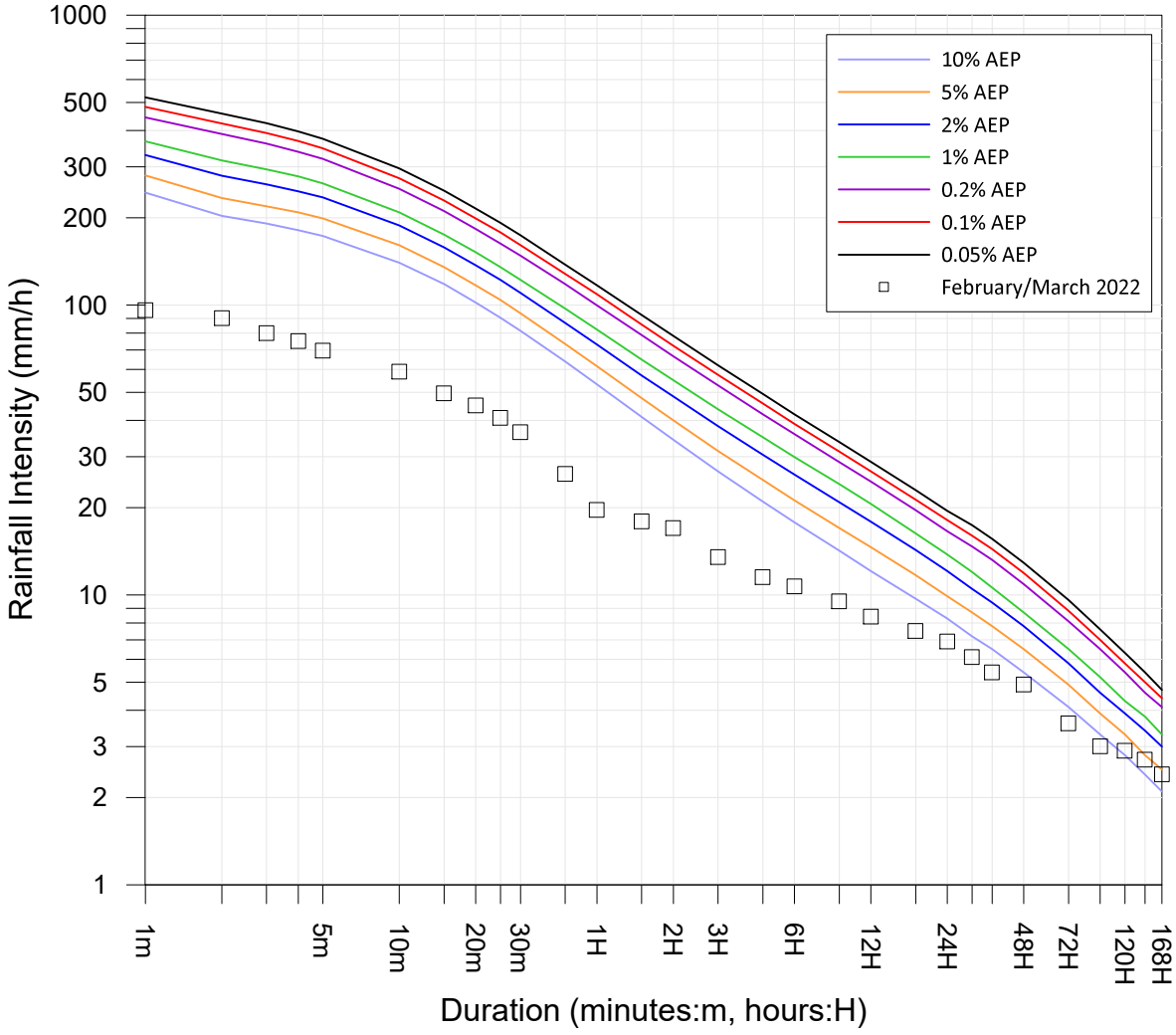
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.18

IFD_58113_Figure 7.18.pdf

Site Owner: BoM
Latitude: -28.4119 Longitude:152.9827

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	96	16:04 20 Feb 2022
2m	90	16:04 20 Feb 2022
3m	80	16:42 23 Feb 2022
4m	75	16:42 23 Feb 2022
5m	69.6	16:42 23 Feb 2022
10m	58.8	16:54 21 Feb 2022
15m	49.6	16:57 21 Feb 2022
20m	45	16:56 21 Feb 2022
25m	40.8	16:58 21 Feb 2022
30m	36.4	17:03 21 Feb 2022
45m	26.1	17:17 21 Feb 2022
1H	19.6	17:32 21 Feb 2022
1.5H	17.9	18:32 27 Feb 2022
2H	17	19:03 27 Feb 2022
3H	13.5	19:39 27 Feb 2022
5H	11.5	19:03 27 Feb 2022
6H	10.7	19:17 27 Feb 2022
9H	9.5	20:12 27 Feb 2022
12H	8.4	23:53 27 Feb 2022
18H	7.5	06:20 28 Feb 2022
24H	6.9	07:43 28 Feb 2022
30H	6.1	09:52 28 Feb 2022
36H	5.4	15:52 28 Feb 2022
48H	4.9	13:21 28 Feb 2022
72H	3.6	19:31 28 Feb 2022
96H	3	09:18 28 Feb 2022
120H	2.9	16:24 28 Feb 2022
144H	2.7	05:39 01 Mar 2022
168H	2.4	16:32 28 Feb 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LOADSTONE (HIGH VIEW) (58141) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

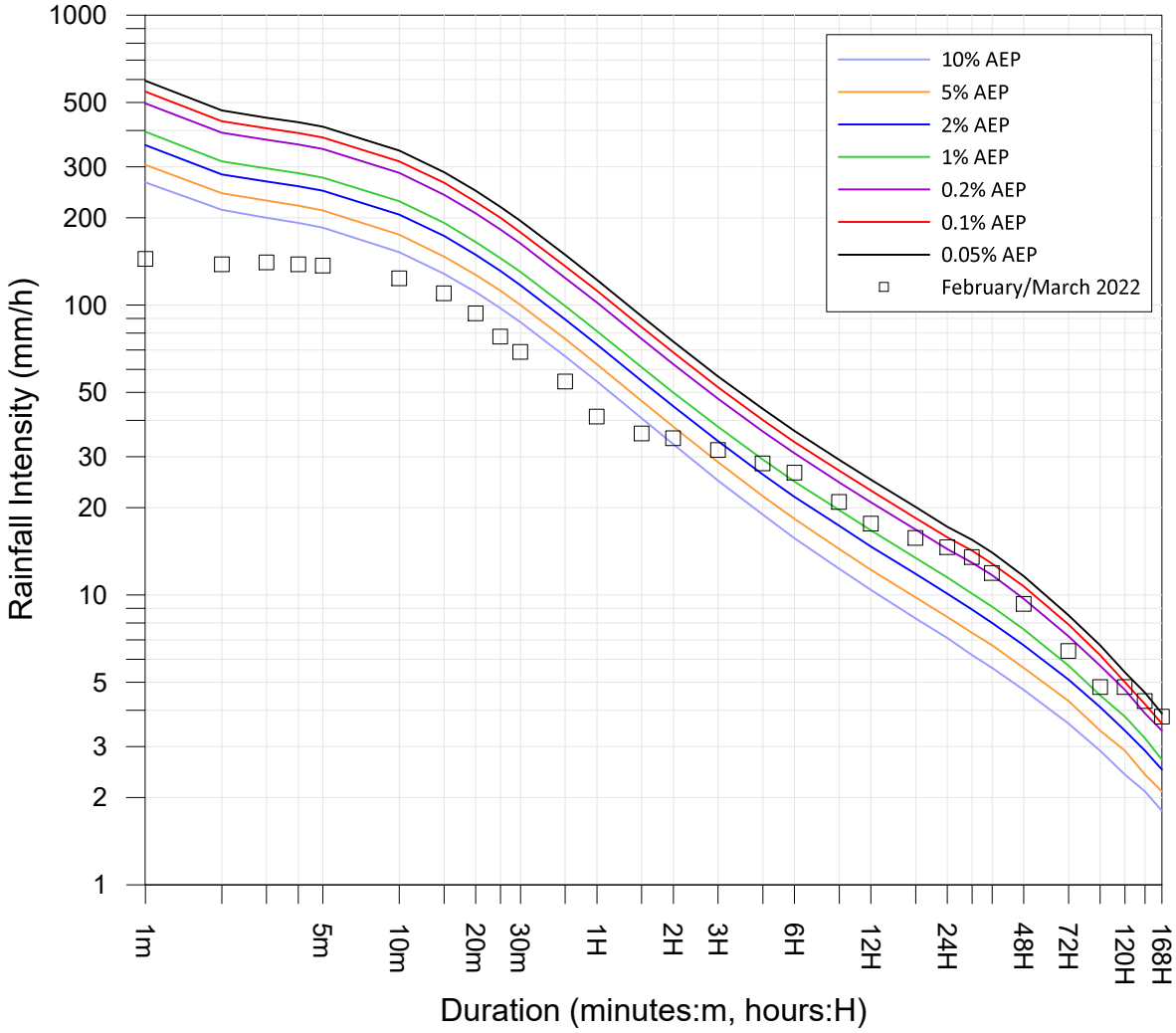
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.19

IFD_58141_Figure 7.19.pdf

Site Owner: WaterNSW
Latitude: -29.1119 Longitude:152.9983

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	144	13:23 06 Mar 2022
2m	138	13:23 06 Mar 2022
3m	140	13:23 06 Mar 2022
4m	138	13:23 06 Mar 2022
5m	136.8	13:23 06 Mar 2022
10m	123.6	13:26 06 Mar 2022
15m	109.6	13:30 06 Mar 2022
20m	93.6	13:34 06 Mar 2022
25m	77.8	13:38 06 Mar 2022
30m	68.8	13:44 06 Mar 2022
45m	54.4	13:57 06 Mar 2022
1H	41.2	14:12 06 Mar 2022
1.5H	36	03:09 28 Feb 2022
2H	34.7	03:06 28 Feb 2022
3H	31.6	03:35 28 Feb 2022
5H	28.4	03:40 28 Feb 2022
6H	26.4	04:42 28 Feb 2022
9H	20.9	05:08 28 Feb 2022
12H	17.6	10:23 28 Feb 2022
18H	15.7	06:11 28 Feb 2022
24H	14.6	12:30 28 Feb 2022
30H	13.5	13:43 28 Feb 2022
36H	11.9	17:03 28 Feb 2022
48H	9.3	21:10 28 Feb 2022
72H	6.4	03:54 01 Mar 2022
96H	4.8	20:04 28 Feb 2022
120H	4.8	17:24 28 Feb 2022
144H	4.3	07:35 01 Mar 2022
168H	3.8	11:20 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

RAPPVILLE (MYRTLE CREEK) (558015) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

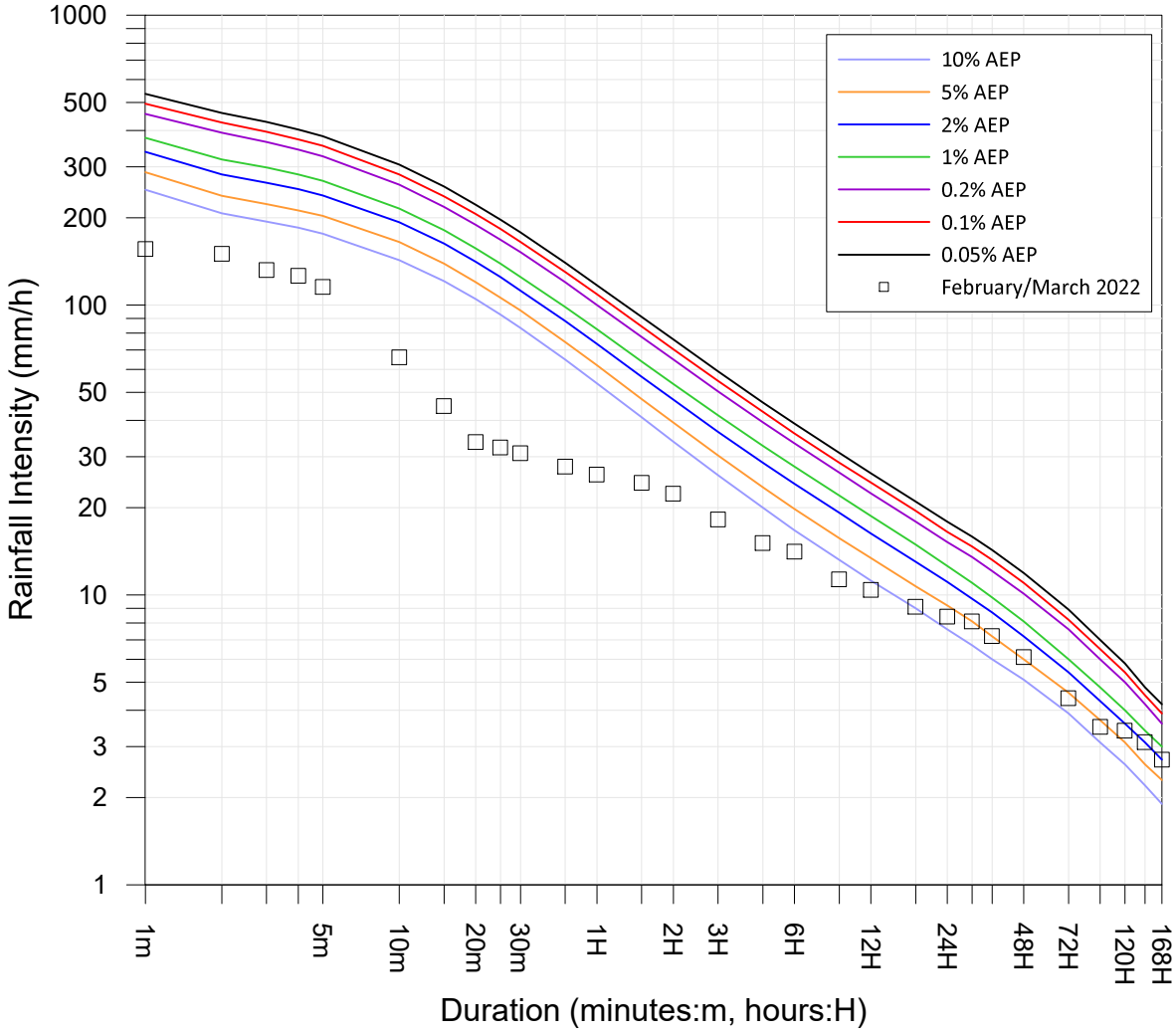
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.20

IFD_558015_Figure 7.20.pdf

Site Owner: WaterNSW
Latitude: -28.5167 Longitude:152.9667

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	156	16:07 04 Mar 2022
2m	150	16:08 04 Mar 2022
3m	132	16:08 04 Mar 2022
4m	126	16:08 04 Mar 2022
5m	115.2	16:08 04 Mar 2022
10m	66	16:12 04 Mar 2022
15m	44.8	16:17 04 Mar 2022
20m	33.6	16:22 04 Mar 2022
25m	32.2	18:13 27 Feb 2022
30m	30.8	18:14 27 Feb 2022
45m	27.7	18:23 27 Feb 2022
1H	26	18:14 27 Feb 2022
1.5H	24.3	18:13 27 Feb 2022
2H	22.3	18:34 27 Feb 2022
3H	18.2	18:35 27 Feb 2022
5H	15.1	18:30 27 Feb 2022
6H	14.1	18:51 27 Feb 2022
9H	11.3	20:52 27 Feb 2022
12H	10.4	23:52 27 Feb 2022
18H	9.1	06:16 28 Feb 2022
24H	8.4	13:42 28 Feb 2022
30H	8.1	13:47 28 Feb 2022
36H	7.2	16:09 28 Feb 2022
48H	6.1	15:06 28 Feb 2022
72H	4.4	06:22 01 Mar 2022
96H	3.5	17:09 28 Feb 2022
120H	3.4	16:33 28 Feb 2022
144H	3.1	05:58 01 Mar 2022
168H	2.7	04:36 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

WIANGAREE BRIDGE (RICHMOND RIVER) (558001)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

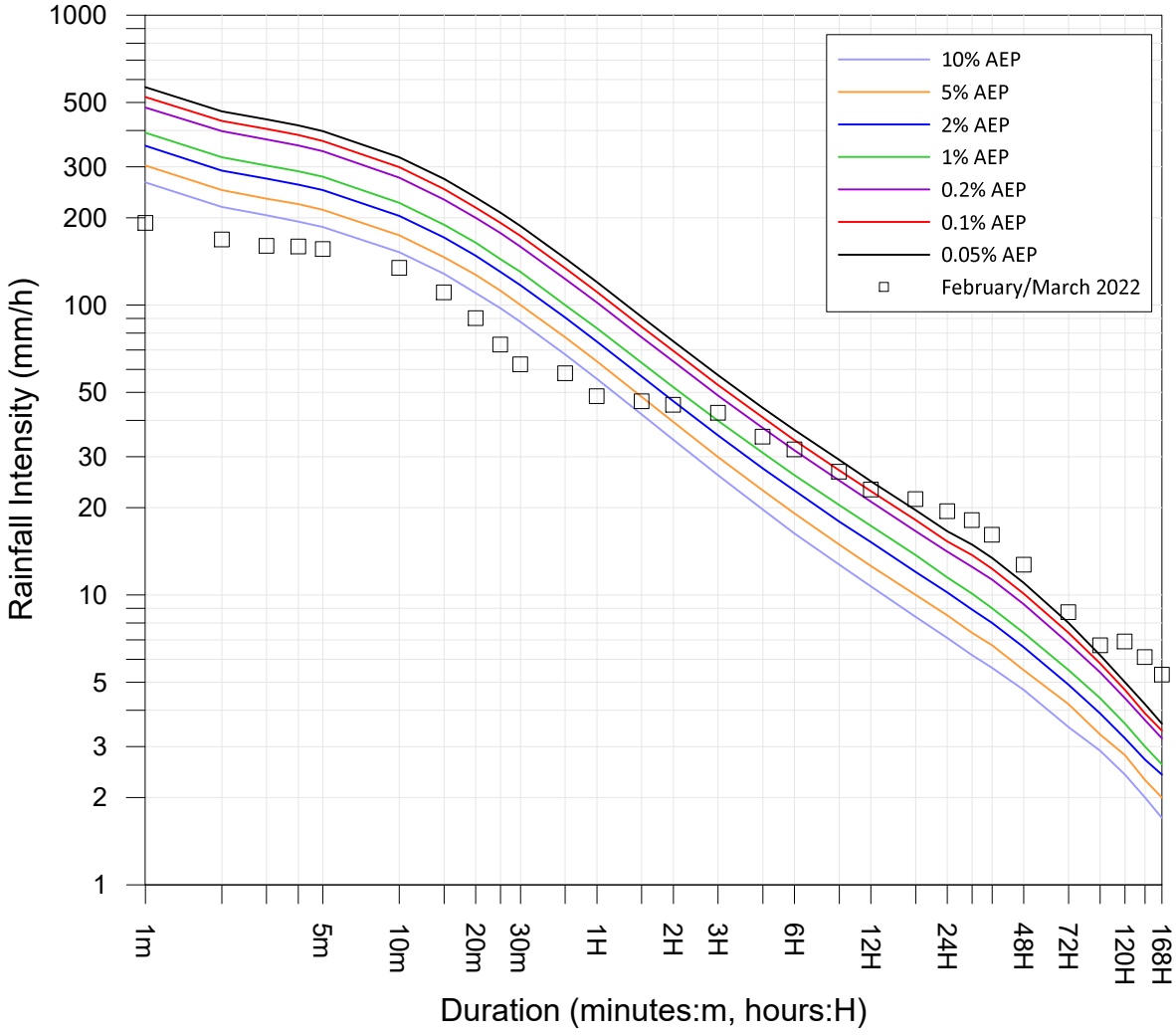
Manly Hydraulics Laboratory

Report MHL2880
Figure
7.21

IFD_558001_Figure 7.21.pdf

Site Owner: WaterNSW
Latitude: -28.9447 Longitude:153.0603

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	192	14:02 06 Mar 2022
2m	168	14:03 06 Mar 2022
3m	160	14:04 06 Mar 2022
4m	159	14:02 06 Mar 2022
5m	156	14:03 06 Mar 2022
10m	134.4	14:05 06 Mar 2022
15m	110.4	14:06 06 Mar 2022
20m	90	14:07 06 Mar 2022
25m	73	14:11 06 Mar 2022
30m	62.4	02:03 24 Feb 2022
45m	58.1	02:08 24 Feb 2022
1H	48.4	00:26 28 Feb 2022
1.5H	46.5	00:24 28 Feb 2022
2H	45.2	00:54 28 Feb 2022
3H	42.4	01:52 28 Feb 2022
5H	35.1	01:51 28 Feb 2022
6H	31.7	04:19 28 Feb 2022
9H	26.6	05:52 28 Feb 2022
12H	23.1	09:07 28 Feb 2022
18H	21.4	14:40 28 Feb 2022
24H	19.4	14:06 28 Feb 2022
30H	18.1	14:25 28 Feb 2022
36H	16.1	17:05 28 Feb 2022
48H	12.7	19:34 28 Feb 2022
72H	8.7	17:16 28 Feb 2022
96H	6.7	23:11 28 Feb 2022
120H	6.9	17:23 28 Feb 2022
144H	6.1	19:14 28 Feb 2022
168H	5.3	11:43 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

SHANNON BROOK AT YORKLEA (558038)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
7.22

IFD_558038_Figure 7.22.pdf

8 Clarence River region

8.1 Clarence River region – water level

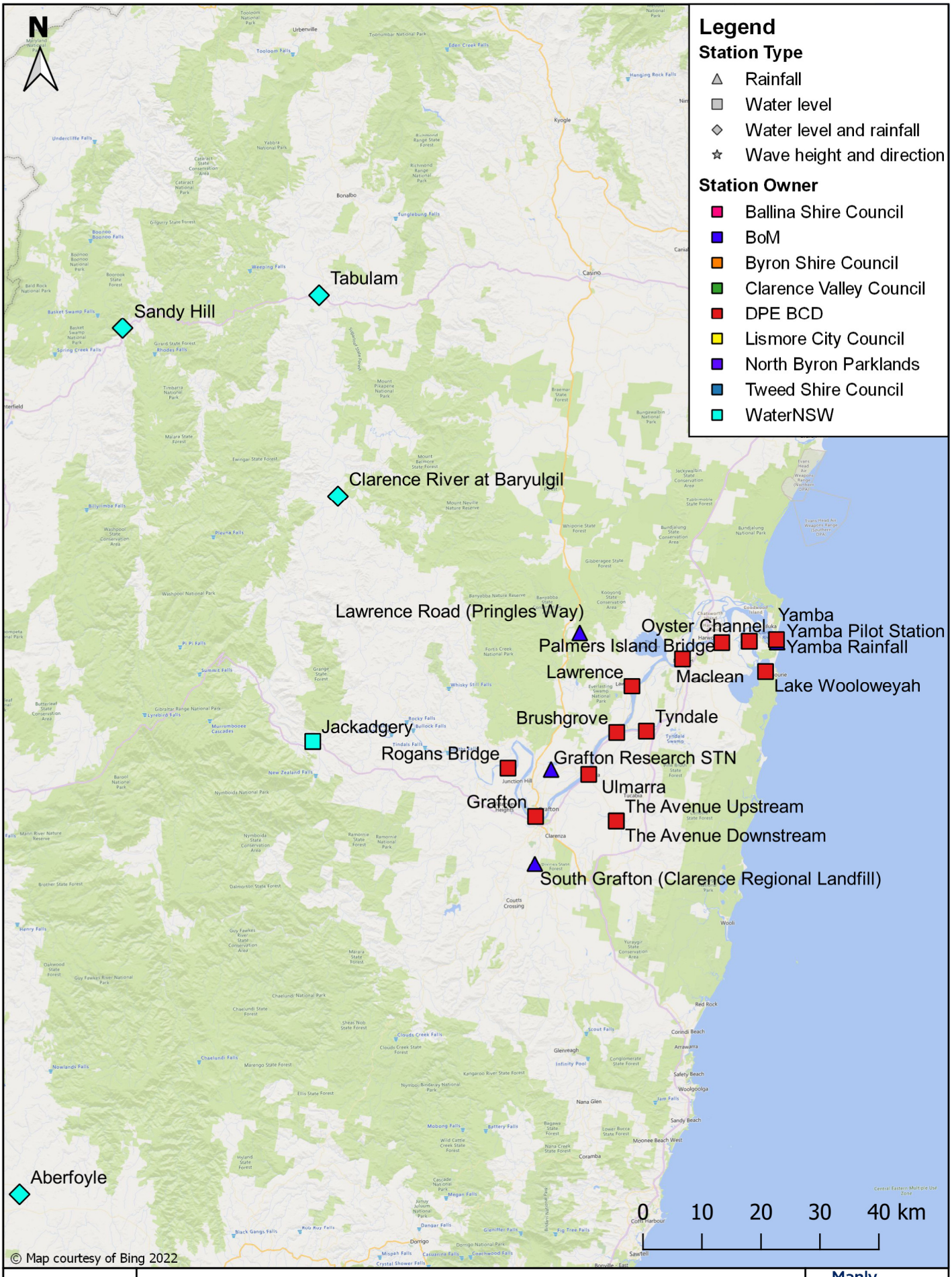
The peak observed water levels for the Clarence River region are listed in **Table 8.1**. **Table 8.2** lists the SES flood classifications for Maclean, Ulmarra and Grafton (BoM, 2013). The locations of water level stations within the Wilsons River region are shown in **Figure 8.1**. The water level data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 8.2** to **Figure 8.10**.

Table 8.1 Clarence River region flood peaks

Station name	Station number	Owner	Datum	Level (m)	Date and time of flood peak
Tabulam	204002	WaterNSW	Local	10.60	28/02/2022 19:30
Sandy Hill	204036	WaterNSW	Local	3.61	27/02/2022 16:45
Clarence River at Baryulgil	204900	WaterNSW	Local	12.03	28/02/2022 12:00
Yamba	204454	DPE BCD	AHD	1.60	01/03/2022 07:30
Oyster Channel	204451	DPE BCD	AHD	1.80	02/03/2022 09:30
Palmers Island Bridge	204426	DPE BCD	AHD	2.79	02/03/2022 07:45
Maclean	204410	DPE BCD	AHD	3.36	01/03/2022 22:45
Lake Wooloweyah	204485	DPE BCD	AHD	1.73	02/03/2022 11:30
Lawrence	204453	DPE BCD	AHD	4.71	01/03/2022 16:00
Tyndale	204465	DPE BCD	AHD	5.05	01/03/2022 23:45
Brushgrove	204406	DPE BCD	AHD	5.16	02/03/2022 00:15
Jackadgery	204004	WaterNSW	Local	9.32	28/02/2022 20:45
Rogans Bridge	204414	DPE BCD	AHD	13.77	28/02/2022 22:30
Ulmarra	204480	DPE BCD	AHD	6.03	01/03/2022 07:30
Grafton	204400	DPE BCD	AHD	7.67	28/02/2022 22:30
The Avenue Downstream	204476	DPE BCD	AHD	5.15	02/03/2022 03:30
The Avenue Upstream	204475	DPE BCD	AHD	5.45	02/03/2022 03:15
Aberfoyle	204030	WaterNSW	Assumed	1.77	07/03/2022 03:00

Table 8.2 SES flood classification for Clarence River region stations

Station name	Station number		Flood classification			Flood peak (m)	Datum	Flood event classification
	Bureau number	AWRC number	Minor	Moderate	Major			
			Water level (m)					
Maclean	558022	204410	1.6	2.2	2.5	3.36	AHD	Major
Ulmarra	58188	204480	2.1	3.4	4.9	6.03	AHD	Major
Grafton	58178	204400	2.1	3.6	5.4	7.67	AHD	Major



NSW GOVERNMENT

CLARENCE RIVER STATIONS

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.1

Figures_MHL2880.qgs

8.2 Clarence River region – rainfall

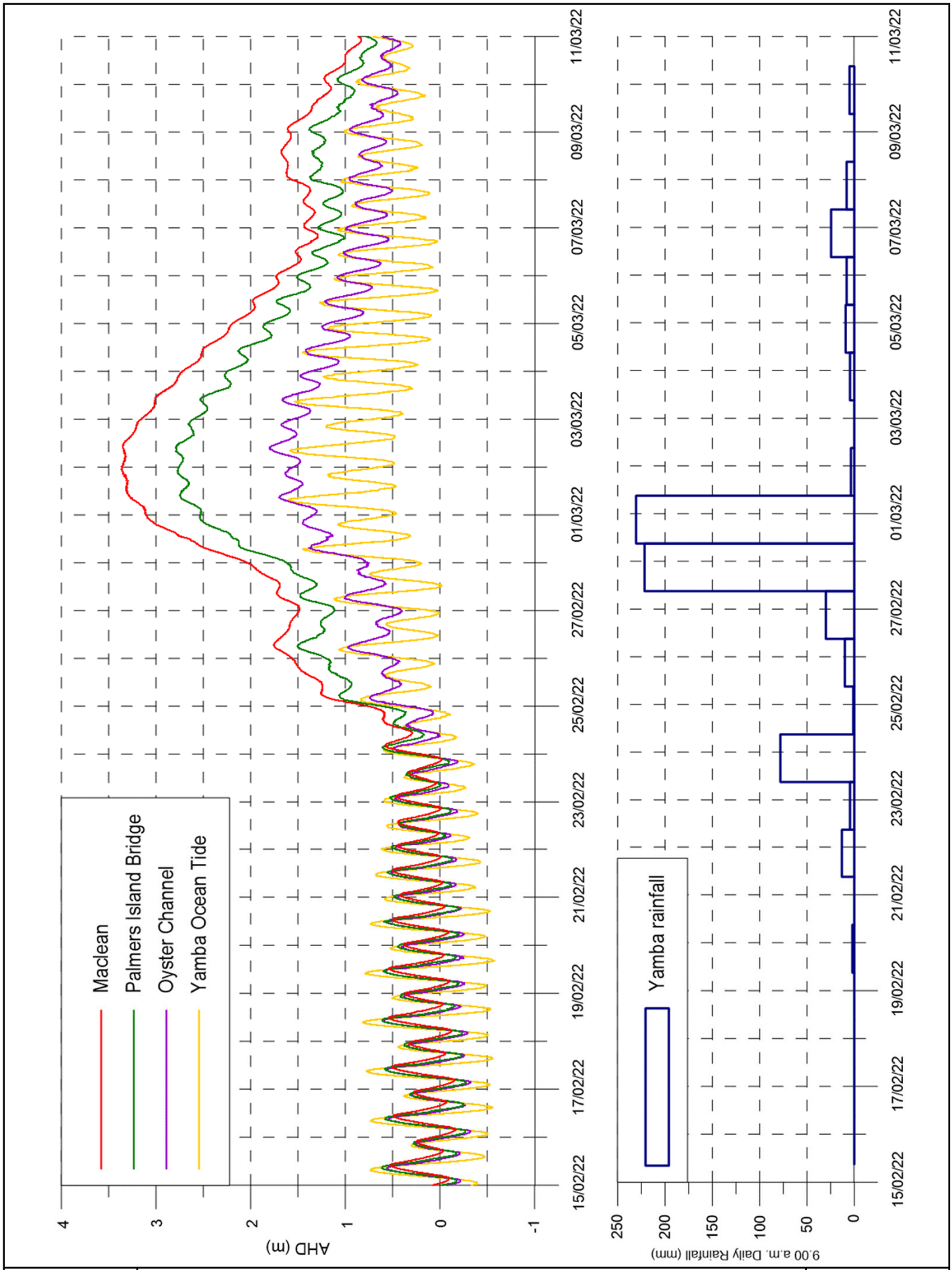
The water level and rainfall data for the period 15 February to 11 March 2022 are displayed graphically in **Figure 8.2** to **Figure 8.10**. 24-hour rainfall totals up until 9:00 a.m. are displayed in **Table 8.3** and **Table 8.4** for the period 15 February to 11 March 2022. The rainfall intensities are displayed graphically in **Figure 8.12** to **Figure 8.20**, in ARR2019 format. Appendix C provides ARR1987 format.

Table 8.3 Clarence River region daily rainfall totals

Date	Tabulam	Sandy Hill	Clarence River at Baryulgil	Lawrence Road (Pringles Way)	Yamba Pilot Station
	204002 (mm)	204036 (mm)	204900 (mm)	58068 (mm)	58012 (mm)
	WaterNSW	WaterNSW	WaterNSW	BoM	BoM
15/02/2022	1.8	2.0	1.0	2.0	1.4
16/02/2022	0.2	0.0	0.0	0.0	0.0
17/02/2022	0.0	0.0	0.2	0.0	0.0
18/02/2022	0.0	0.0	0.0	0.0	0.0
19/02/2022	0.0	0.0	0.8	22.4	0.0
20/02/2022	0.4	0.0	0.0	0.8	2.6
21/02/2022	0.0	0.0	0.0	0.0	0.0
22/02/2022	0.0	0.0	0.0	0.0	14.6
23/02/2022	16.8	21.5	17.4	5.8	5.6
24/02/2022	42.4	39.5	99.0	114.4	87.6
25/02/2022	13.8	30.5	30.2	35.6	1.6
26/02/2022	29.0	14.5	16.4	21.4	11.4
27/02/2022	54.2	36.5	53.2	36.6	34.0
28/02/2022	102.0	48.5	165.6	291.2	273.4
01/03/2022	23.2	9.0	37.2	56.4	254.6
02/03/2022	13.4	22.0	5.6	3.8	4.2
03/03/2022	8.2	6.5	13.0	0.2	0.0
04/03/2022	11.6	10.5	8.6	4.4	4.6
05/03/2022	4.2	3.0	0.2	0.2	9.6
06/03/2022	0.0	0.0	0.2	2.0	9.2
07/03/2022	6.2	6.0	27.8	51.0	26.2
08/03/2022	7.8	14.5	7.8	14.0	9.2
09/03/2022	0.2	0.0	0.0	0.0	0.0
10/03/2022	0.0	0.0	1.2	5.6	5.6
11/03/2022	0.0	0.0	0.0	6.8	7.2

Table 8.4 Clarence River region daily rainfall totals (cont.)

Date	Yamba	Grafton Research Station	South Grafton (Clarence Regional Landfill)	Aberfoyle
	462994 (mm)	58077 (mm)	58231 (mm)	204030 (mm)
	Clarence Valley Council	BoM	BoM	WaterNSW
15/02/2022	0.0	5.6	0.0	0.0
16/02/2022	0.0	0.0	0.0	0.2
17/02/2022	0.0	0.0	0.0	0.0
18/02/2022	0.0	0.0	0.0	0.4
19/02/2022	0.0	4.8	6.0	0.0
20/02/2022	2.0	0.4	0.0	0.0
21/02/2022	0.0	0.0	0.0	3.2
22/02/2022	13.0	0.2	4.0	36.8
23/02/2022	4.5	23.8	33.0	2.0
24/02/2022	78.0	80.4	67.0	14.0
25/02/2022	1.0	27.2	45.0	21.8
26/02/2022	10.0	27.0	13.0	2.2
27/02/2022	30.0	44.8	41.0	15.6
28/02/2022	221.5	253.4	185.0	11.6
01/03/2022	230.5	49.4	57.0	0.4
02/03/2022	3.5	2.6	3.0	0.6
03/03/2022	0.0	0.4	0.0	5.0
04/03/2022	4.5	2.0	1.0	2.2
05/03/2022	9.0	1.6	2.0	0.0
06/03/2022	8.0	1.6	2.0	26.8
07/03/2022	24.5	13.6	48.0	40.2
08/03/2022	8.0	30.4	7.0	0.0
09/03/2022	0.0	11.0	0.0	0.0
10/03/2022	5.0	13.6	17.0	0.0
11/03/2022	0.5	1.8	0.0	3.0



NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

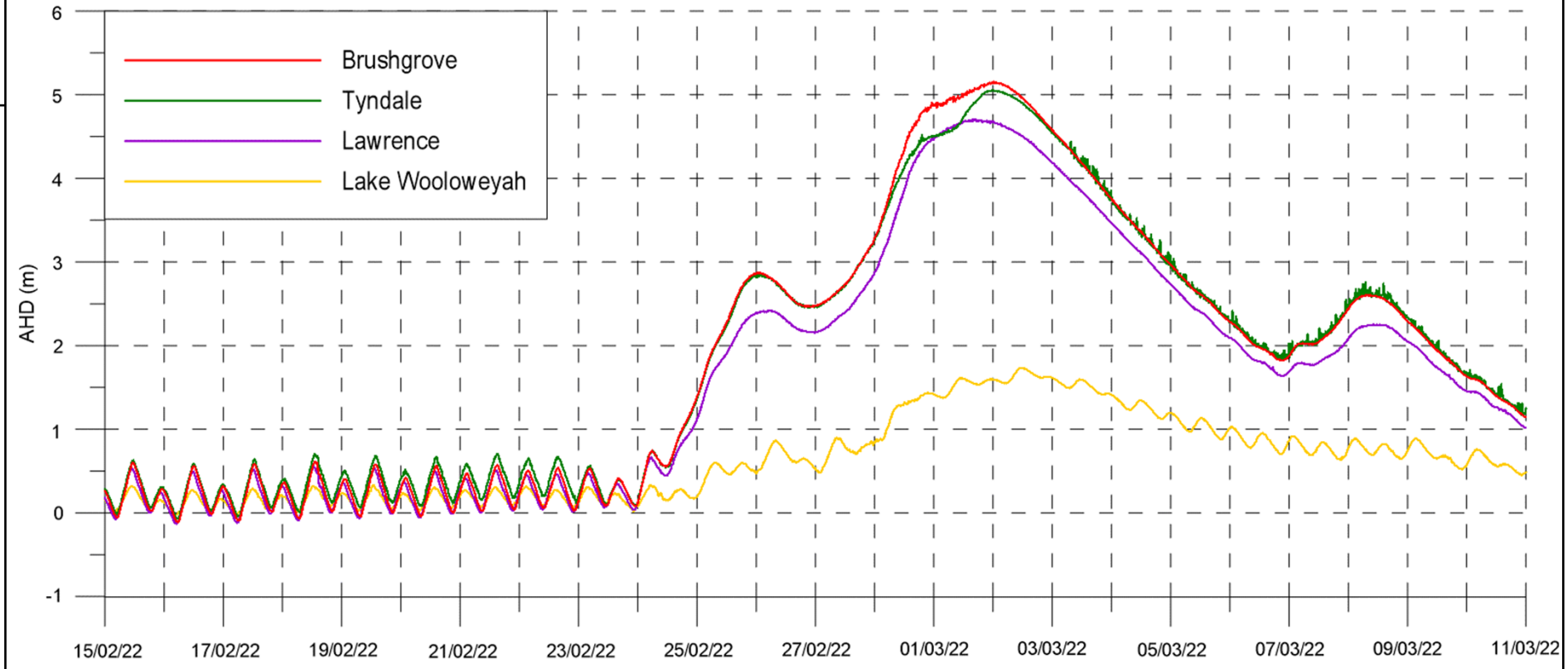
Manly Hydraulics Laboratory

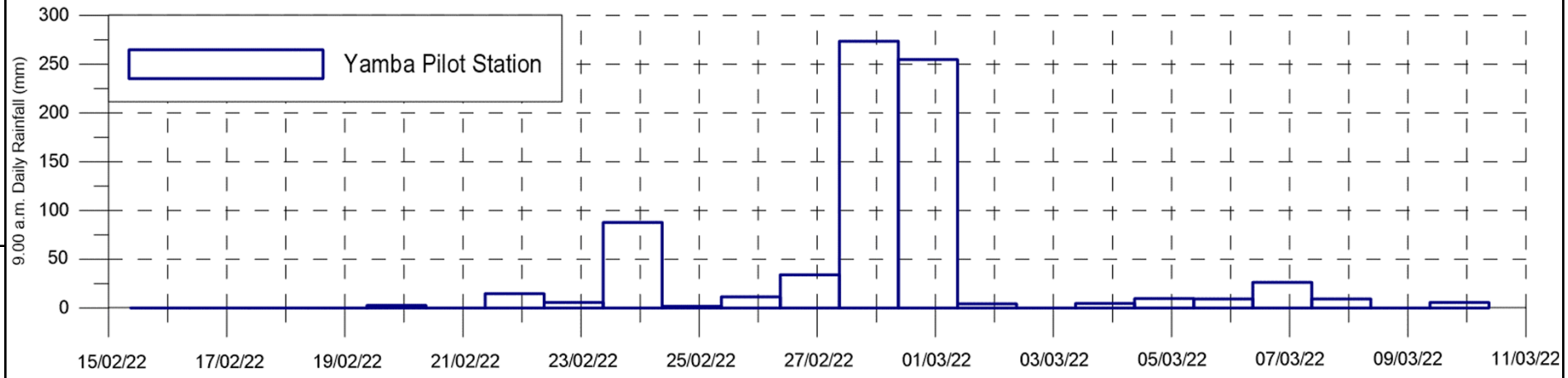
Report MHL2880
Figure
8.2

8.2.GRF

NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022





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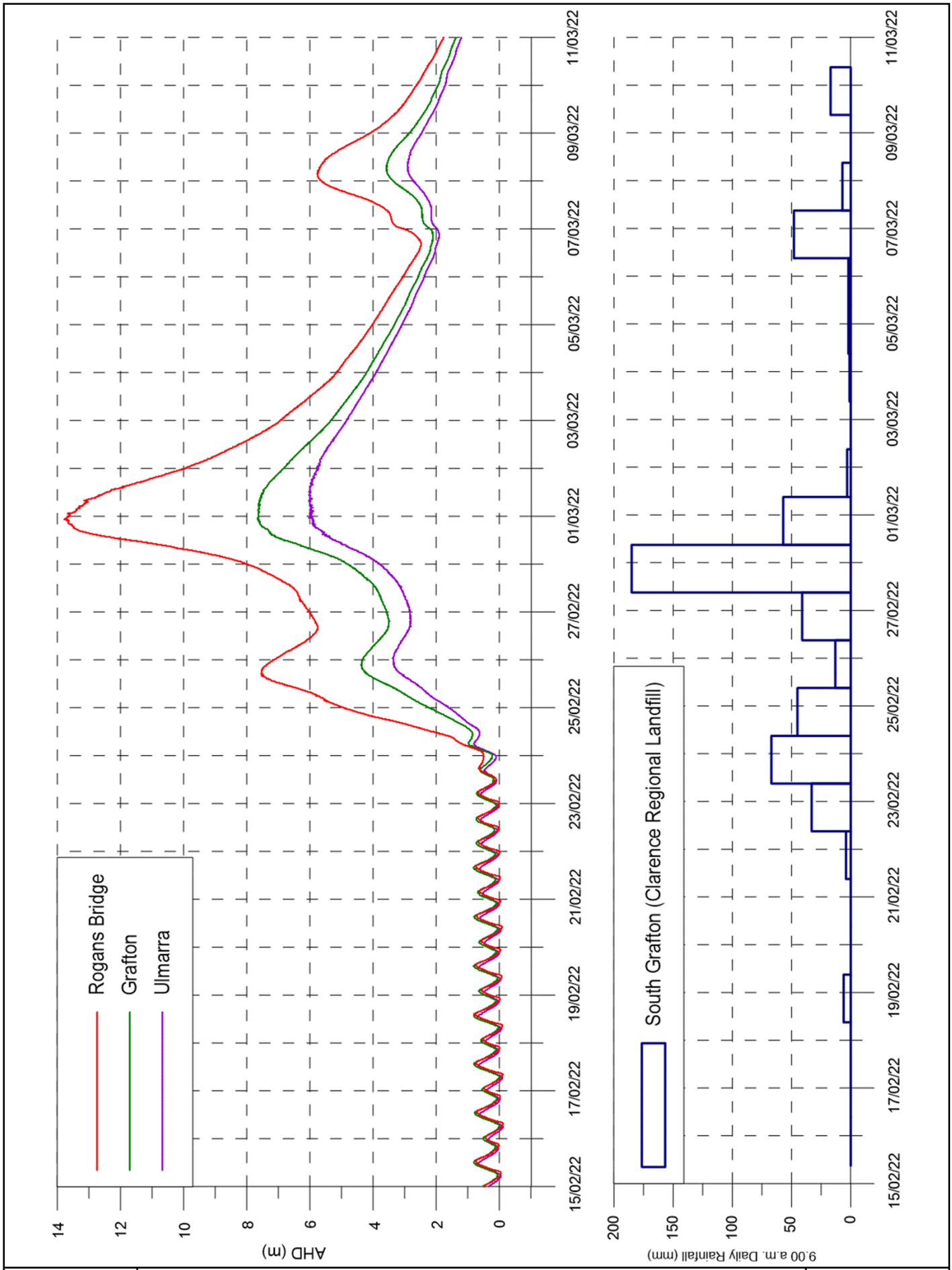
Report MHL2880
Figure 8.3

8.3.GRF



NSW GOVERNMENT

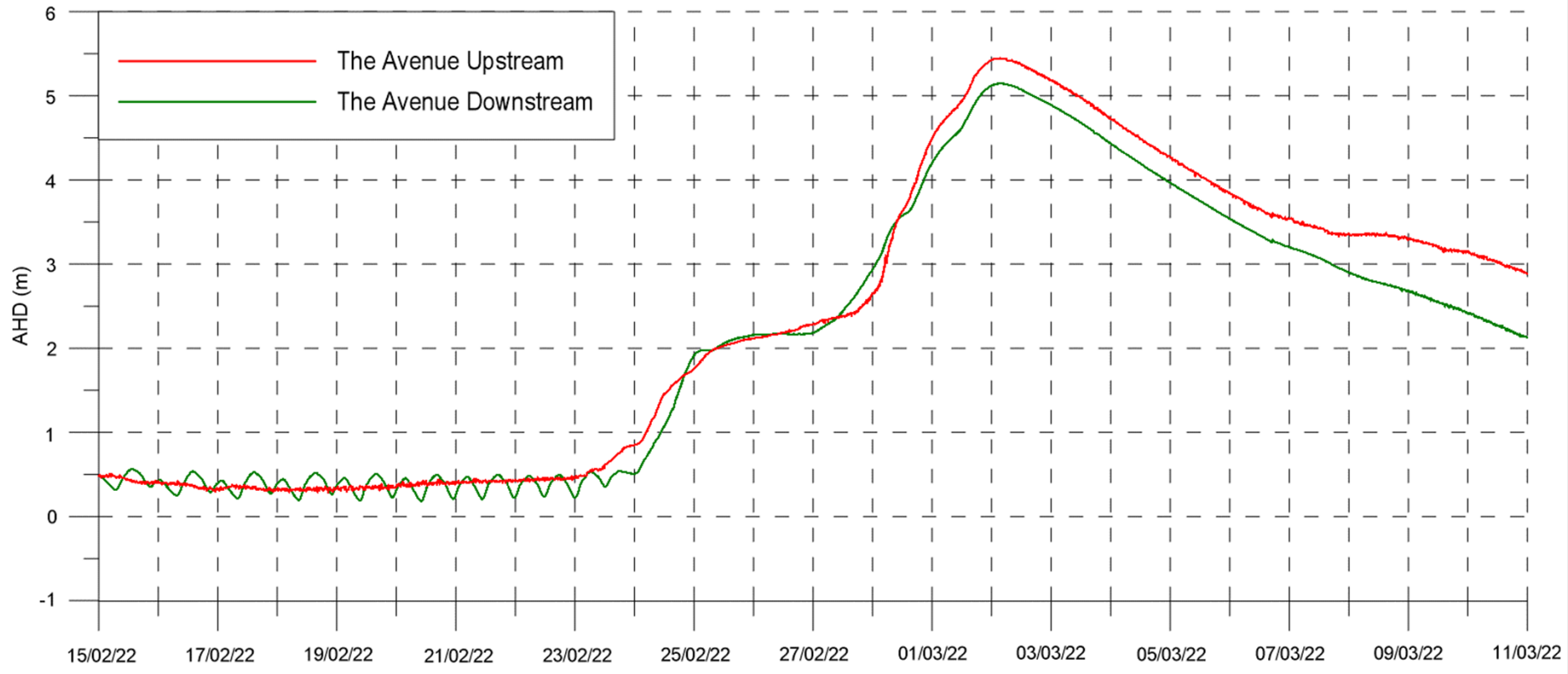
CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

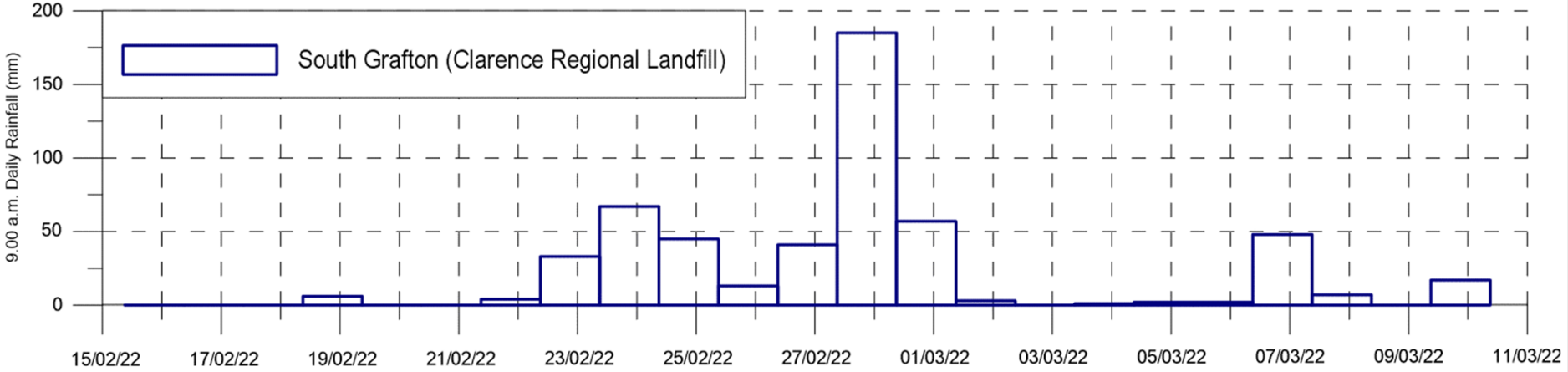
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.4

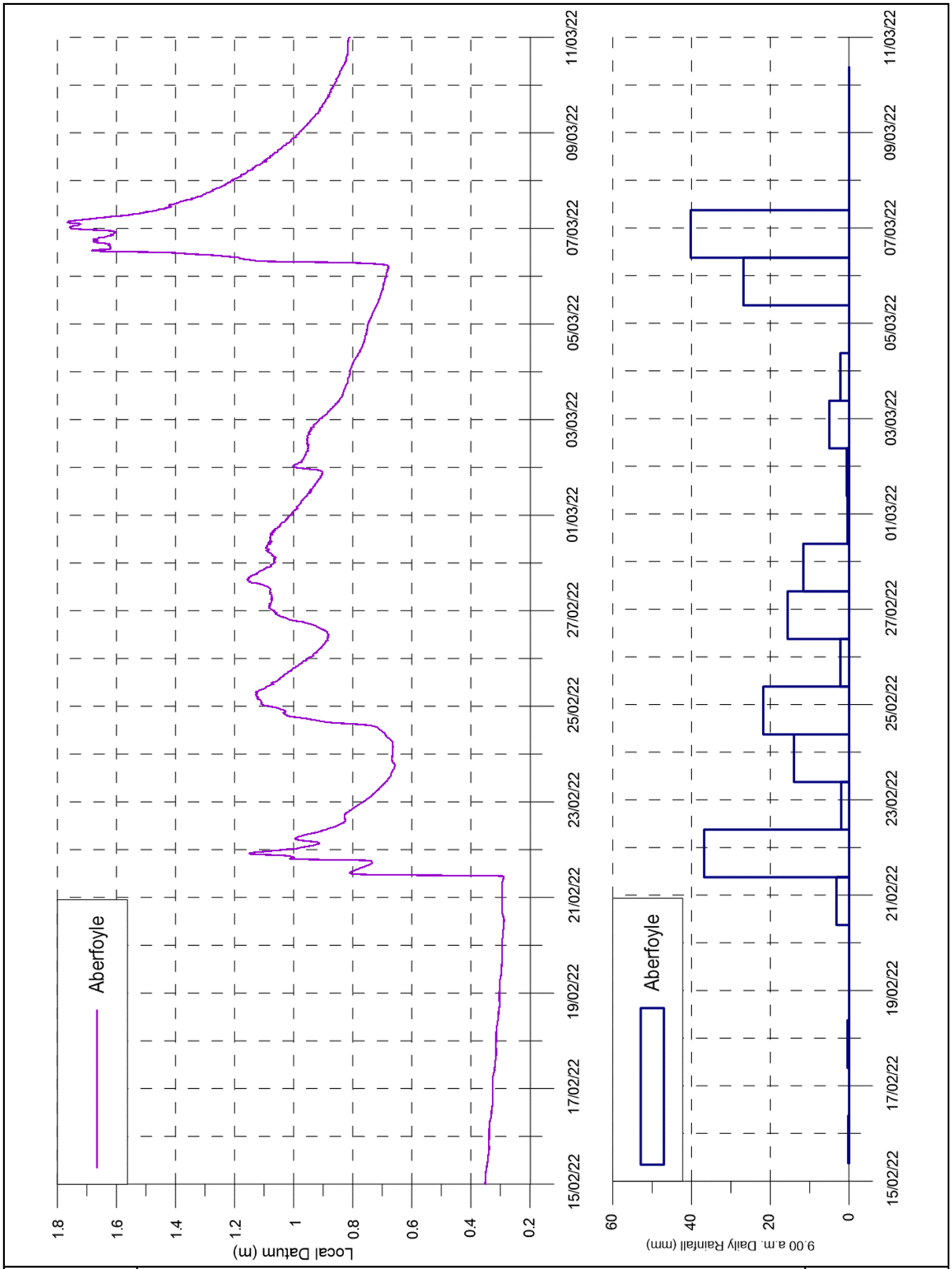
8.4.GRF

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022





Manly Hydraulics Laboratory
Report MHL2880
Figure 8.5
8.5.GRF



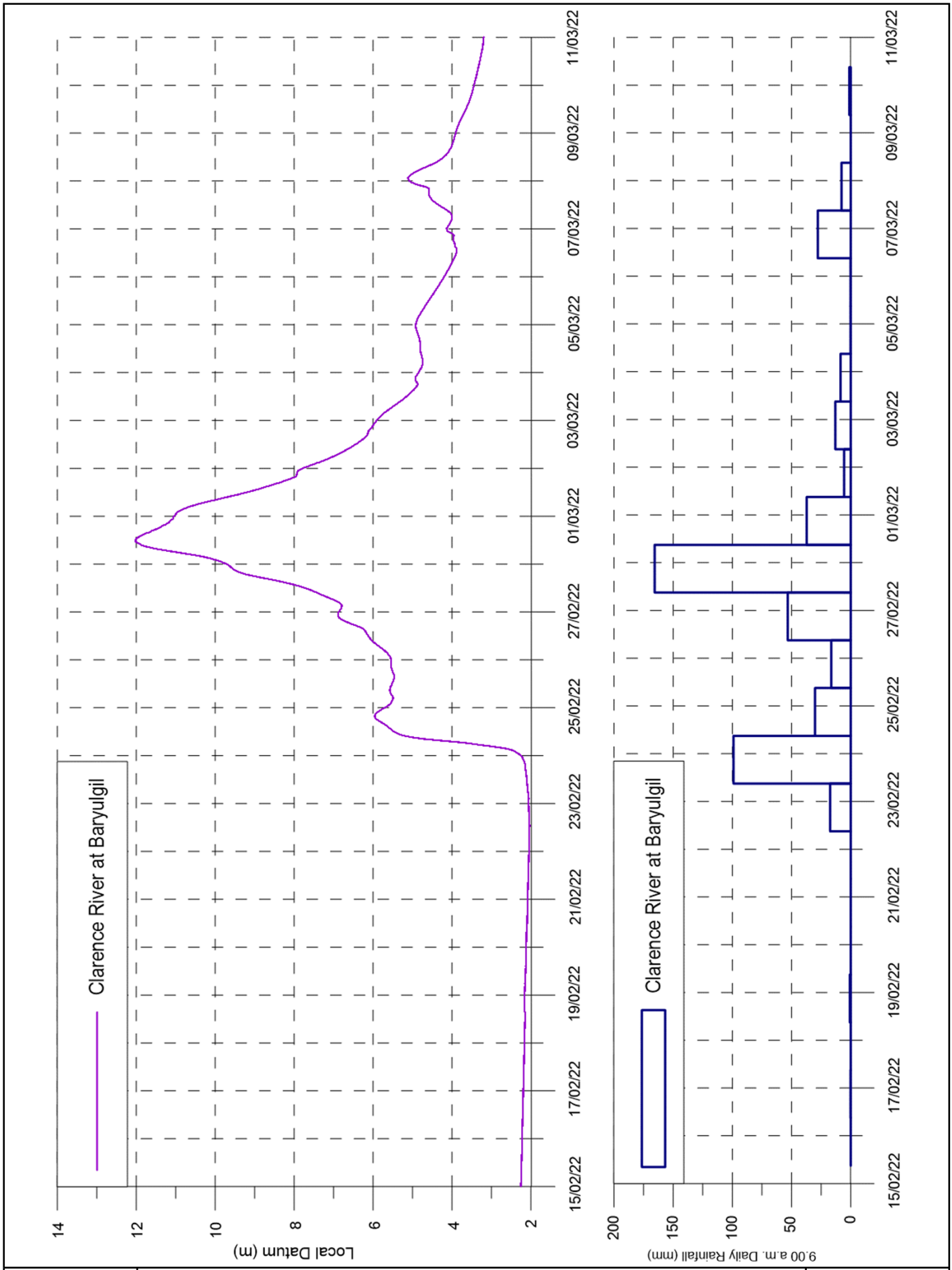
NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.6

8.6.GRF



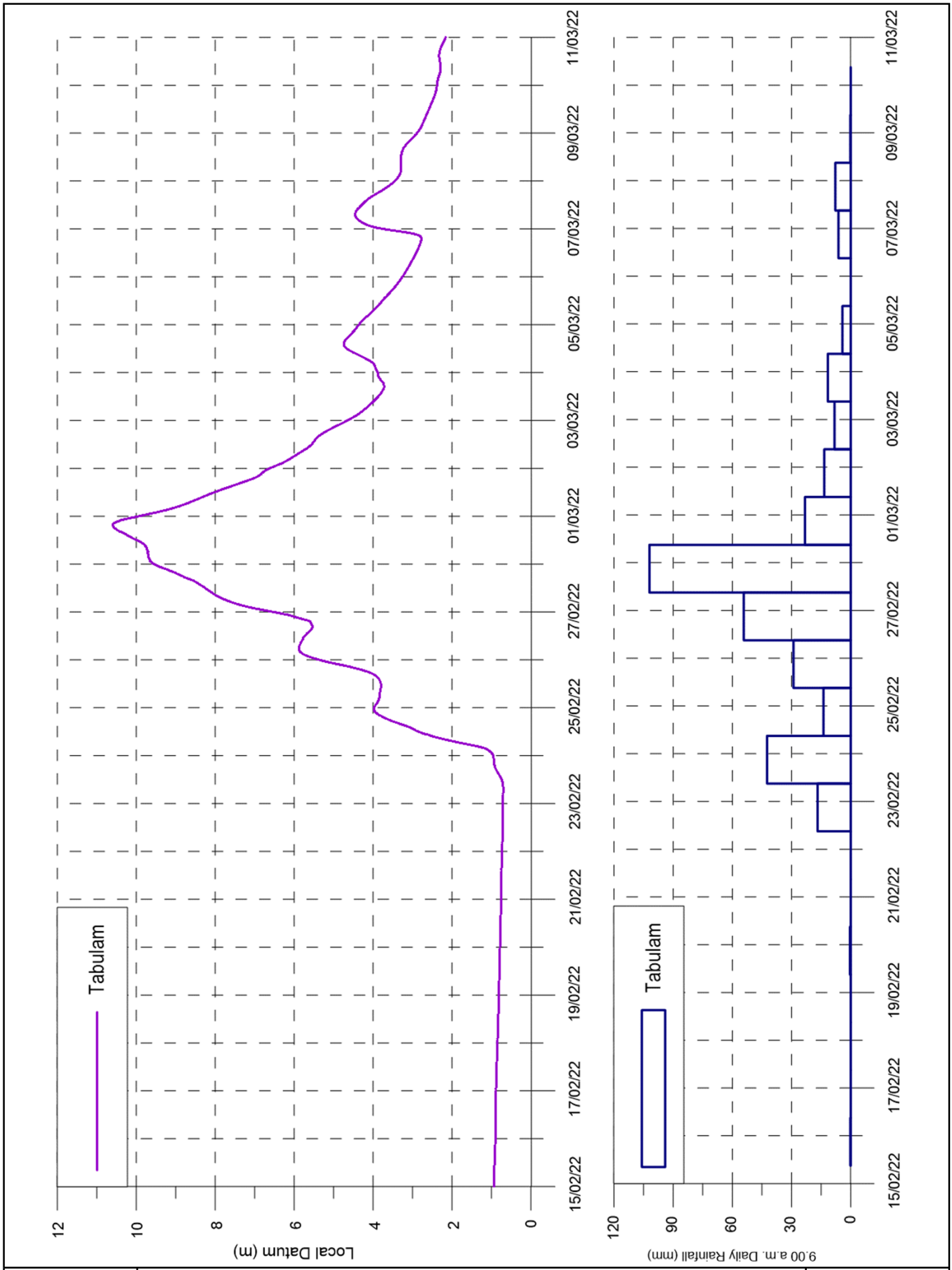
NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.7

8.7.GRF



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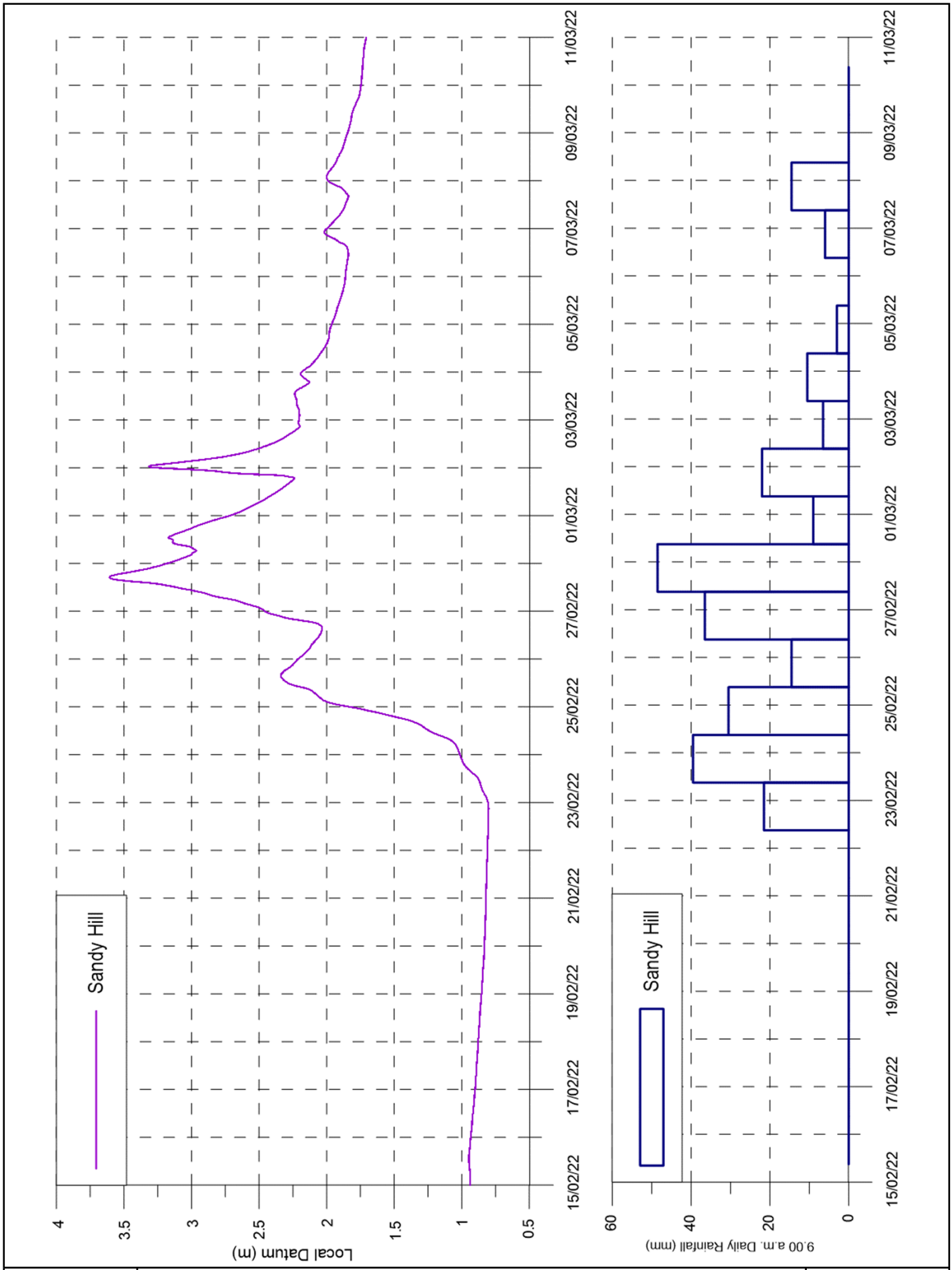
CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.8

8.8.GRF



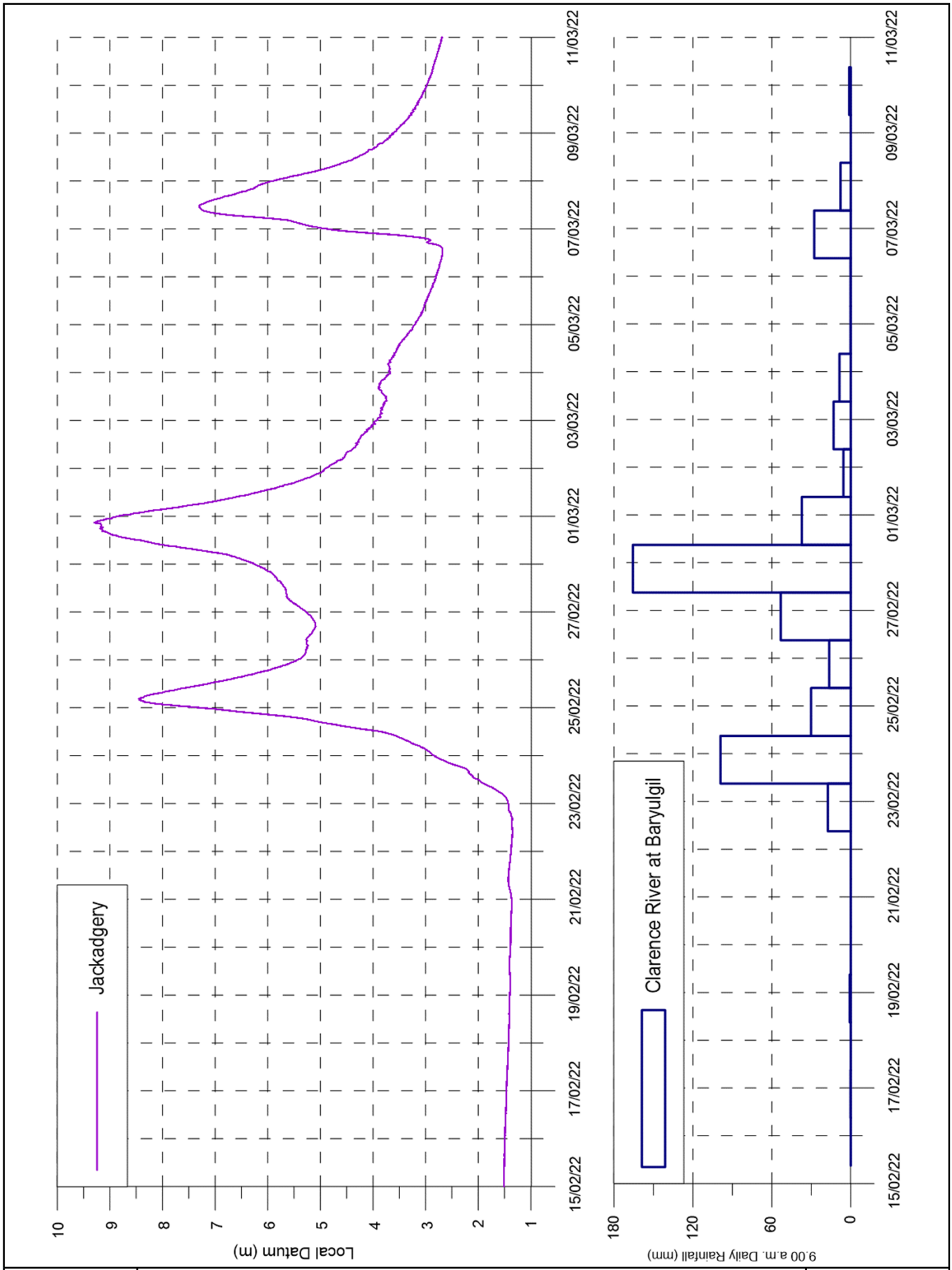
NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.9

8.9.GRF



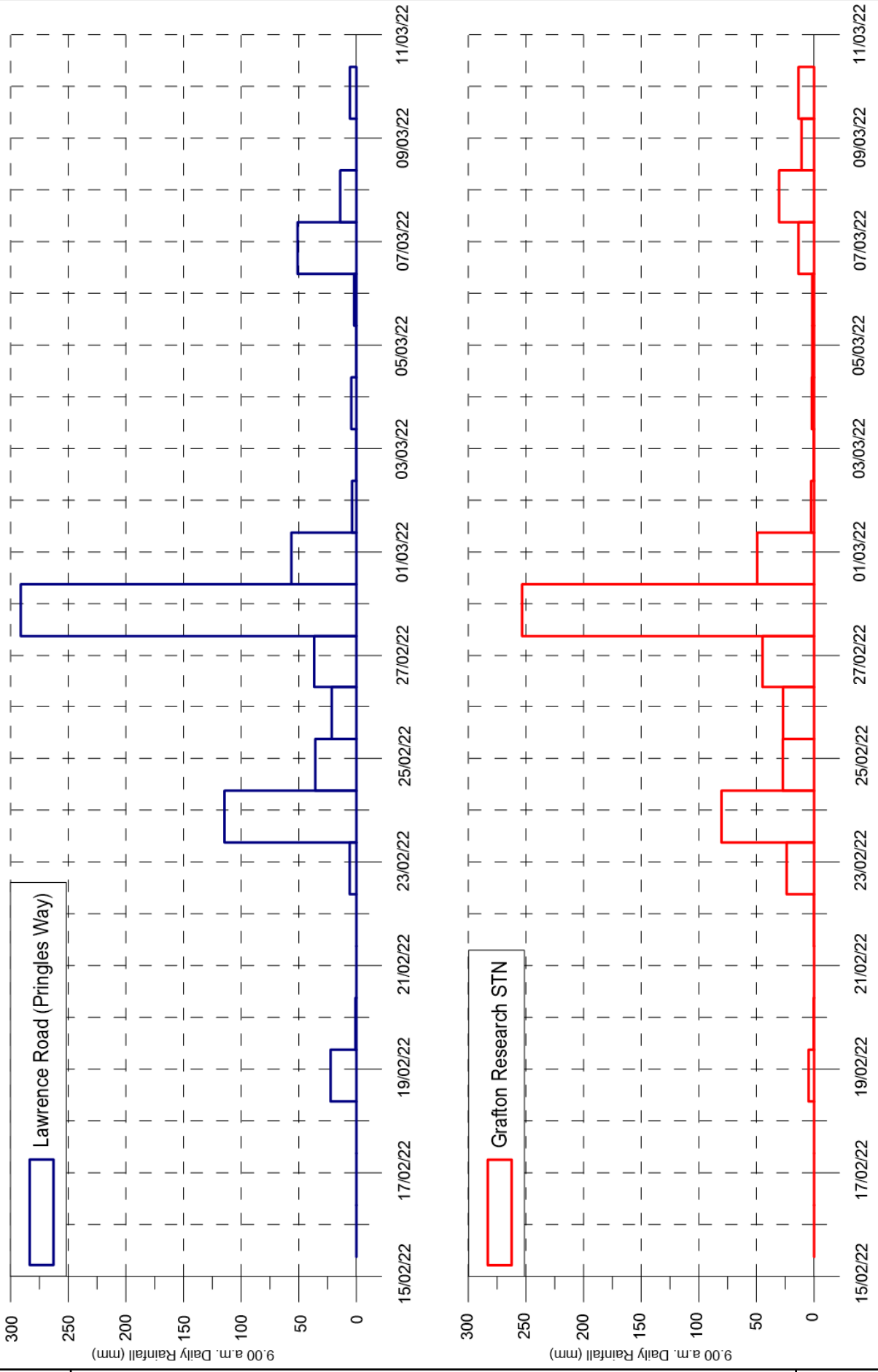
NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.10

8.10.GRF



NSW GOVERNMENT

CLARENCE RIVER REGION
WATER LEVEL AND RAINFALL DATA
15 FEBURARY – 11 MARCH 2022

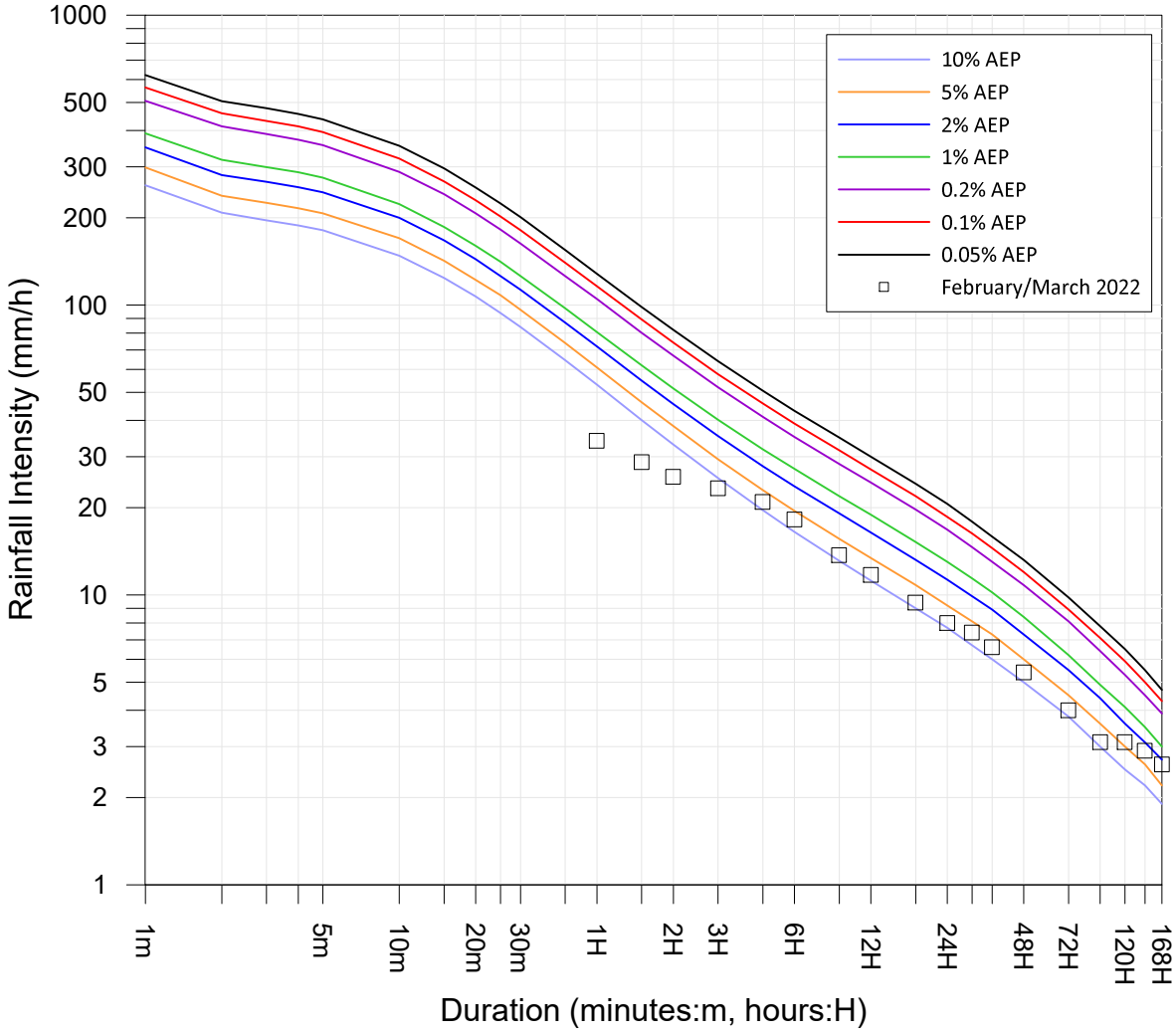
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.11

8.10.GRF

Site Owner: BoM
Latitude: -29.7668 Longitude:152.9288

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	34	05:59 28 Feb 2022
1.5H	28.7	06:47 28 Feb 2022
2H	25.5	06:59 28 Feb 2022
3H	23.3	07:25 28 Feb 2022
5H	20.9	08:55 28 Feb 2022
6H	18.2	09:48 28 Feb 2022
9H	13.7	11:03 28 Feb 2022
12H	11.7	11:27 28 Feb 2022
18H	9.4	17:27 28 Feb 2022
24H	8	09:42 28 Feb 2022
30H	7.4	15:42 28 Feb 2022
36H	6.6	20:57 28 Feb 2022
48H	5.4	17:23 28 Feb 2022
72H	4	21:02 28 Feb 2022
96H	3.1	20:22 28 Feb 2022
120H	3.1	00:08 01 Mar 2022
144H	2.9	02:49 01 Mar 2022
168H	2.6	08:06 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

SOUTH GRAFTON (CLARENCE REGIONAL LANDFILL) (58231) INTENSITY-FREQUENCY-DURATION FEBRUARY/MARCH 2022

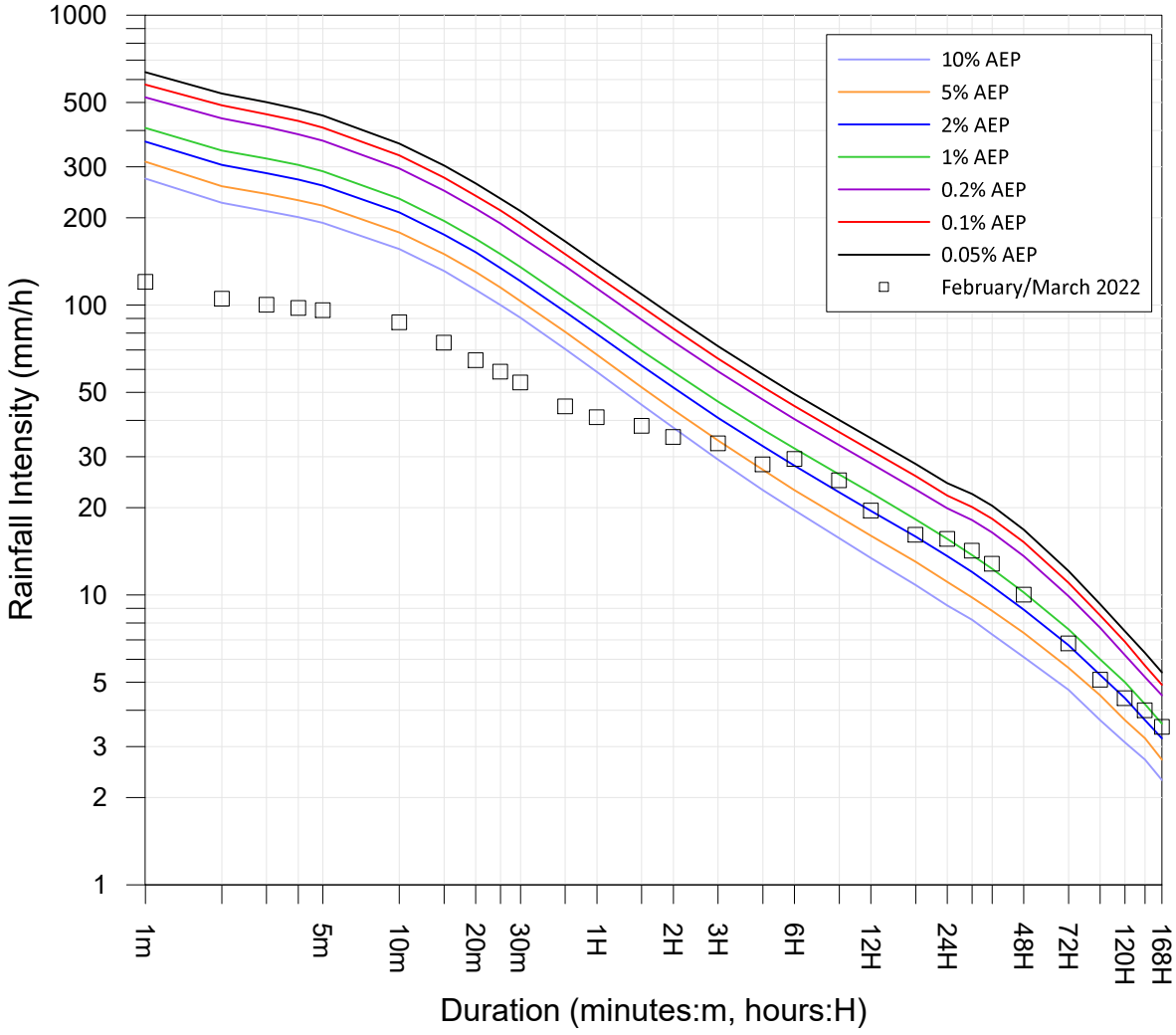
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.12

IFD_58231_Figure 8.12.pdf

Site Owner: Clarence Valley Council
Latitude: -29.4326 Longitude:153.3633

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	120	12:31 28 Feb 2022
2m	105	12:32 28 Feb 2022
3m	100	12:33 28 Feb 2022
4m	97.5	11:32 28 Feb 2022
5m	96	11:33 28 Feb 2022
10m	87	11:35 28 Feb 2022
15m	74	11:39 28 Feb 2022
20m	64.5	11:44 28 Feb 2022
25m	58.8	11:49 28 Feb 2022
30m	54	11:53 28 Feb 2022
45m	44.7	12:10 28 Feb 2022
1H	41	12:21 28 Feb 2022
1.5H	38.3	12:53 28 Feb 2022
2H	35	16:59 28 Feb 2022
3H	33.3	17:45 28 Feb 2022
5H	28.2	18:11 28 Feb 2022
6H	29.4	17:24 28 Feb 2022
9H	24.8	18:27 28 Feb 2022
12H	19.5	18:32 28 Feb 2022
18H	16.1	17:07 28 Feb 2022
24H	15.6	18:50 28 Feb 2022
30H	14.2	17:52 28 Feb 2022
36H	12.8	18:40 28 Feb 2022
48H	10	01:10 01 Mar 2022
72H	6.8	04:50 01 Mar 2022
96H	5.1	15:32 01 Mar 2022
120H	4.4	21:36 28 Feb 2022
144H	4	23:29 28 Feb 2022
168H	3.5	02:30 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

YAMBA (462994)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

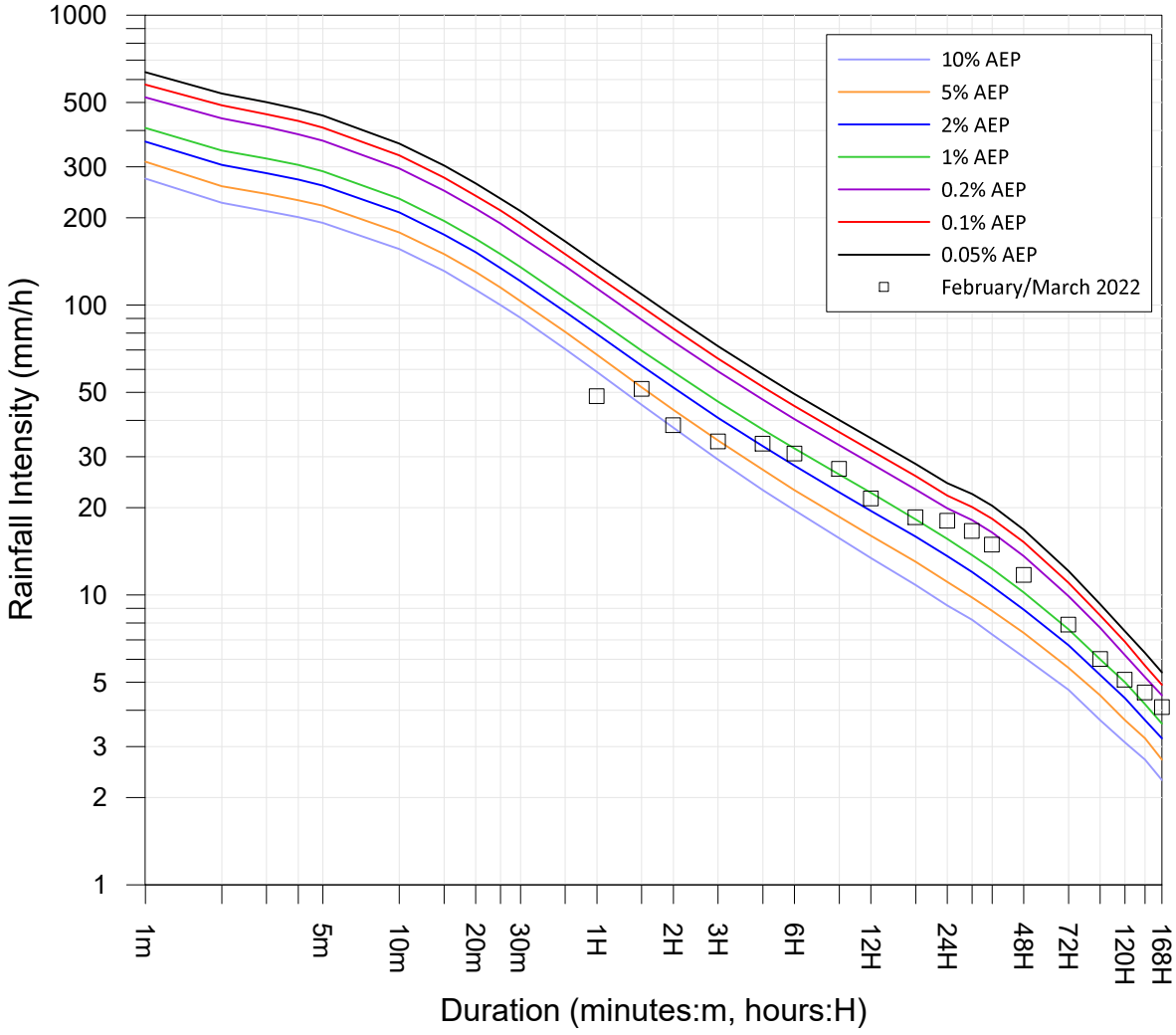
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.13

FD_462994_Figure 8.13.pdf

Site Owner: BoM
Latitude: -29.4325 Longitude:153.3632

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	48.4	00:59 28 Feb 2022
1.5H	51.3	00:29 28 Feb 2022
2H	38.5	00:59 28 Feb 2022
3H	33.8	18:59 28 Feb 2022
5H	33.2	16:29 28 Feb 2022
6H	30.7	17:59 28 Feb 2022
9H	27.2	18:59 28 Feb 2022
12H	21.5	18:59 28 Feb 2022
18H	18.5	17:59 28 Feb 2022
24H	18	19:59 28 Feb 2022
30H	16.6	18:59 28 Feb 2022
36H	14.9	19:59 28 Feb 2022
48H	11.7	00:59 01 Mar 2022
72H	7.9	04:59 01 Mar 2022
96H	6	15:59 01 Mar 2022
120H	5.1	21:59 28 Feb 2022
144H	4.6	23:59 28 Feb 2022
168H	4.1	02:59 01 Mar 2022

Rainfall data collected at hourly intervals only.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

YAMBA PILOT STATION (58012)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

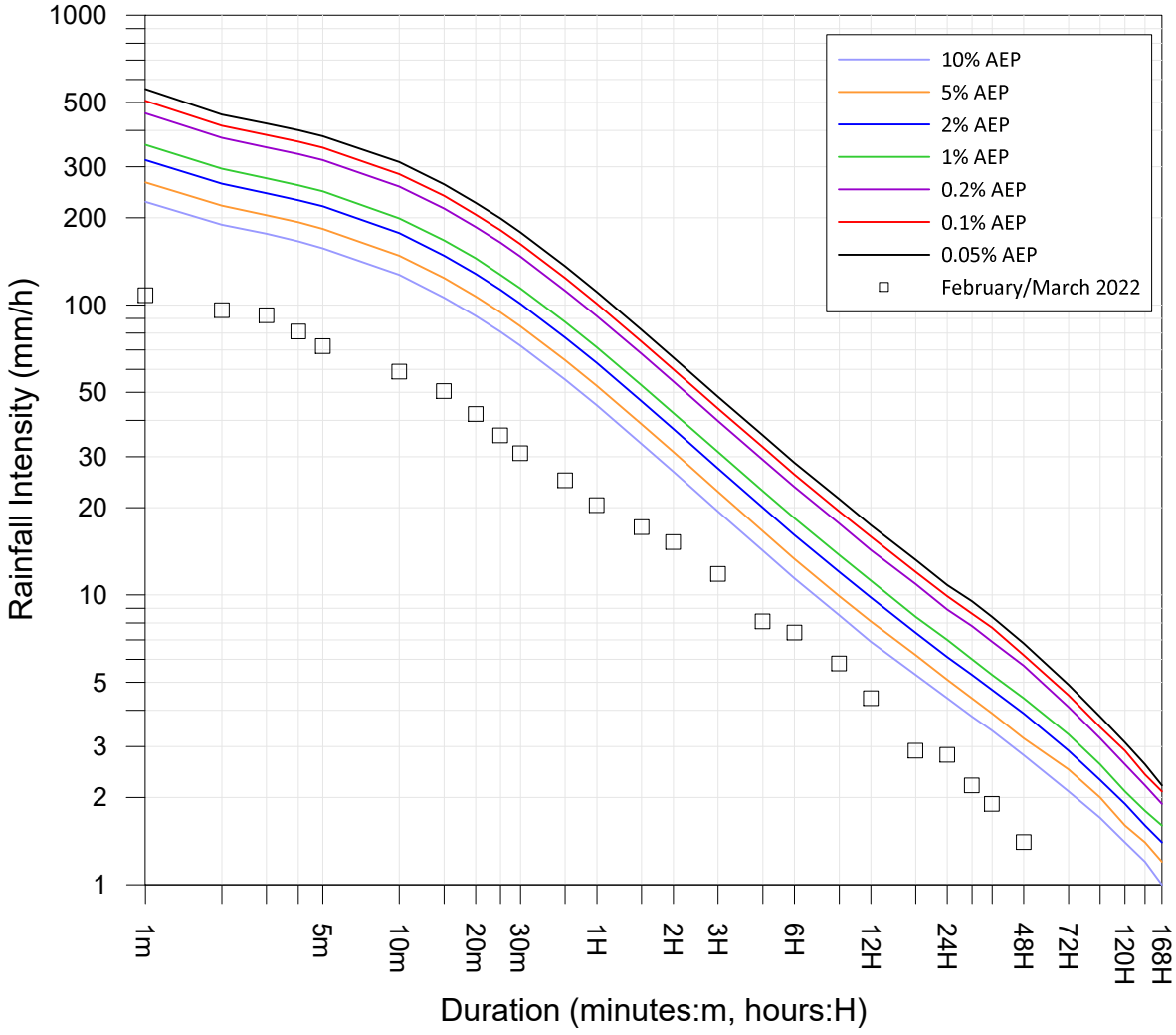
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.14

IFD_58012_Figure 8.14.pdf

Site Owner: WaterNSW
Latitude: -30.2587 Longitude:152.0094

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	108	09:40 06 Mar 2022
2m	96	09:40 06 Mar 2022
3m	92	09:40 06 Mar 2022
4m	81	09:41 06 Mar 2022
5m	72	05:34 06 Mar 2022
10m	58.8	05:37 06 Mar 2022
15m	50.4	09:42 06 Mar 2022
20m	42	09:45 06 Mar 2022
25m	35.5	09:50 06 Mar 2022
30m	30.8	09:52 06 Mar 2022
45m	24.8	18:14 21 Feb 2022
1H	20.4	18:00 21 Feb 2022
1.5H	17.1	18:30 21 Feb 2022
2H	15.2	19:01 21 Feb 2022
3H	11.8	20:00 21 Feb 2022
5H	8.1	21:30 21 Feb 2022
6H	7.4	10:49 06 Mar 2022
9H	5.8	13:45 06 Mar 2022
12H	4.4	16:49 06 Mar 2022
18H	2.9	22:45 06 Mar 2022
24H	2.8	04:45 07 Mar 2022
30H	2.2	10:45 07 Mar 2022
36H	1.9	16:45 07 Mar 2022
48H	1.4	10:54 07 Mar 2022
72H	0.9	17:00 24 Feb 2022
96H	0.8	17:00 25 Feb 2022
120H	0.7	17:00 26 Feb 2022
144H	0.7	17:00 27 Feb 2022
168H	0.6	17:00 28 Feb 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

ABERFOYLE (204030)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

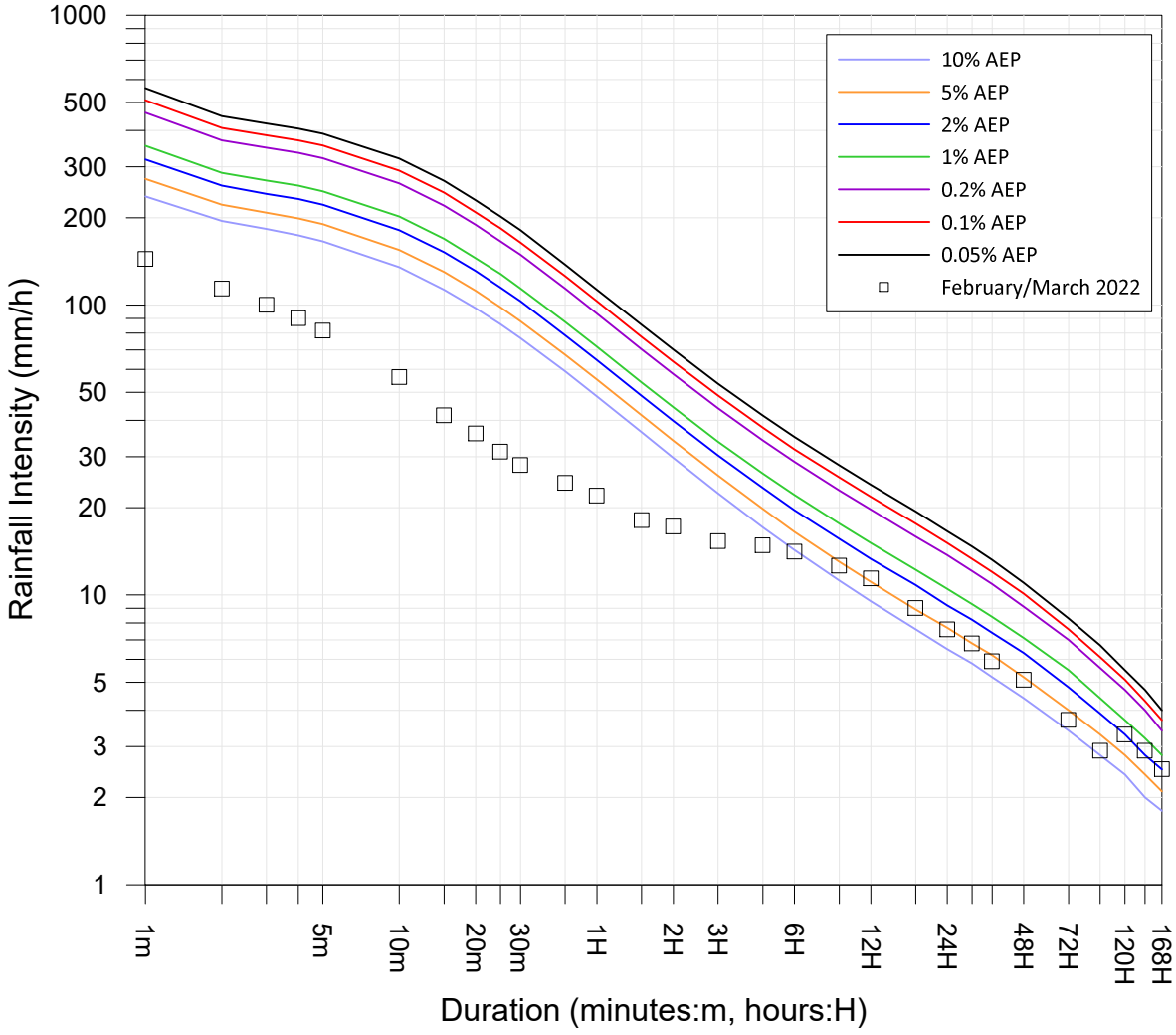
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.15

IFD_204030_Figure 8.15.pdf

Site Owner: WaterNSW
Latitude: -29.1966 Longitude:152.5928

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	144	15:56 02 Mar 2022
2m	114	15:57 02 Mar 2022
3m	100	12:42 06 Mar 2022
4m	90	12:42 06 Mar 2022
5m	81.6	12:42 06 Mar 2022
10m	56.4	16:02 02 Mar 2022
15m	41.6	03:09 24 Feb 2022
20m	36	03:08 24 Feb 2022
25m	31.2	03:13 24 Feb 2022
30m	28	03:25 24 Feb 2022
45m	24.3	03:14 24 Feb 2022
1H	22	03:29 24 Feb 2022
1.5H	18.1	07:59 28 Feb 2022
2H	17.2	08:37 28 Feb 2022
3H	15.3	09:04 28 Feb 2022
5H	14.8	08:14 28 Feb 2022
6H	14.1	08:48 28 Feb 2022
9H	12.6	11:29 28 Feb 2022
12H	11.4	11:26 28 Feb 2022
18H	9	14:25 28 Feb 2022
24H	7.6	11:26 28 Feb 2022
30H	6.8	14:26 28 Feb 2022
36H	5.9	14:42 28 Feb 2022
48H	5.1	14:35 28 Feb 2022
72H	3.7	14:26 28 Feb 2022
96H	2.9	11:36 28 Feb 2022
120H	3.3	14:19 28 Feb 2022
144H	2.9	13:16 28 Feb 2022
168H	2.5	09:16 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

CLARENCE RIVER AT BARYULGIL (204900)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

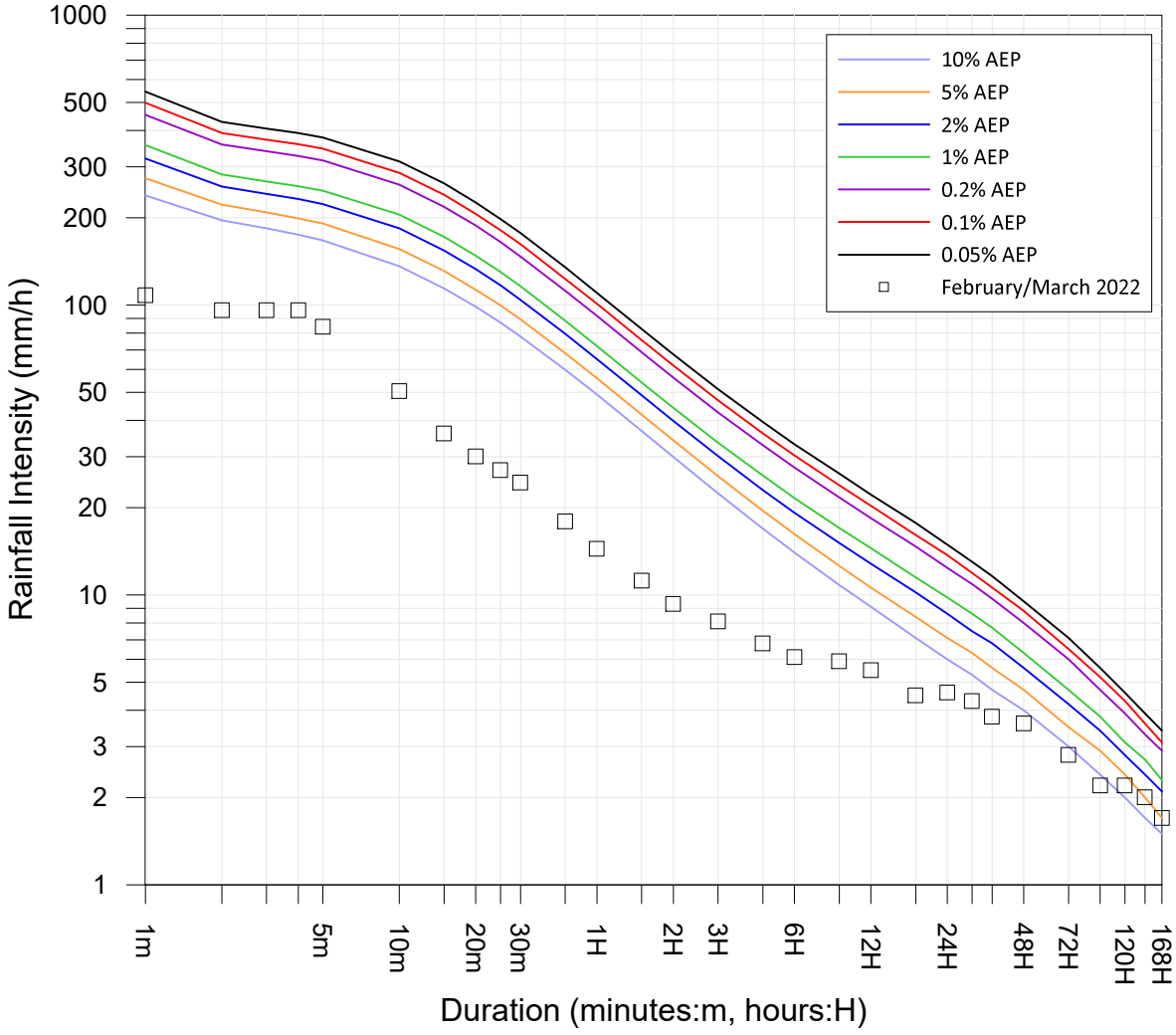
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.16

IFD_204900_Figure 8.16.pdf

Site Owner: WaterNSW
Latitude: -28.8858 Longitude:152.5657

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	108	18:56 01 Mar 2022
2m	96	18:56 01 Mar 2022
3m	96	18:56 01 Mar 2022
4m	96	18:56 01 Mar 2022
5m	84	18:57 01 Mar 2022
10m	50.4	19:00 01 Mar 2022
15m	36	19:03 01 Mar 2022
20m	30	00:38 24 Feb 2022
25m	26.9	00:41 24 Feb 2022
30m	24.4	00:46 24 Feb 2022
45m	17.9	00:51 24 Feb 2022
1H	14.4	00:58 24 Feb 2022
1.5H	11.2	00:53 24 Feb 2022
2H	9.3	04:16 28 Feb 2022
3H	8.1	02:34 24 Feb 2022
5H	6.8	06:37 28 Feb 2022
6H	6.1	05:33 28 Feb 2022
9H	5.9	11:08 28 Feb 2022
12H	5.5	11:43 28 Feb 2022
18H	4.5	12:03 28 Feb 2022
24H	4.6	12:09 28 Feb 2022
30H	4.3	13:34 28 Feb 2022
36H	3.8	12:46 28 Feb 2022
48H	3.6	14:54 28 Feb 2022
72H	2.8	15:42 28 Feb 2022
96H	2.2	13:15 28 Feb 2022
120H	2.2	13:33 28 Feb 2022
144H	2	15:21 28 Feb 2022
168H	1.7	18:57 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

TABULAM (204002)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

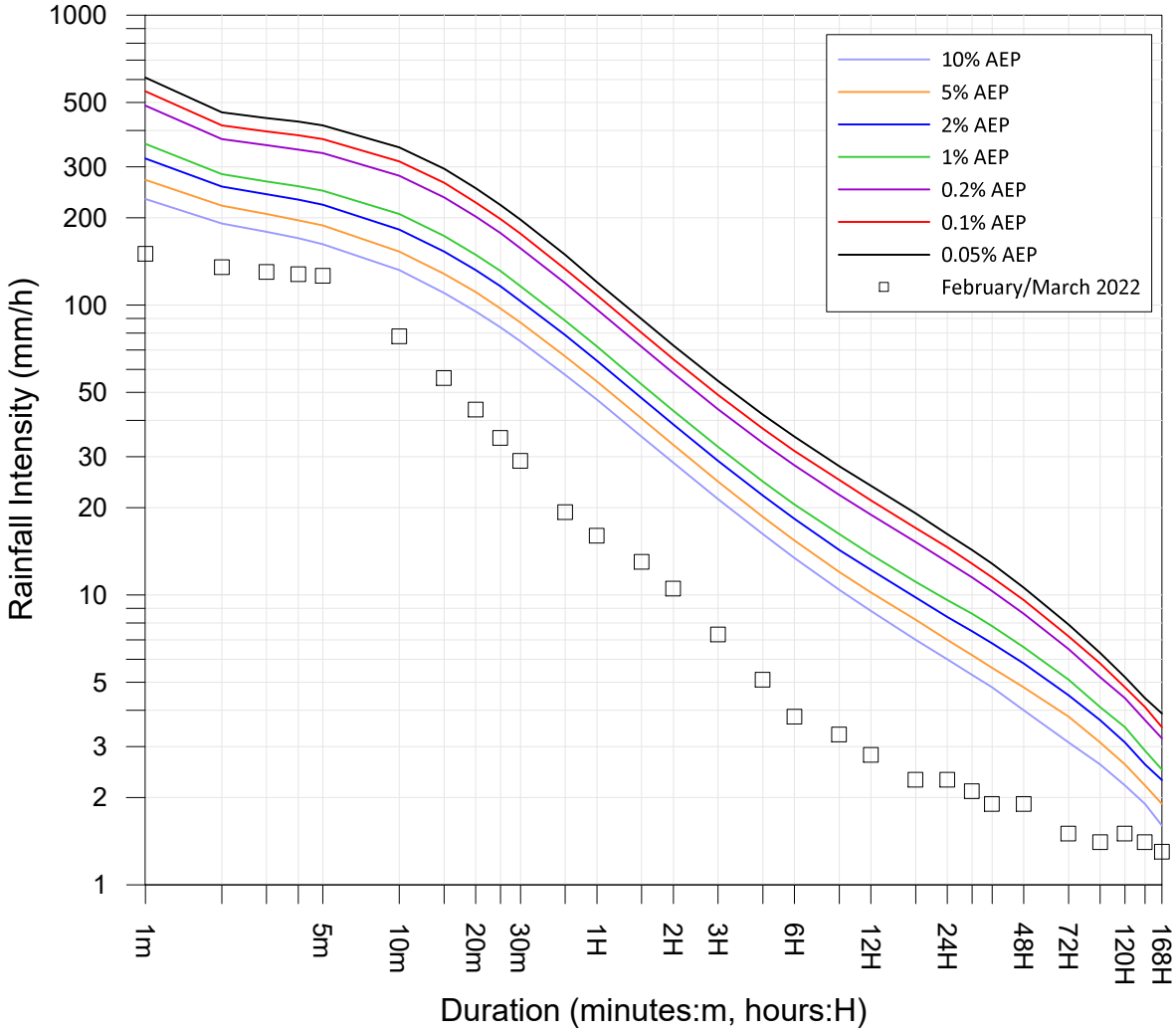
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.17

IFD_204002_Figure 8.17.pdf

Site Owner: WaterNSW
Latitude: -28.9319 Longitude:152.2181

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	150	18:44 01 Mar 2022
2m	135	18:45 01 Mar 2022
3m	130	18:46 01 Mar 2022
4m	127.5	18:47 01 Mar 2022
5m	126	18:47 01 Mar 2022
10m	78	18:50 01 Mar 2022
15m	56	18:54 01 Mar 2022
20m	43.5	18:58 01 Mar 2022
25m	34.8	19:03 01 Mar 2022
30m	29	19:08 01 Mar 2022
45m	19.3	19:23 01 Mar 2022
1H	16	09:26 23 Feb 2022
1.5H	13	09:48 23 Feb 2022
2H	10.5	10:18 23 Feb 2022
3H	7.3	11:22 23 Feb 2022
5H	5.1	12:48 23 Feb 2022
6H	3.8	15:56 27 Feb 2022
9H	3.3	16:10 27 Feb 2022
12H	2.8	17:23 27 Feb 2022
18H	2.3	16:14 27 Feb 2022
24H	2.3	15:29 27 Feb 2022
30H	2.1	17:02 27 Feb 2022
36H	1.9	20:18 24 Feb 2022
48H	1.9	11:02 28 Feb 2022
72H	1.5	11:30 28 Feb 2022
96H	1.4	11:01 28 Feb 2022
120H	1.5	08:18 28 Feb 2022
144H	1.4	19:59 28 Feb 2022
168H	1.3	18:54 01 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

SANDY HILL (204036)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

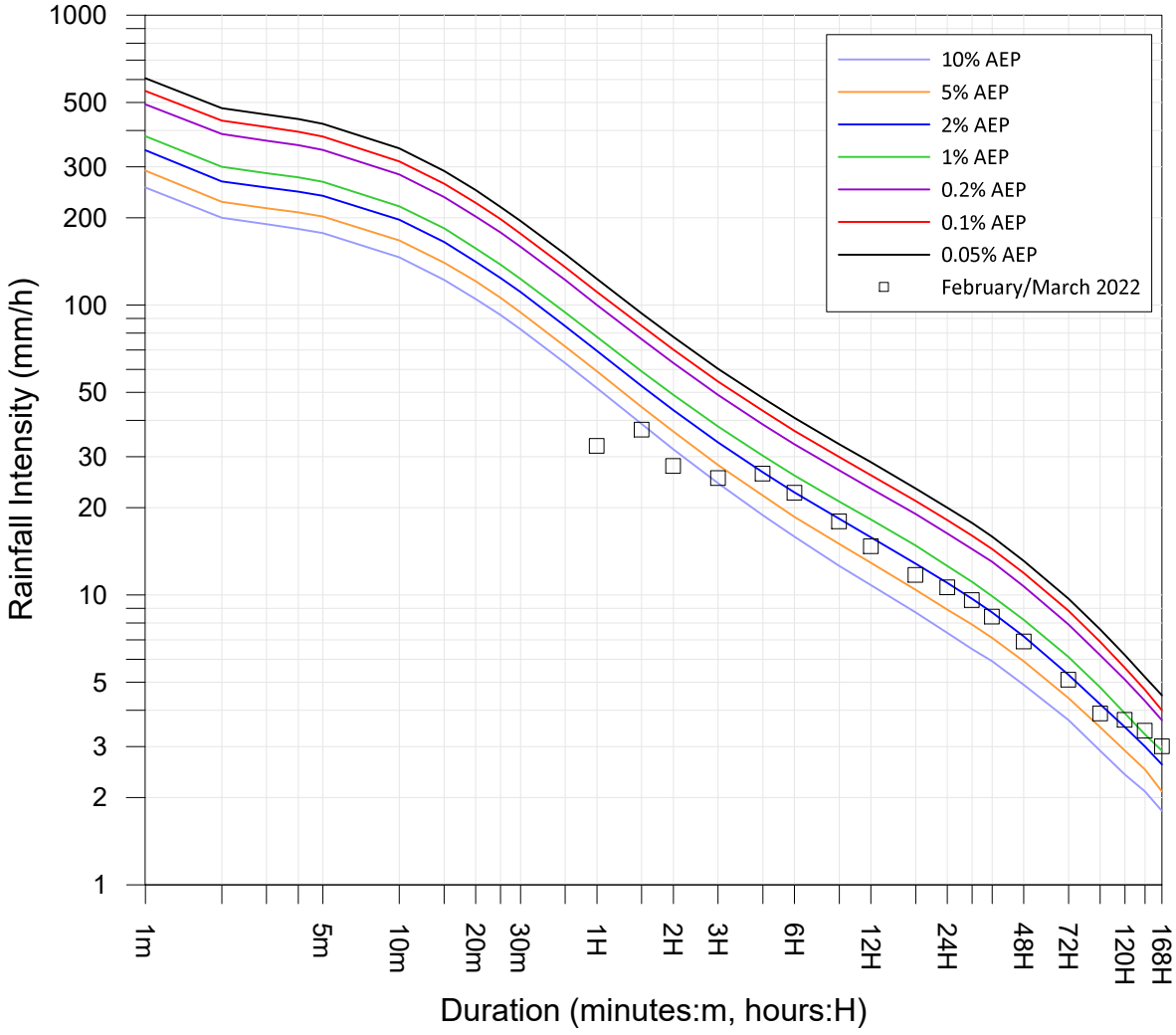
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.18

IFD_204036_Figure 8.18.pdf

Site Owner: BoM
Latitude: -29.6224 Longitude:152.9605

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	-	-
2m	-	-
3m	-	-
4m	-	-
5m	-	-
10m	-	-
15m	-	-
20m	-	-
25m	-	-
30m	-	-
45m	-	-
1H	32.6	00:59 28 Feb 2022
1.5H	37.1	00:29 28 Feb 2022
2H	27.8	00:59 28 Feb 2022
3H	25.3	18:59 28 Feb 2022
5H	26.2	16:29 28 Feb 2022
6H	22.5	17:59 28 Feb 2022
9H	17.9	18:59 28 Feb 2022
12H	14.7	18:59 28 Feb 2022
18H	11.7	17:59 28 Feb 2022
24H	10.6	19:59 28 Feb 2022
30H	9.6	18:59 28 Feb 2022
36H	8.4	19:59 28 Feb 2022
48H	6.9	00:59 01 Mar 2022
72H	5.1	04:59 01 Mar 2022
96H	3.9	15:59 01 Mar 2022
120H	3.7	21:59 28 Feb 2022
144H	3.4	23:59 28 Feb 2022
168H	3	02:59 01 Mar 2022

Rainfall data collected at hourly intervals only.

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

GRAFTON RESEARCH STN (58077)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

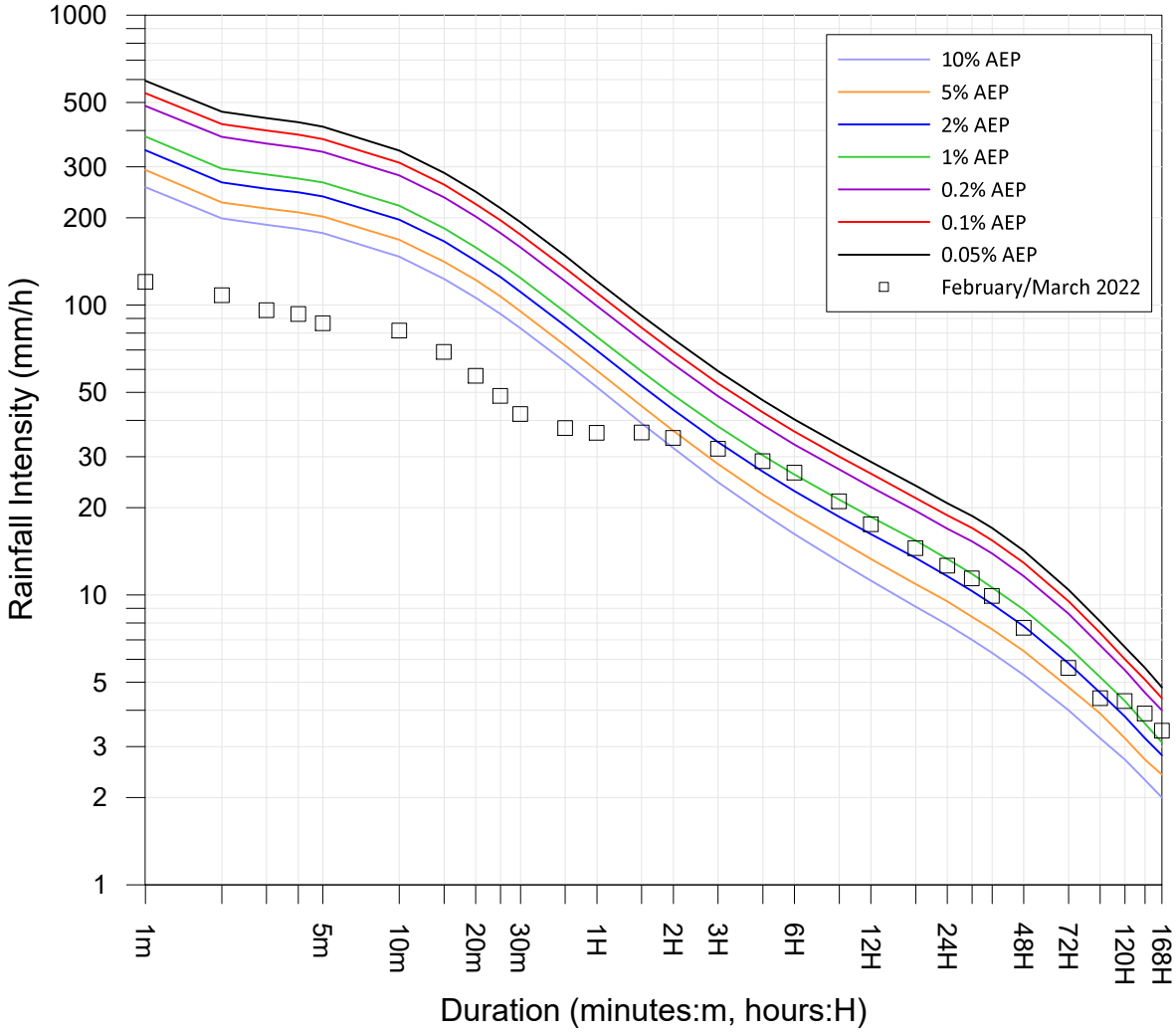
Manly Hydraulics Laboratory

Report MHL2880
Figure
8.19

IFD_58077_Figure 8.19.pdf

Site Owner: BoM
Latitude: -29.4133 Longitude:153.0153

AEP = Annual Exceedance Probability



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
1m	120	14:02 18 Feb 2022
2m	108	14:03 18 Feb 2022
3m	96	16:33 06 Mar 2022
4m	93	16:33 06 Mar 2022
5m	86.4	16:34 06 Mar 2022
10m	81.6	14:10 18 Feb 2022
15m	68.8	14:14 18 Feb 2022
20m	57	14:19 18 Feb 2022
25m	48.5	14:24 18 Feb 2022
30m	42	14:29 18 Feb 2022
45m	37.6	03:03 28 Feb 2022
1H	36.2	03:06 28 Feb 2022
1.5H	36.3	03:47 28 Feb 2022
2H	34.8	03:48 28 Feb 2022
3H	31.9	03:51 28 Feb 2022
5H	28.9	04:46 28 Feb 2022
6H	26.4	05:38 28 Feb 2022
9H	21	06:20 28 Feb 2022
12H	17.5	08:27 28 Feb 2022
18H	14.5	14:15 28 Feb 2022
24H	12.6	12:29 28 Feb 2022
30H	11.4	14:15 28 Feb 2022
36H	9.9	16:46 28 Feb 2022
48H	7.7	16:29 28 Feb 2022
72H	5.6	21:06 28 Feb 2022
96H	4.4	16:27 28 Feb 2022
120H	4.3	16:25 28 Feb 2022
144H	3.9	00:27 01 Mar 2022
168H	3.4	00:27 02 Mar 2022

Reference: Australian Rainfall and Runoff (2019)

NSW GOVERNMENT

LAWRENCE ROAD (PRINGLES WAY) (58068)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
8.20

IFD_58068_Figure 8.20.pdf

References

BoM. (2013). *Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.13.* Melbourne VIC 3001: Bureau of Meteorology.

Appendix A Station performance

Appendix A provides an overview of data capture percentages of all stations proposed to be included (with reasons as to why they could not be presented) and those that are presented in this report. In total, stations recorded an average of 94.3% data recovery during the February/March 2022 flood event.

Table A.1 Station metadata and performance

Station Name	Station code	Station Type	Owner	Latitude	Longitude	Datum	Data recovery %	Comment
Wave								
Byron Bay	BYRBOW	Wave	DPE BCD	-28.87055556	153.69416667	NA	96%	
Tweed River								
Tweed Entrance South	201472	Water level	DPE BCD	-28.17063900	153.55118600	AHD	100%	
Cobaki	201448	Water level	DPE BCD	-28.17663864	153.50267704	AHD	100%	
Letitia 2A	201429	Water level	DPE BCD	-28.18295183	153.55328813	AHD	100%	
Dry Dock	201428	Water level	DPE BCD	-28.19367417	153.51672538	AHD	100%	
Terranora	201447	Water level	DPE BCD	-28.20142241	153.49882931	AHD	100%	
Tweed Heads Golf Club	58056	Rainfall	BoM	-28.20833038	153.56035050	NA	100%	Daily rainfall only, no IFD plot.
Bilambil Heights (Marana Reservoir)	558085	Rainfall	Tweed Shire Council	-28.21600000	153.47800000	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Barneys Point	201426	Water level	DPE BCD	-28.22535799	153.55147852	AHD	100%	
Chinderah	558010	Water level	Tweed Shire Council	-28.23522773	153.55222121	AHD	100%	
Kingscliff (Sewerage Treatment Plant)	558090	Rainfall	Tweed Shire Council	-28.25600000	153.54800000	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Couchy Creek	558079	Rainfall	Tweed Shire Council	-28.26620000	153.27900000	NA	100%	
Tumbulgum	201432	Water level	DPE BCD	-28.27724627	153.46060830	AHD	100%	
Limpinwood (Bald Mountain)	558032	Rainfall	BoM	-28.30820000	153.23310000	NA	100%	
Kynnumboon	201422	Water level	DPE BCD	-28.31451111	153.38944004	AHD	94%	Station has missing data up to 09:45 16 February 2022 because of logger issues.
Chillingham	58011	Rainfall	Tweed Shire Council	-28.31460000	153.27500000	NA	100%	
Boat Harbour (Rous River)	58204	Water level and rainfall	Tweed Shire Council	-28.32170000	153.34670000	Local datum	100%	
North Murwillumbah	201420	Water level	DPE BCD	-28.32736973	153.40121717	AHD	70%	Station has missing data up to 10:00 22 February 2022 because gas purge station was out of gas.
Murwillumbah Bridge	201465	Water level	DPE BCD	-28.32840206	153.40009887	AHD	100%	
Clothiers Creek	558082	Rainfall	Tweed Shire Council	-28.33600000	153.47600000	NA	100%	
Bray Park Weir	201455	Water level	DPE BCD	-28.34535948	153.36945078	AHD	100%	
Hastings (Sewerage Treatment Plant)	558091	Rainfall	Tweed Shire Council	-28.35300000	153.56000000	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Oxley River at Eungella	201001	Water level and rainfall	WaterNSW	-28.35368217	153.29298658	Local datum	100%	
Tyalgum Bridge (Tyalgum River)	558088	Water level and rainfall	Tweed Shire Council	-28.35900000	153.21000000	Local datum	100%	
Cudgera	558046	Rainfall	DPE BCD	-28.39196173	153.50526128	NA	100%	
Brays Creek (Misty Mountain)	58005	Rainfall	Byron Shire Council	-28.39810000	153.17310000	NA	100%	
Uki	201900	Water level	WaterNSW	-28.41321987	153.33471684	Local datum	100%	
Clarrie Hall Dam	201013	Water level	Tweed Shire Council	-28.43030801	153.31475598	AHD	0%	Data loss because station was out of gas.
Palmers Road	558018	Water level and rainfall	Tweed Shire Council	-28.43400000	153.29500000	Local datum	100%	
Burringbar	558083	Rainfall	Tweed Shire Council	-28.43720000	153.47290000	NA	100%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.
Burringbar (Burringbar Creek)	558103	Water level	WaterNSW	-28.43770000	153.47680000	Local datum	100%	
Burringbar Rd (Burringbar Creek)	558106	Water level and rainfall	Tweed Shire Council	-28.44400000	153.44200000	Local datum	55%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation. Rainfall station failed at 02:47 28 February 2022. Water level station stopped at 04:50 28 February 2022.
Upper Burringbar Rd	558107	Rainfall	Tweed Shire Council	-28.45310000	153.40600000	NA	100%	
Upper Crabbes Creek (Crabbes Creek Rd)	558094	Rainfall	North Byron Parklands	-28.46350000	153.45260000	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Station Name	Station code	Station Type	Owner	Latitude	Longitude	Datum	Data recovery %	Comment
Wooyung Rd (Crabbes Creek)	558095	Rainfall	North Byron Parklands	-28.46700000	153.53000000	NA	94%	Water level sensor was not functioning during the reporting period, only rainfall data is presented. Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.
Kunghur (The Junction)	58129	Rainfall	BoM	-28.46960000	153.25320000	NA	100%	
Doon Doon (Mccabes Road)	58019	Rainfall	BoM	-28.53140000	153.31510000	NA	100%	
Brunswick River								
Kingscliff Upstream	202434	Water level	DPE BCD	-28.26522220	153.58145420	AHD	100%	
Bogangar	202416	Water level	DPE BCD	-28.32705338	153.55800094	AHD	100%	
Yelgun (Yelgun Creek)	558096	Water level and rainfall	North Byron Parklands	-28.48500000	153.51400000	Local datum	92%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation. Water level data is missing from 27 February to 1 March 2022.
Lacks Creek (Middle Pocket)	558005	Water level and rainfall	Byron Shire Council	-28.49440000	153.48470000	Local datum	92%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation. Water level data is missing from 27 February to 1 March 2022.
Main Arm	558053	Rainfall	DPE BCD	-28.50008632	153.43321753	NA	54%	Rainfall catch was blocked from 13:25 26 February 2022 to 11:32 12 April 2022.
Billinudgel	202400	Water level	DPE BCD	-28.50161532	153.52679111	AHD	100%	
Mullumbimby (Upper Main Arm)	558034	Rainfall	BoM	-28.50310000	153.38170000	NA	100%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation.
The Pocket (Marshalls Creek)	558004	Water level	Byron Shire Council	-28.50470000	153.47720000	Local datum	92%	Water level data is missing from 27 February to 1 March 2022.
Orana Bridge	202475	Water level	DPE BCD	-28.51581170	153.54788303	AHD	100%	
Durrumbul (Brunswick River)	202001	Water level	WaterNSW	-28.53280000	153.45670000	Local datum	100%	
Brunswick Heads	202403	Water level	DPE BCD	-28.53702500	153.55276900	AHD	100%	
Mullumbimby (Fairview Farm)	58040	Rainfall	BoM	-28.54510000	153.49480000	NA	100%	Daily rainfall only, no IFD plot.
Mullumbimby	202402	Water level	DPE BCD	-28.55002021	153.49662932	AHD	100%	
Mullumbimby Creek (Mullumbimby Ck)	558008	Water level and rainfall	Byron Shire Council	-28.55420000	153.43670000	Local datum	92%	Rainfall readings impacted by possible radio transfer interruptions. Suspect duration IFD results removed by observation. Water level data is missing from 27 February to 1 March 2022.
Myocum	558036	Rainfall	DPE BCD	-28.58944445	153.51673585	NA	100%	
Byron Bay (Belongil Ck Bridge)	558099	Water level and rainfall	Byron Shire Council	-28.63780000	153.59510000	Local datum	88%	Water level data gaps between 24-26 February 2022.
Cape Byron AWS	58216	Rainfall	BoM	-28.63990000	153.63580000	NA	100%	Rainfall data collected at hourly intervals only.
Wilsons River								
Lillian Rock (Williams Rd)	58148	Rainfall	BoM	-28.528	153.152	NA	100%	
Huonbrook	558049	Rainfall	DPE BCD	-28.55212291	153.3856478	NA	100%	
Wilsons at Lavertys Gap Weir	203062	Water level	WaterNSW	-28.576278	153.438248	Local datum	100%	
Terania Creek	558078	Rainfall	Lismore City Council	-28.588	153.299	NA	0%	No data available.
Goonengerry (Alert)	558033	Rainfall	Byron Shire Council	-28.594	153.417	NA	100%	
Cawongla (Alert)	558024	Rainfall	Lismore City Council	-28.605	153.091	NA	100%	
Nimbin (Goolmangar Creek)	58180	Water level and rainfall	Lismore City Council	-28.608	153.213	Local datum	100%	
Richmond River at Kyogle	203900	Water level and rainfall	WaterNSW	-28.621042	152.994844	Local datum	100%	
Coopers Creek at Repentence	203002	Water level	WaterNSW	-28.641292	153.412585	Local datum	100%	
Repentence (Coopers Ck)	558000	Rainfall	Lismore City Council	-28.643	153.417	NA	100%	
The Channon	58147	Rainfall	Lismore City Council	-28.672	153.278	NA	54%	Rainfall station failed at 04:24 28 February 2022.
Jiggi (Gwynne St)	558086	Rainfall	Lismore City Council	-28.676	153.154	NA	100%	
Dunoon	558031	Rainfall	BoM	-28.677	153.322	NA	100%	
Coopers at Ewing Bridge	203024	Water level	WaterNSW	-28.721535	153.362272	Local datum	100%	

Station Name	Station code	Station Type	Owner	Latitude	Longitude	Datum	Data recovery %	Comment
Wilsons River at Nashua	58162	Water level and rainfall	Lismore City Council	-28.728	153.458	Local datum	100%	
Goolmangar Creek at McNamara Bridge Weir	203061	Water level	WaterNSW	-28.733144	153.225572	Local datum	100%	
Leycester Rock Valley	203010	Water level and rainfall	WaterNSW	-28.7365	153.164	Local datum	100%	
Bentley (Back Creek)	58202	Water level and rainfall	Lismore City Council	-28.7406	153.075	Local datum	100%	
Coopers Creek at Fairmeadow	203060	Water level	WaterNSW	-28.745973	153.351676	Local datum	100%	
Wilsons River at Eltham	203014	Water level	WaterNSW	-28.755574	153.394827	Local datum	100%	
Houghlahans Creek	558069	Rainfall	Ballina Shire Council	-28.785	153.474	NA	100%	
Woodlawn College	203402	Water level	DPE BCD	-28.78541179	153.3025389	AHD	100%	
Tuncester (Leycester Ck)	203443	Water level	DPE BCD	-28.79575471	153.2401965	AHD	100%	
Tuncester	58201	Rainfall	Lismore City Council	-28.7967	153.2386	NA	100%	
Lismore (Dawson Street)	558087	Water level and rainfall	Lismore City Council	-28.8081	153.2818	Local datum	85%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Lismore (Wilson River)	58176	Water level	Lismore City Council	-28.81	153.2733	AHD	56%	Water level station stopped at 12:55 28 February 2022.
Lismore (Wilsons River at Browns Creek)	558100	Water level	Lismore City Council	-28.82323709	153.2703873	Local datum	94%	Data started at 13:29 16 February 2022.
Lismore Airport AWS	58214	Rainfall	BoM	-28.83	153.26	NA	54%	Rainfall station failed at 02:40 28 February 2022.
Alstonville STP	558072	Rainfall	Ballina Shire Council	-28.831	153.444	NA	100%	
East Gundurimba	203427	Water level	DPE BCD	-28.84570949	153.2668938	AHD	53%	Station inundated by flood waters, and failed at 07:45 28 February 2022. Debris line survey result is available.
Wilsons River at Tuckurimba	558076	Water level and rainfall	Lismore City Council	-28.962	153.307	Local datum	100%	
Richmond River								
Loadstone (High View)	58141	Rainfall	BoM	-28.41190000	152.98270000	NA	100%	
Green Pigeon (Morning View)	58113	Rainfall	BoM	-28.47380000	153.08610000	NA	100%	
Wiangaree Bridge (Richmond River)	558001	Water level and rainfall	WaterNSW	-28.51670000	152.96670000	Local datum	100%	Water level trend data used to fill the data gap between 2-7 March 2022.
Eden Ck At Doubtful	558037	Water level and rainfall	WaterNSW	-28.75910000	152.92220000	Local datum	100%	
Lake Ainsworth	203455	Water level and rainfall	DPE BCD	-28.78075797	153.59282403	AHD	100%	
Ballina Airport AWS	58198	Rainfall	BoM	-28.83530000	153.55850000	NA	100%	Rainfall data collected at hourly intervals only.
Casino (Richmond River)	558013	Water level	WaterNSW	-28.86670000	153.05000000	Local datum	100%	
Missingham Bridge	203465	Water level	DPE BCD	-28.86874414	153.57587082	AHD	100%	
Byrnes Point	203461	Water level	DPE BCD	-28.87376511	153.52668832	AHD	100%	
Ballina Breakwall	203425	Water level	DPE BCD	-28.87537745	153.58442879	AHD	70%	Station failed up to 11:45 22 February 2022 due to orifice being damaged in multiple east coast low swell events.
Casino Airport AWS	58208	Rainfall	BoM	-28.88240000	153.06180000	NA	100%	Rainfall data collected at hourly intervals only.
Shannon Brook at Yorklea	558038	Water level and rainfall	WaterNSW	-28.94470000	153.06030000	Local datum	100%	
Wardell	203468	Water level	DPE BCD	-28.95341219	153.46469697	AHD	100%	
Coraki	203403	Water level	DPE BCD	-28.98380196	153.28723405	AHD	100%	
Bungawalbin	203450	Water level	DPE BCD	-29.03345559	153.27761472	AHD	100%	
Woodburn	2034134	Water level	DPE BCD	-29.07102616	153.34192721	AHD	100%	
Tucombil Highway Bridge	203480	Water level	DPE BCD	-29.08458239	153.33856060	AHD	100%	
Rocky Mouth Creek	203432	Water level	DPE BCD	-29.09603047	153.32625613	AHD	56%	Station inundated by flood waters. Water level station stopped at 21:15 28 February 2022.
Rappville (Myrtle Creek)	558015	Water level and rainfall	WaterNSW	-29.11190000	152.99830000	Local datum	100%	

Station Name	Station code	Station Type	Owner	Latitude	Longitude	Datum	Data recovery %	Comment
Evans River Fishing Co-op	203462	Water level	DPE BCD	-29.12240415	153.43428897	AHD	57%	Station inundated by flood waters, debris line survey undertaken.
Iron Gates	203475	Water level	DPE BCD	-29.12369592	153.40808279	AHD	100%	
Bungawalbin Creek	2034133	Water level	DPE BCD	-29.13985053	153.17026047	AHD	54%	Station inundated by flood waters, debris line survey undertaken.
Evans Head RAAF Bombing Range AWS	58212	Rainfall	BoM	-29.18300000	153.39640000	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Whiporie Post Office	58099	Rainfall	BoM	-29.28245567	152.98916675	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Clarence River								
Tabulam	204002	Water level and rainfall	WaterNSW	-28.88582499	152.5657093	Local datum	100%	
Sandy Hill	204036	Water level and rainfall	WaterNSW	-28.93187189	152.2180585	Local datum	100%	
Clarence River at Baryulgil	204900	Water level and rainfall	WaterNSW	-29.19658827	152.59282170	Local datum	100%	
Lawrence Road (Pringles Way)	58068	Rainfall	BoM	-29.41330000	153.01530000	NA	100%	
Yamba	204454	Water level	DPE BCD	-29.42895800	153.36206100	AHD	100%	
Oyster Channel	204451	Water level	DPE BCD	-29.43069947	153.31412358	AHD	100%	
Palmers Island Bridge	204426	Water level	DPE BCD	-29.43211940	153.26578999	AHD	100%	
Yamba Pilot Station	58012	Rainfall	BoM	-29.43250000	153.36320000	NA	100%	Hourly rainfall
Yamba	462994	Rainfall	Clarence Valley Council	-29.43257806	153.36328779	NA	100%	
Maclean	204410	Water level	DPE BCD	-29.45602524	153.19592770	AHD	100%	
Lake Wooloweyah	204485	Water level	DPE BCD	-29.47756940	153.34184003	AHD	100%	
Lawrence	204453	Water level	DPE BCD	-29.49696691	153.10583881	AHD	100%	
Tyndale	204465	Water level	DPE BCD	-29.56662948	153.12987277	AHD	100%	
Brushgrove	204406	Water level	DPE BCD	-29.56791583	153.07751172	AHD	100%	
Jackadgery	204004	Water level	WaterNSW	-29.57338287	152.54082177	Local datum	100%	
Rogans Bridge	204414	Water level	DPE BCD	-29.61921949	152.88445004	AHD	100%	
Grafton Research Station	58077	Rainfall	BoM	-29.62240000	152.96050000	NA	100%	Hourly rainfall
Ulmarra	204480	Water level	DPE BCD	-29.63096744	153.02681748	AHD	100%	
Grafton	204400	Water level	DPE BCD	-29.69380313	152.93165355	AHD	100%	
The Avenue Downstream	204476	Water level	DPE BCD	-29.70283404	153.07416232	AHD	100%	
The Avenue Upstream	204475	Water level	DPE BCD	-29.70298761	153.07391433	AHD	100%	
South Grafton (Clarence Regional Landfill)	58231	Rainfall	BoM	-29.76678763	152.92884562	NA	100%	Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.
Aberfoyle	204030	Water level and rainfall	WaterNSW	-30.25870000	152.00940000	Assumed	100%	

Appendix B Flood photographs February/March 2022 event

Appendix B provides flood photographs captured during and after the flood event, including debris lines indicating maximum water levels. Photographs are courtesy of MHL staff.

Tweed River at Bray Park Weir 14:30 (AEST) 04 March 2022 1.51m AHD

Tweed River at Kynnumboon 12:15 (AEST) 05 March 2022 1.17m AHD

Tweed River at Tumbulgum 09:30 (AEST) 05 March 2022 0.84m AHD

Brunswick River at Billinudgel 10:30 (AEST) 05 March 2022 1.08m AHD

Brunswick River at Mullumbimby 07:45 (AEST) 05 March 2022 0.54m AHD

Clarence River at Brushgrove 10:58 (AEST) 03 March 2022 4.21m AHD

Wilsons River at Woodlawn College 12:15 (AEST) 04 March 2022 6.10m AHD

Richmond River at Tucombil Highway Bridge 08:15 (AEST) 07 March 2022 2.97m AHD

Richmond River at Wardell 08:15 (AEST) 06 March 2022 1.87m AHD

Richmond River at Woodburn 09:15 (AEST) 07 March 2022 2.92m AHD

Clarence River at Grafton (radar) 12:00 (AEST) 01 March 2022 7.345m AHD

Clarence River at Maclean 09:45 (AEST) 02 March 2022 3.370m AHD

Clarence River at Ulmarra 08:05 (AEST) 02 March 2022 5.575m AHD

Appendix C 1987 Intensity-frequency-duration

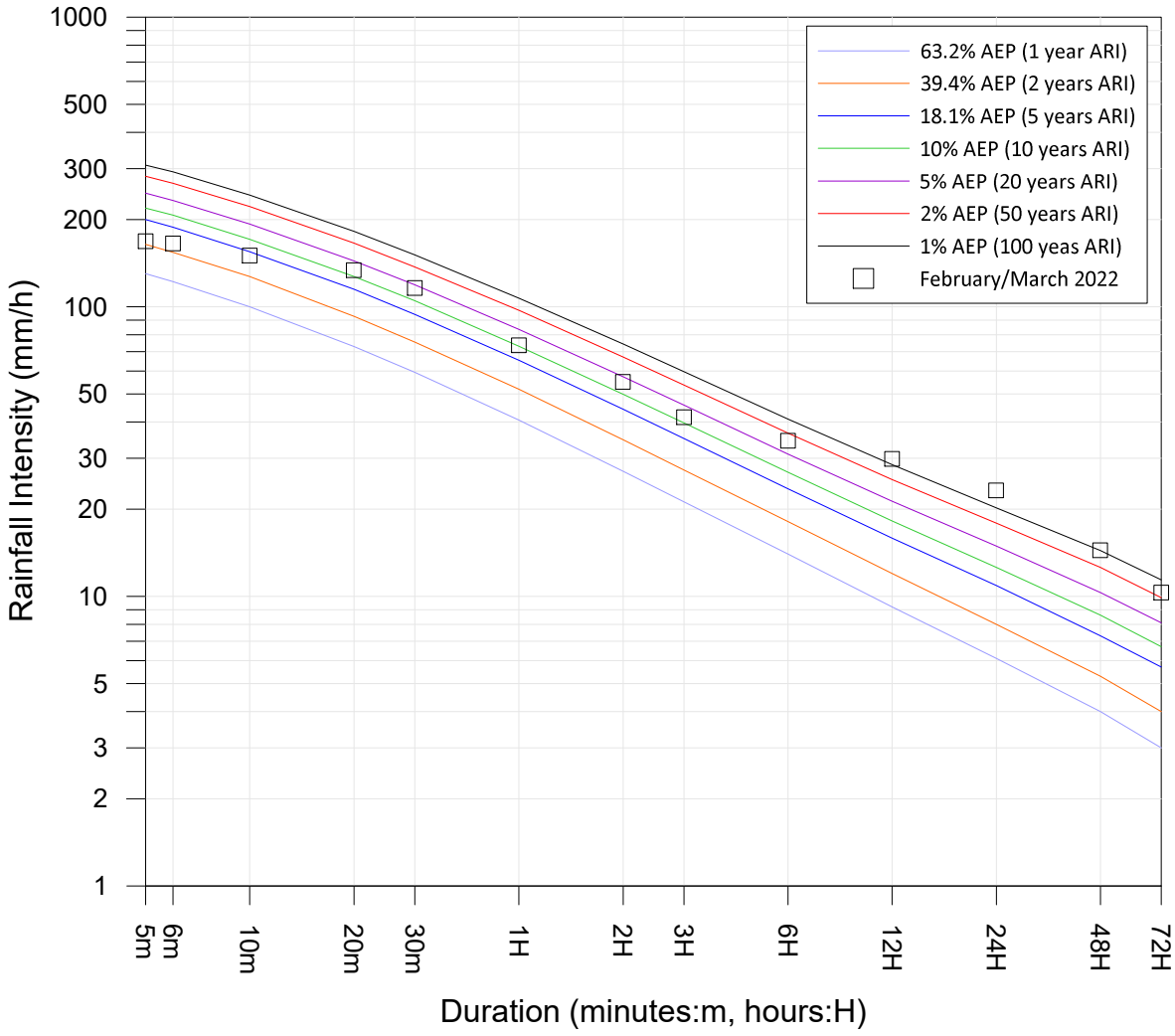
Appendix C displays the rainfall intensities in the ARR1987 format. Refer to Table C.1 for a reference list of the 1987 intensity-frequency-duration (IFD) curves.

Table C.1 1987 IFD figure reference list

Figure reference	Station	Figure reference	Station
C.1	Cudgera	C.34	Lillian Rock (Williams Rd)
C.2	Oxley River at Eungella	C.35	Goonengerry (Alert)
C.3	Bilambil Heights (Marana Reservoir)	C.36	Cawongla (Alert)
C.4	Boat Harbour (Rous River)	C.37	Nimbin (Goolmangar Creek)
C.5	Brays Creek (Misty Mountain)	C.38	Richmond River at Kyogle
C.6	Chillingham	C.39	Repentence (Coopers Ck)
C.7	Couchy Creek	C.40	The Channon
C.8	Doon Doon (Mccabes Road)	C.41	Jiggi (Gwynne St)
C.9	Kingscliff (Sewerage Treatment Plant)	C.42	Dunoon
C.10	Kunghur (The Junction)	C.43	Bentley (Back Creek)
C.11	Limpinwood (Bald Mountain)	C.44	Tuncester
C.12	Palmers Road	C.45	Houghlahans Creek
C.13	Tyalgum Bridge (Tyalgum River)	C.46	Alstonville STP
C.14	Burringbar	C.47	Lake Ainsworth
C.15	Burringbar Rd (Burringbar Creek)	C.48	Whiporie Post Office
C.16	Clothiers Creek	C.49	Evans Head RAAF Bombing Range AWS
C.17	Wooyung Rd (Crabbes Creek)	C.50	Ballina Airport AWS
C.18	Hastings (Sewerage Treatment Plant)	C.51	Casino Airport AWS
C.19	Upper Burringbar Rd	C.52	Eden Ck At Doubtful
C.20	Upper Crabbes Creek (Crabbes Creek Rd)	C.53	Green Pigeon (Morning View)
C.21	Myocum	C.54	Loadstone (High View)
C.22	Byron Bay (Belongil Ck Bridge)	C.55	Rappville (Myrtle Creek)
C.23	Cape Byron AWS	C.56	Wiangaree Bridge (Richmond River)
C.24	Lacks Creek (Middle Pocket)	C.57	Shannon Brook At Yorklea
C.25	Mullumbimby (Upper Main Arm)	C.58	South Grafton (Clarence Regional Landfill)
C.26	Mullumbimby Creek (Mullumbimby Ck)	C.59	Yamba
C.27	Yelgun (Yelgun Creek)	C.60	Yamba Pilot Station
C.28	Lismore (Dawson Street)	C.61	Aberfoyle
C.29	Wilsons River at Nashua	C.62	Clarence River at Baryulgil
C.30	Wilsons River at Tuckurimba	C.63	Tabulam
C.31	Lismore Airport AWS	C.64	Sandy Hill
C.32	Leycester Rock Valley	C.65	Grafton Research Station
C.33	Huonbrook	C.66	Lawrence Road (Pringles Way)

Site Owner: DPE BCD
Latitude: -28.392 Longitude:153.5053

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	168	01:26 28 Feb 2022
6m	165	01:27 28 Feb 2022
10m	150	01:29 28 Feb 2022
20m	133.5	01:39 28 Feb 2022
30m	116	01:45 28 Feb 2022
1H	73.5	02:15 28 Feb 2022
2H	55	02:51 28 Feb 2022
3H	41.5	03:03 28 Feb 2022
6H	34.4	06:52 28 Feb 2022
12H	29.8	13:15 28 Feb 2022
24H	23.2	19:57 28 Feb 2022
48H	14.4	21:26 28 Feb 2022
72H	10.3	13:17 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CUDGERA (558046)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

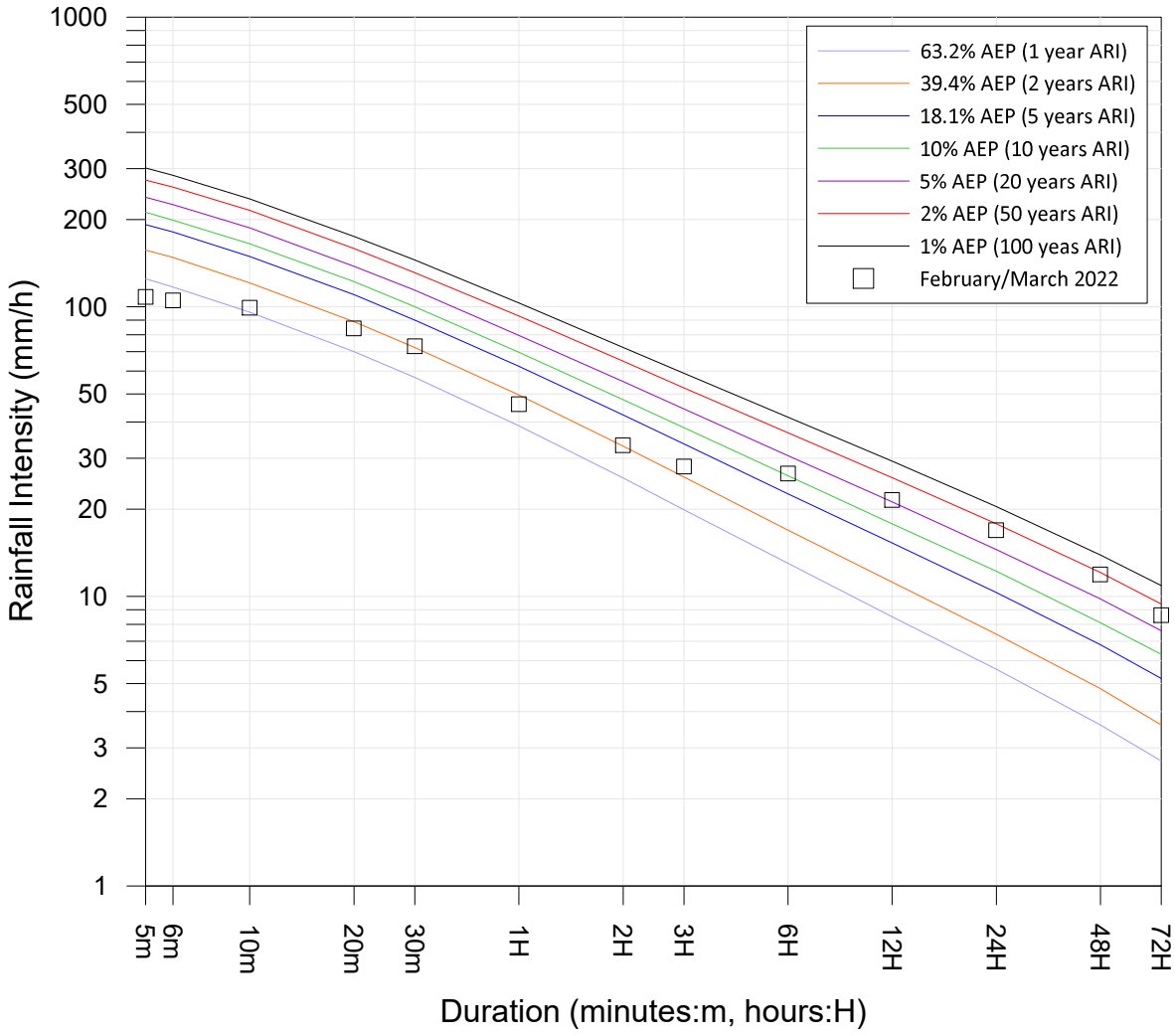
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.1

IFD_558046_Figure C.1.pdf

Site Owner: WaterNSW
Latitude: -28.3537 Longitude:153.293

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	108	09:00 28 Feb 2022
6m	105	09:00 28 Feb 2022
10m	99	09:03 28 Feb 2022
20m	84	09:05 28 Feb 2022
30m	73	09:05 28 Feb 2022
1H	46	09:30 28 Feb 2022
2H	33.2	09:05 28 Feb 2022
3H	28	10:51 28 Feb 2022
6H	26.5	09:05 28 Feb 2022
12H	21.5	10:51 28 Feb 2022
24H	16.9	10:51 28 Feb 2022
48H	11.9	16:36 28 Feb 2022
72H	8.6	02:54 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

OXLEY RIVER AT EUNGELLA (201001)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

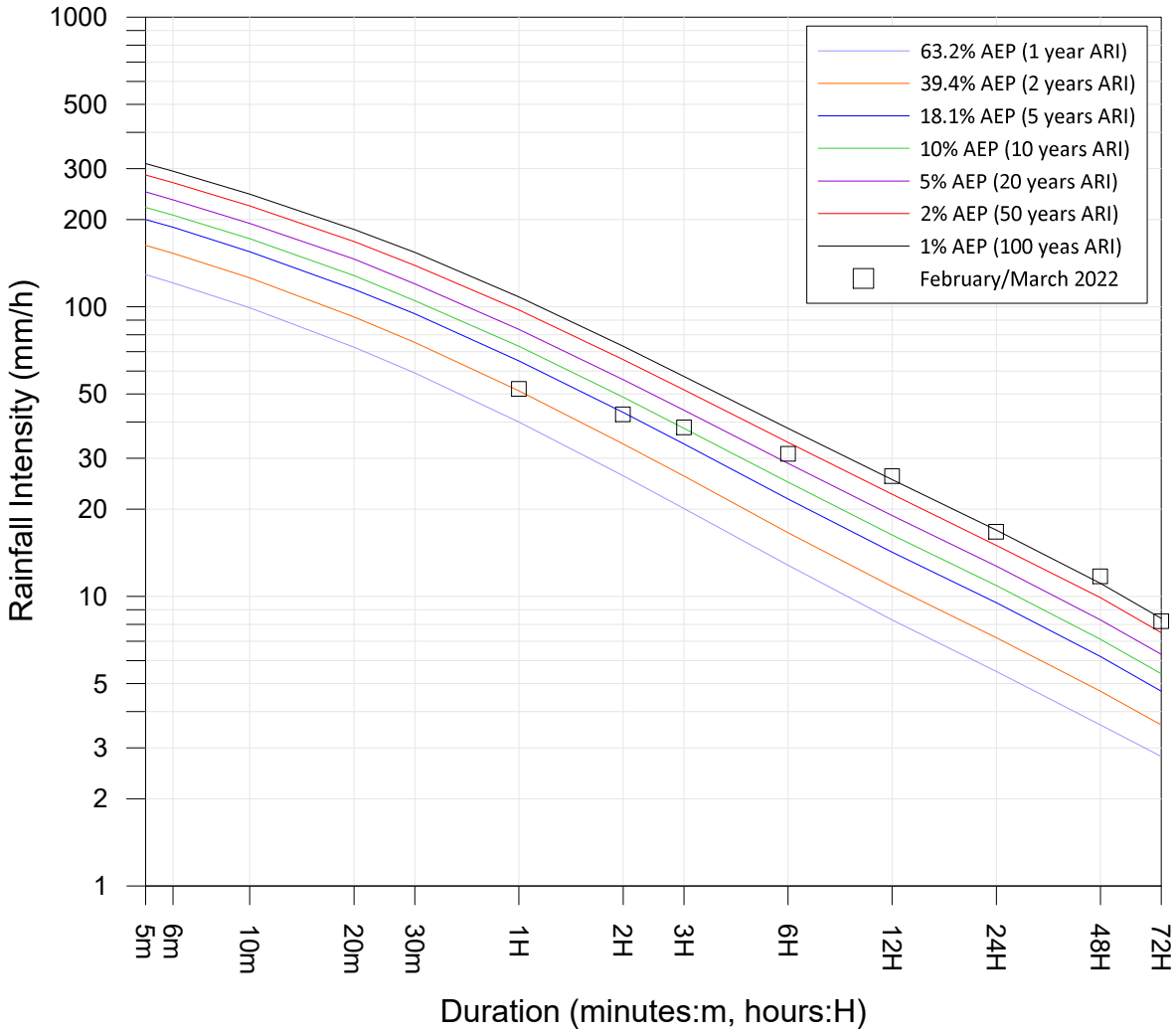
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.2

IFD_201001_Figure C.2.pdf

Site Owner: Tweed Shire Council
Latitude: -28.216 Longitude:153.478

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	52	10:51 28 Feb 2022
2H	42.5	10:17 28 Feb 2022
3H	38.3	10:21 28 Feb 2022
6H	31	10:18 28 Feb 2022
12H	26	10:57 28 Feb 2022
24H	16.7	18:46 28 Feb 2022
48H	11.7	13:11 28 Feb 2022
72H	8.2	22:43 28 Feb 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BILAMBIL HEIGHTS (MARANA RESERVOIR) (558085)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

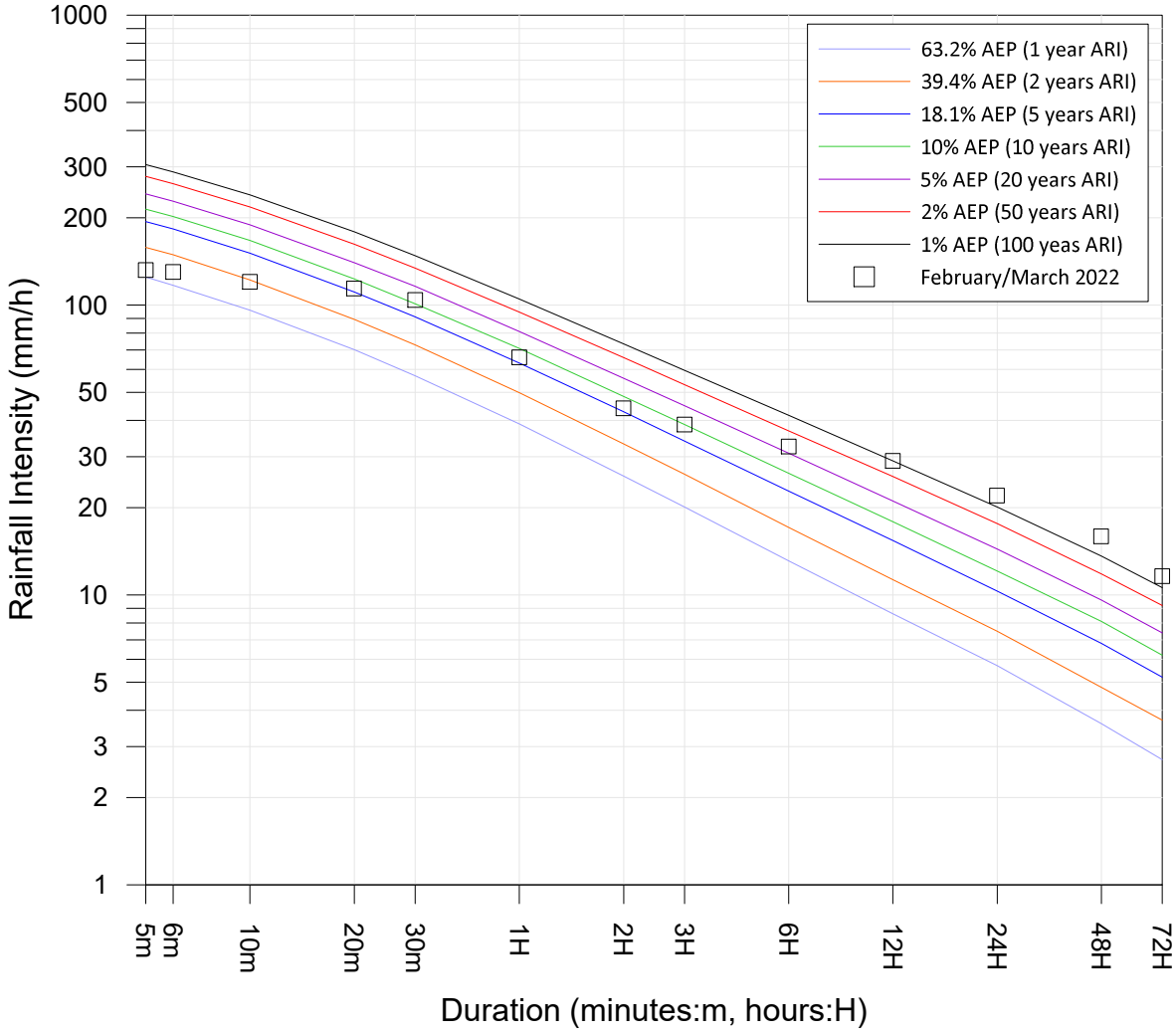
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.3

IFD_558085_Figure C.3.pdf

Site Owner: Tweed Shire Council
Latitude: -28.3217 Longitude:153.3467

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	132	10:40 28 Feb 2022
6m	130	08:26 28 Feb 2022
10m	120	08:40 28 Feb 2022
20m	114	08:41 28 Feb 2022
30m	104	08:47 28 Feb 2022
1H	66	09:13 28 Feb 2022
2H	44	08:56 28 Feb 2022
3H	38.7	10:50 28 Feb 2022
6H	32.5	08:57 28 Feb 2022
12H	29	08:59 28 Feb 2022
24H	22	10:46 28 Feb 2022
48H	15.9	16:20 28 Feb 2022
72H	11.6	03:12 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BOAT HARBOUR (ROUS RIVER) (58204)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

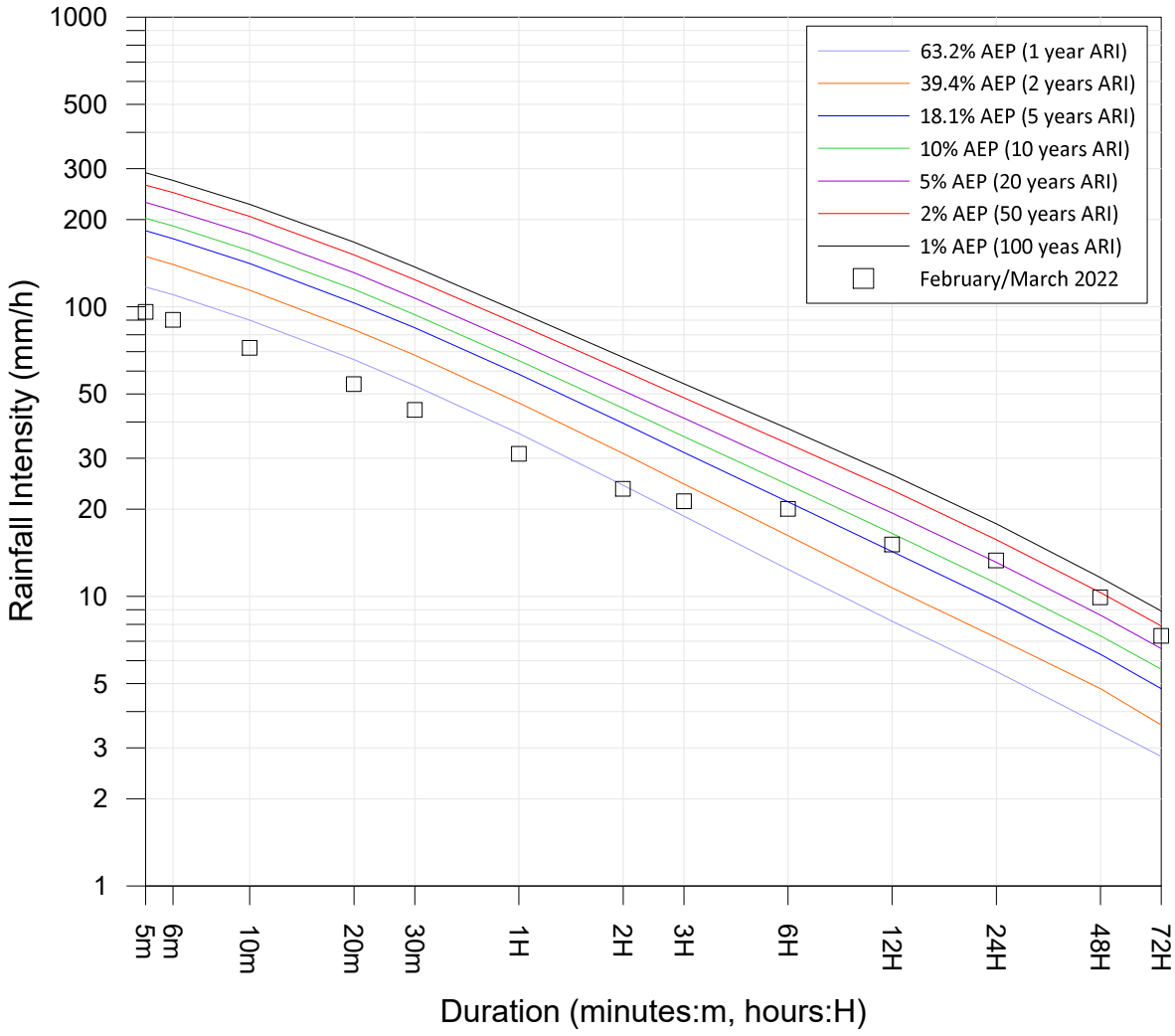
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.4

IFD_58204_Figure C.4.pdf

Site Owner: Byron Shire Council
Latitude: -28.3981 Longitude:153.1731

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	96	16:14 23 Feb 2022
6m	90	16:15 23 Feb 2022
10m	72	16:19 23 Feb 2022
20m	54	16:24 23 Feb 2022
30m	44	08:36 28 Feb 2022
1H	31	08:40 28 Feb 2022
2H	23.5	08:39 28 Feb 2022
3H	21.3	09:17 28 Feb 2022
6H	20	09:30 28 Feb 2022
12H	15.1	10:38 28 Feb 2022
24H	13.3	10:36 28 Feb 2022
48H	9.9	15:43 28 Feb 2022
72H	7.3	18:53 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BRAYS CREEK (MISTY MOUNTAIN) (58005)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

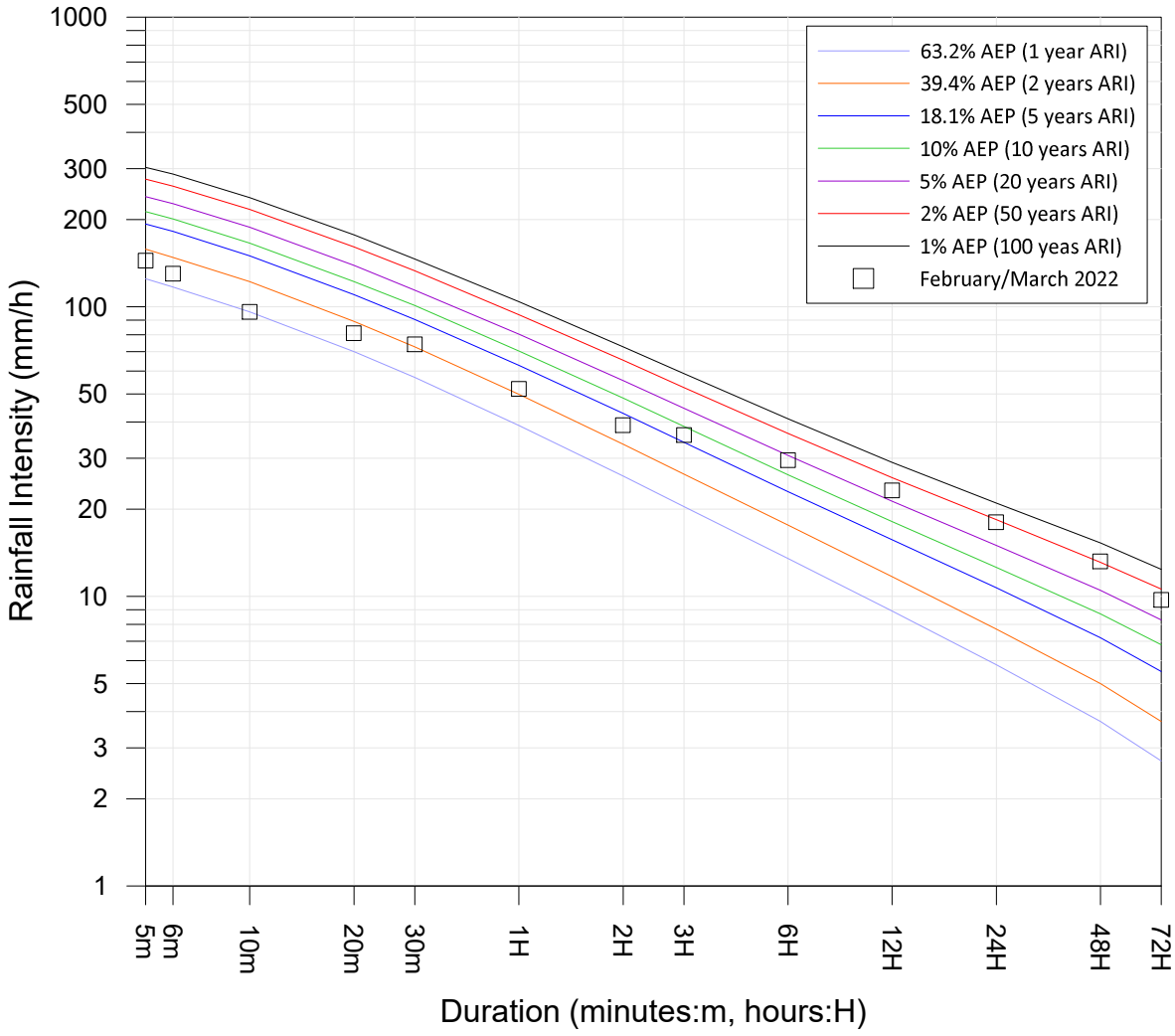
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.5

IFD_58005_Figure C.5.pdf

Site Owner: Tweed Shire Council
Latitude: -28.3146 Longitude:153.275

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	144	08:56 28 Feb 2022
6m	130	08:57 28 Feb 2022
10m	96	09:01 24 Feb 2022
20m	81	09:02 24 Feb 2022
30m	74	09:01 24 Feb 2022
1H	52	09:25 24 Feb 2022
2H	39	07:58 28 Feb 2022
3H	36	08:08 28 Feb 2022
6H	29.5	08:58 28 Feb 2022
12H	23.2	08:59 28 Feb 2022
24H	18	08:58 28 Feb 2022
48H	13.2	16:30 28 Feb 2022
72H	9.7	00:28 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CHILLINGHAM (58011)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

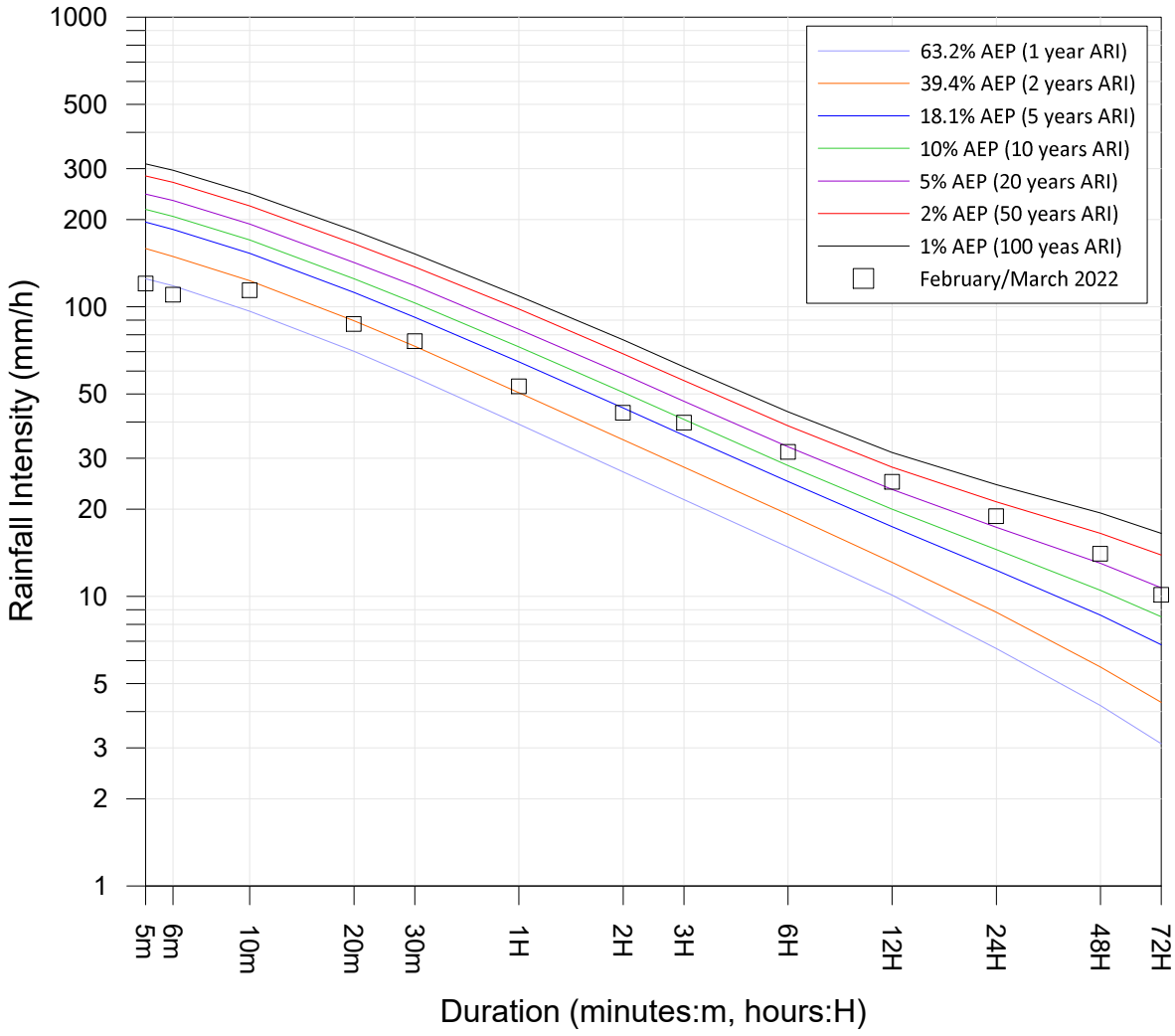
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.6

IFD_58011_Figure C.6.pdf

Site Owner: Tweed Shire Council
Latitude: -28.2662 Longitude:153.279

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	120	07:36 28 Feb 2022
6m	110	07:36 28 Feb 2022
10m	114	07:36 28 Feb 2022
20m	87	07:40 28 Feb 2022
30m	76	07:39 28 Feb 2022
1H	53	07:58 28 Feb 2022
2H	43	07:53 28 Feb 2022
3H	39.7	07:53 28 Feb 2022
6H	31.5	07:56 28 Feb 2022
12H	24.8	07:45 28 Feb 2022
24H	18.9	08:26 28 Feb 2022
48H	14	14:50 28 Feb 2022
72H	10.1	03:17 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

COUCHY CREEK (558079)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

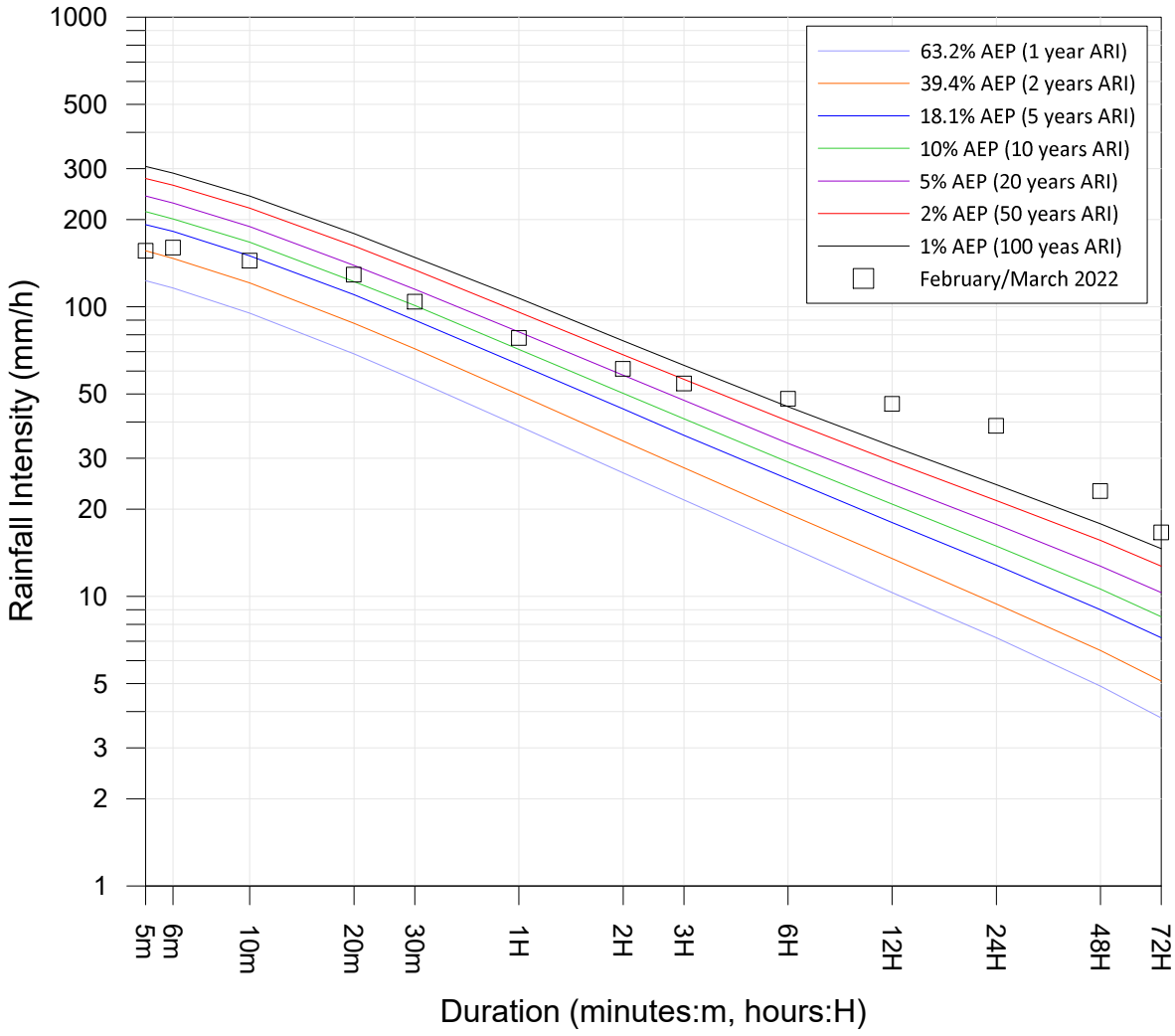
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.7

IFD_558079_Figure C.7.pdf

Site Owner: BoM
Latitude: -28.5314 Longitude:153.3151

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	156	09:41 28 Feb 2022
6m	160	09:37 28 Feb 2022
10m	144	09:41 28 Feb 2022
20m	129	09:46 28 Feb 2022
30m	104	09:45 28 Feb 2022
1H	78	02:04 28 Feb 2022
2H	61	02:07 28 Feb 2022
3H	54.3	12:26 28 Feb 2022
6H	48	07:21 28 Feb 2022
12H	46.2	12:58 28 Feb 2022
24H	38.8	16:41 28 Feb 2022
48H	23.1	16:24 28 Feb 2022
72H	16.6	22:17 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

DOON DOON (MCCABES ROAD) (58019)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

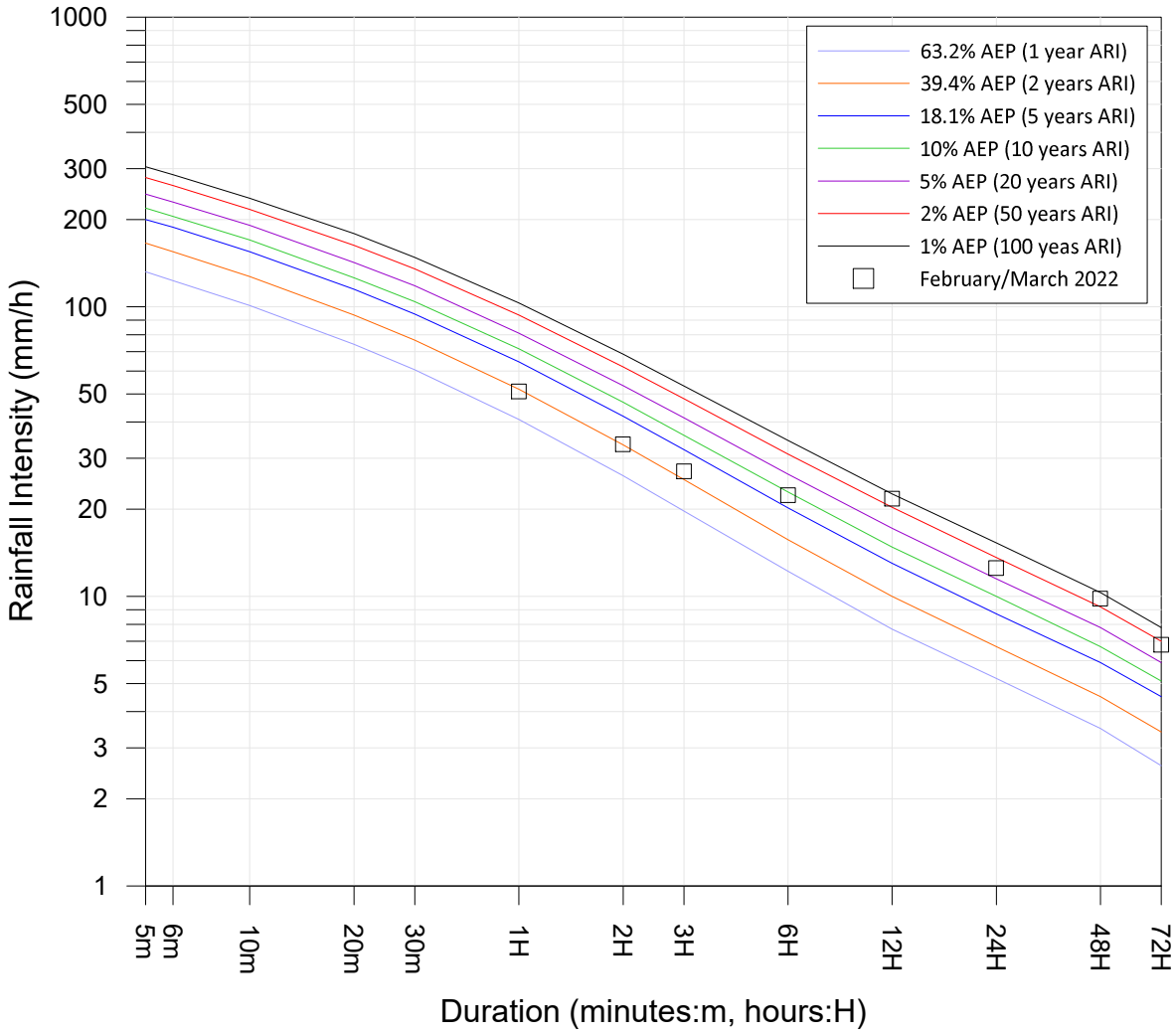
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.8

IFD_58019_Figure C.8.pdf

Site Owner: Tweed Shire Council
Latitude: -28.256 Longitude:153.548

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	51	04:53 28 Feb 2022
2H	33.5	11:51 28 Feb 2022
3H	27	07:04 28 Feb 2022
6H	22.3	06:53 28 Feb 2022
12H	21.7	12:45 28 Feb 2022
24H	12.5	18:49 28 Feb 2022
48H	9.8	13:01 28 Feb 2022
72H	6.8	22:21 28 Feb 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

KINGSCLIFF (SEWERAGE TREATMENT PLANT) (558090)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

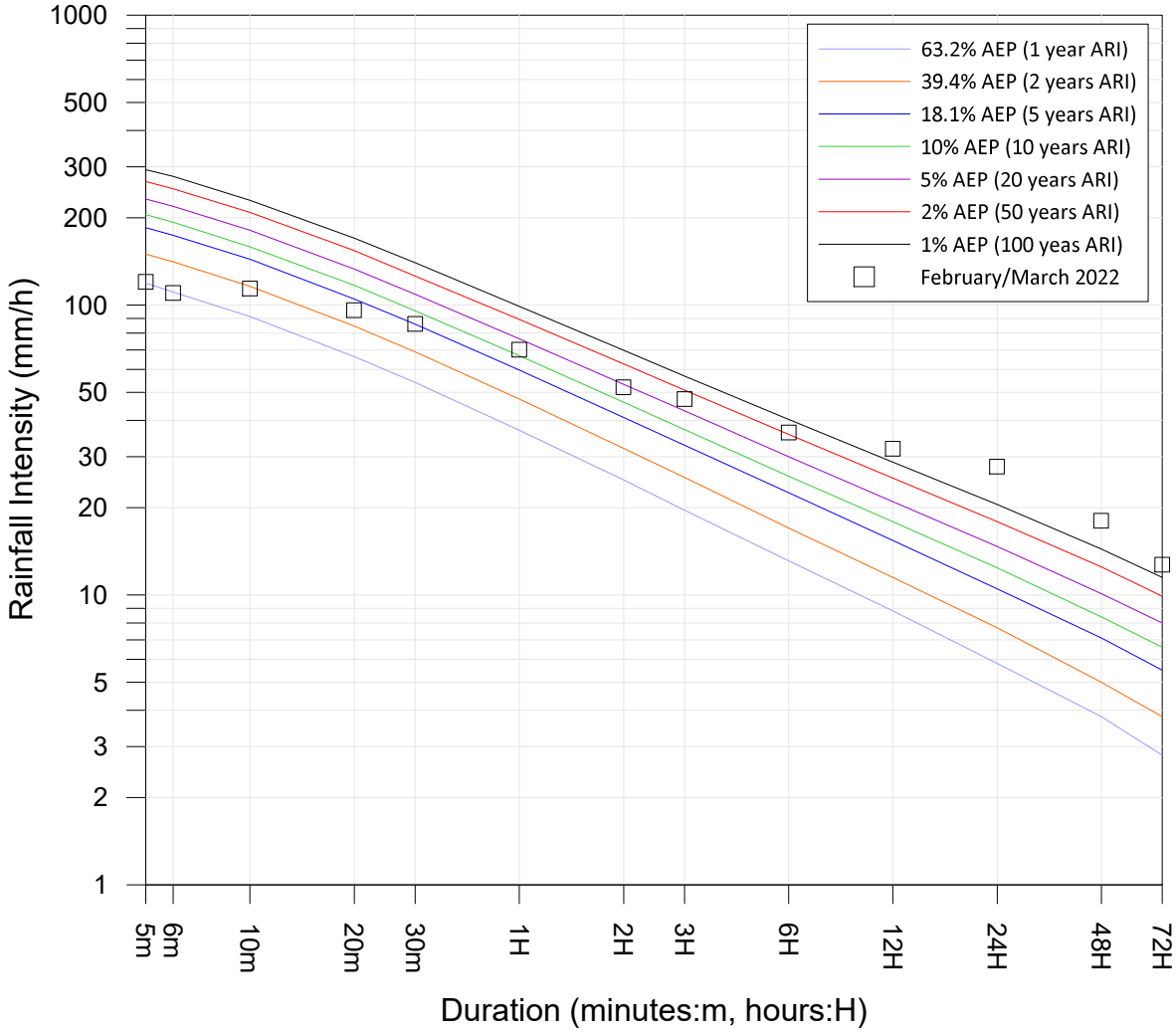
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.9

IFD_558090_Figure C.9.pdf

Site Owner: BoM
Latitude: -28.4696 Longitude:153.2532

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	120	09:11 28 Feb 2022
6m	110	09:13 28 Feb 2022
10m	114	09:10 28 Feb 2022
20m	96	09:20 28 Feb 2022
30m	86	09:13 28 Feb 2022
1H	70	09:22 28 Feb 2022
2H	52	10:15 28 Feb 2022
3H	47.3	11:10 28 Feb 2022
6H	36.3	11:12 28 Feb 2022
12H	31.9	11:29 28 Feb 2022
24H	27.7	15:53 28 Feb 2022
48H	18	16:06 28 Feb 2022
72H	12.7	05:17 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

KUNGHUR (THE JUNCTION) (58129)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

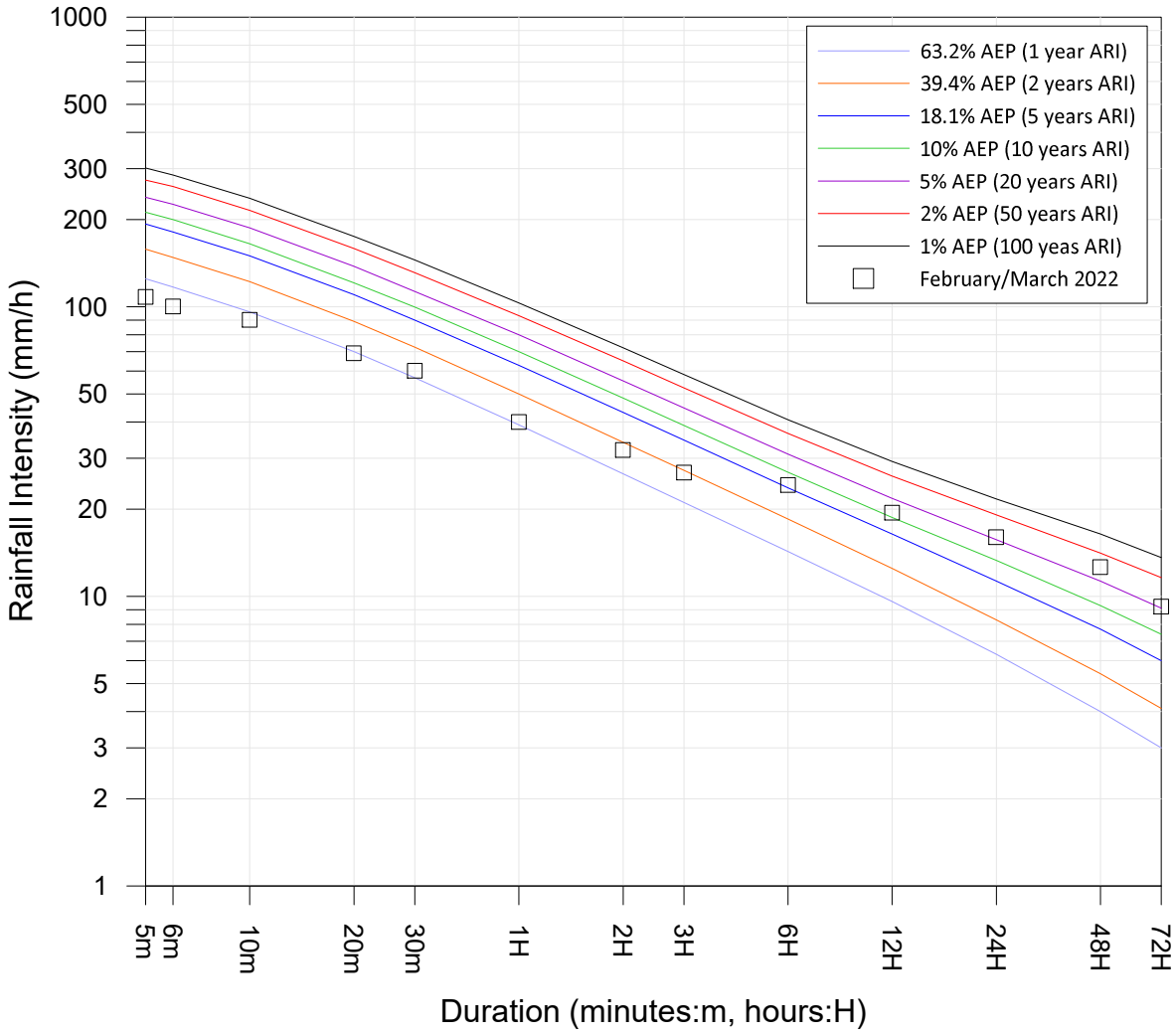
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.10

IFD_58129_Figure C.10.pdf

Site Owner: BoM
Latitude: -28.3082 Longitude:153.2331

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	108	05:31 23 Feb 2022
6m	100	05:31 23 Feb 2022
10m	90	06:37 23 Feb 2022
20m	69	09:02 24 Feb 2022
30m	60	05:49 23 Feb 2022
1H	40	06:20 23 Feb 2022
2H	32	06:38 23 Feb 2022
3H	26.7	08:24 28 Feb 2022
6H	24.2	08:45 28 Feb 2022
12H	19.4	10:16 28 Feb 2022
24H	16	10:09 28 Feb 2022
48H	12.6	15:00 28 Feb 2022
72H	9.2	23:41 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LIMPINWOOD (BALD MOUNTAIN) (558032)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

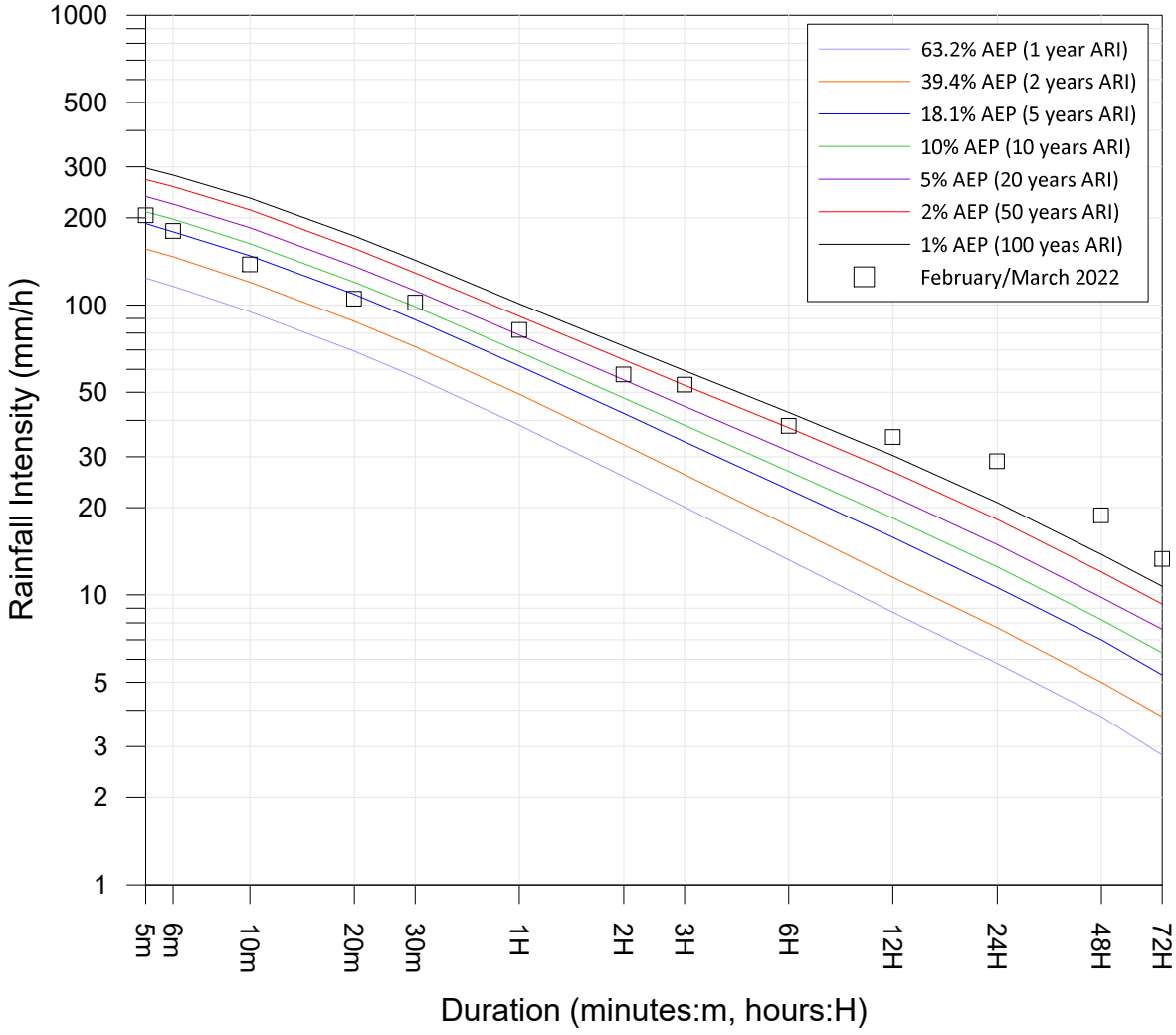
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.11

IFD_558032_Figure C.11.pdf

Site Owner: Tweed Shire Council
Latitude: -28.434 Longitude:153.295

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	204	01:10 28 Feb 2022
6m	180	01:06 28 Feb 2022
10m	138	01:06 28 Feb 2022
20m	105	08:55 28 Feb 2022
30m	102	09:05 28 Feb 2022
1H	82	09:17 28 Feb 2022
2H	57.5	10:10 28 Feb 2022
3H	53	11:20 28 Feb 2022
6H	38.3	11:21 28 Feb 2022
12H	35	11:30 28 Feb 2022
24H	28.9	16:43 28 Feb 2022
48H	18.8	16:27 28 Feb 2022
72H	13.3	22:27 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

PALMERS ROAD (558018)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

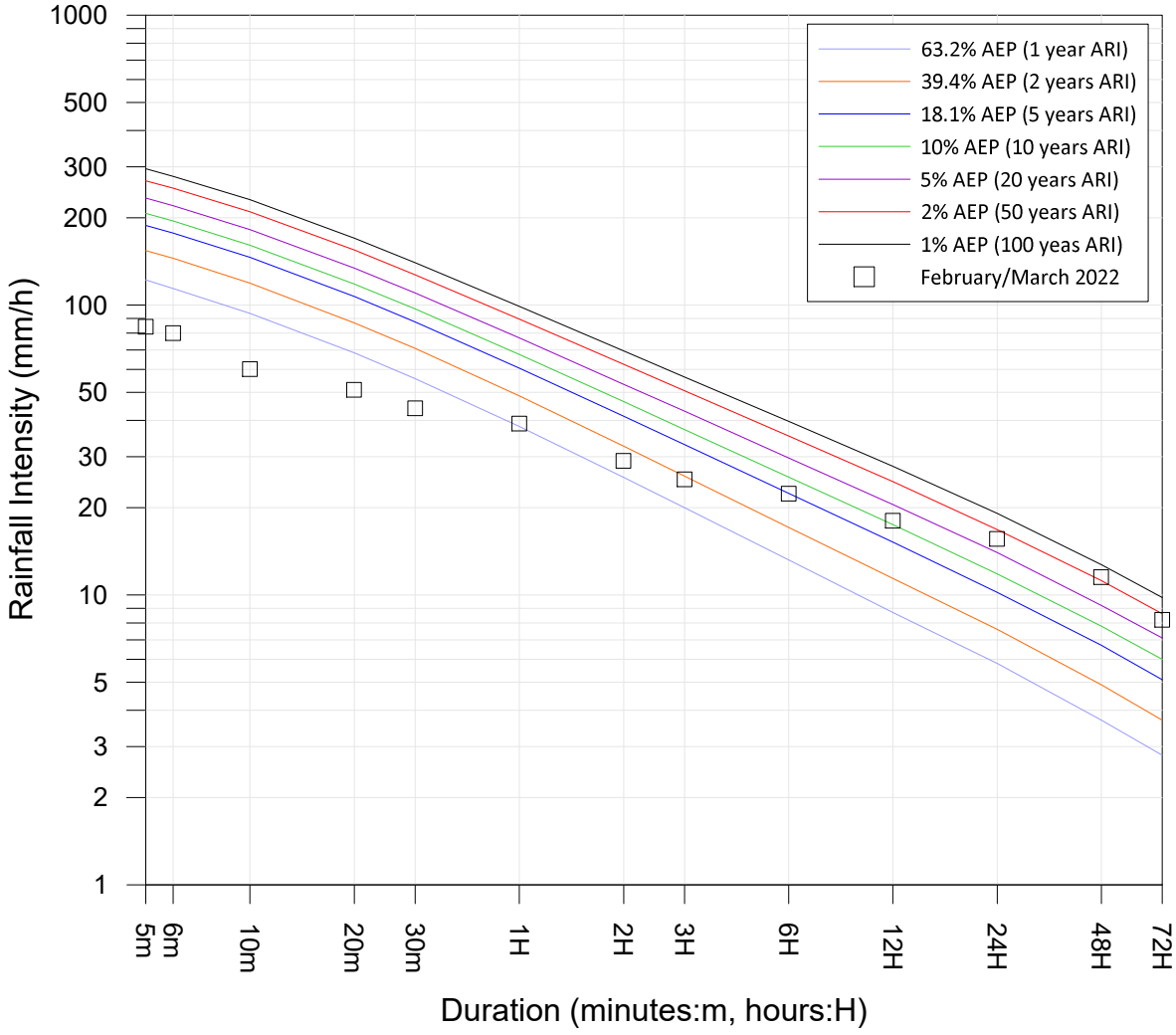
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.12

IFD_558018_Figure C.12.pdf

Site Owner: Tweed Shire Council
Latitude: -28.359 Longitude:153.21

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	84	15:11 28 Feb 2022
6m	80	15:12 28 Feb 2022
10m	60	15:16 28 Feb 2022
20m	51	08:17 28 Feb 2022
30m	44	08:20 28 Feb 2022
1H	39	08:17 28 Feb 2022
2H	29	08:17 28 Feb 2022
3H	25	08:40 28 Feb 2022
6H	22.3	08:56 28 Feb 2022
12H	18	10:21 28 Feb 2022
24H	15.6	10:29 28 Feb 2022
48H	11.5	15:36 28 Feb 2022
72H	8.2	18:16 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

TYALGUM BRIDGE (TYALGUM RIVER) (558088)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

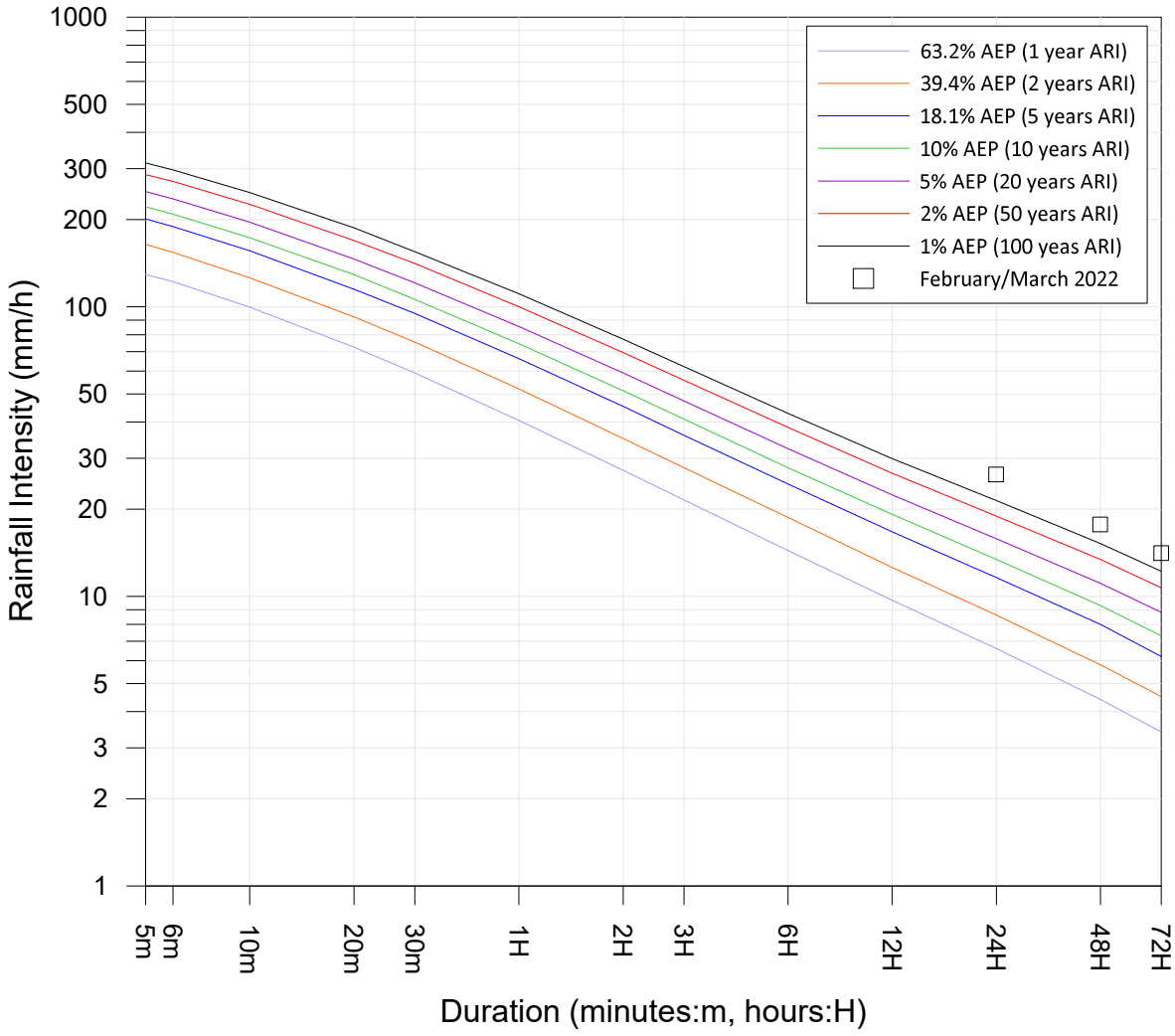
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.13

IFD_558088_Figure C.13.pdf

Site Owner: Tweed Shire Council
Latitude: -28.4372 Longitude:153.4729

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	26.3	13:40 28 Feb 2022
48H	17.7	10:51 01 Mar 2022
72H	14.1	15:21 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BURRINGBAR (558083)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

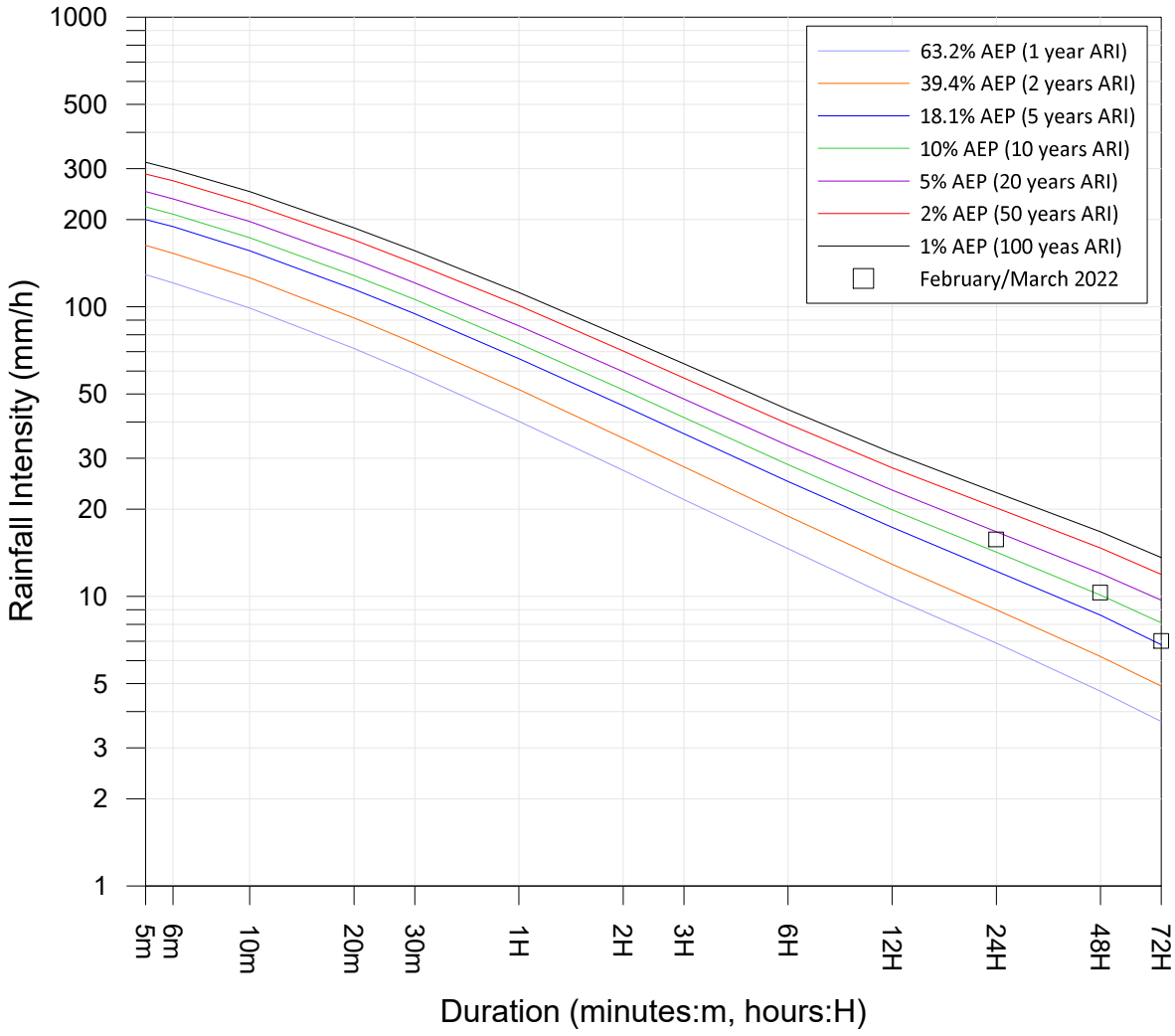
Manly Hydraulics Laboratory

Report MHL2880
Figure C.14

IFD_558083_Figure C.14.pdf

Site Owner: Tweed Shire Council
Latitude: -28.444 Longitude:153.442

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	15.7	03:13 28 Feb 2022
48H	10.3	04:30 28 Feb 2022
72H	7	03:23 28 Feb 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.
Rainfall station failed at 02:47 28 February 2022.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BURRINGBAR RD (BURRINGBAR CREEK) (558106)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

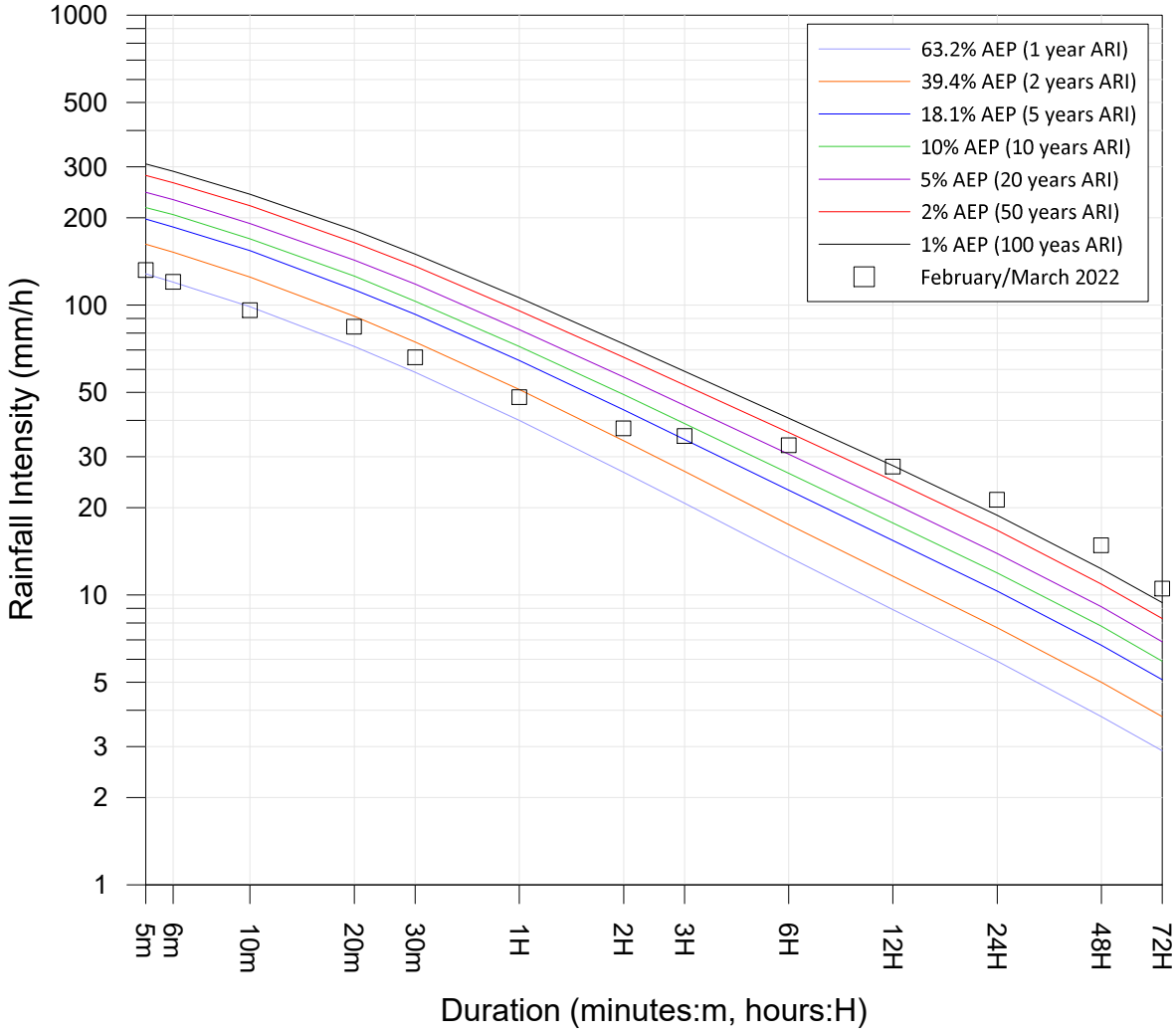
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.15

IFD_558106_Figure C.15.pdf

Site Owner: Tweed Shire Council
Latitude: -28.336 Longitude:153.476

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	132	10:27 28 Feb 2022
6m	120	10:28 28 Feb 2022
10m	96	04:57 28 Feb 2022
20m	84	04:58 28 Feb 2022
30m	66	04:58 28 Feb 2022
1H	48	05:20 28 Feb 2022
2H	37.5	02:22 28 Feb 2022
3H	35.3	02:18 28 Feb 2022
6H	32.8	02:35 28 Feb 2022
12H	27.7	08:15 28 Feb 2022
24H	21.3	17:00 28 Feb 2022
48H	14.8	14:38 28 Feb 2022
72H	10.5	14:07 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CLOTHIERS CREEK (558082)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

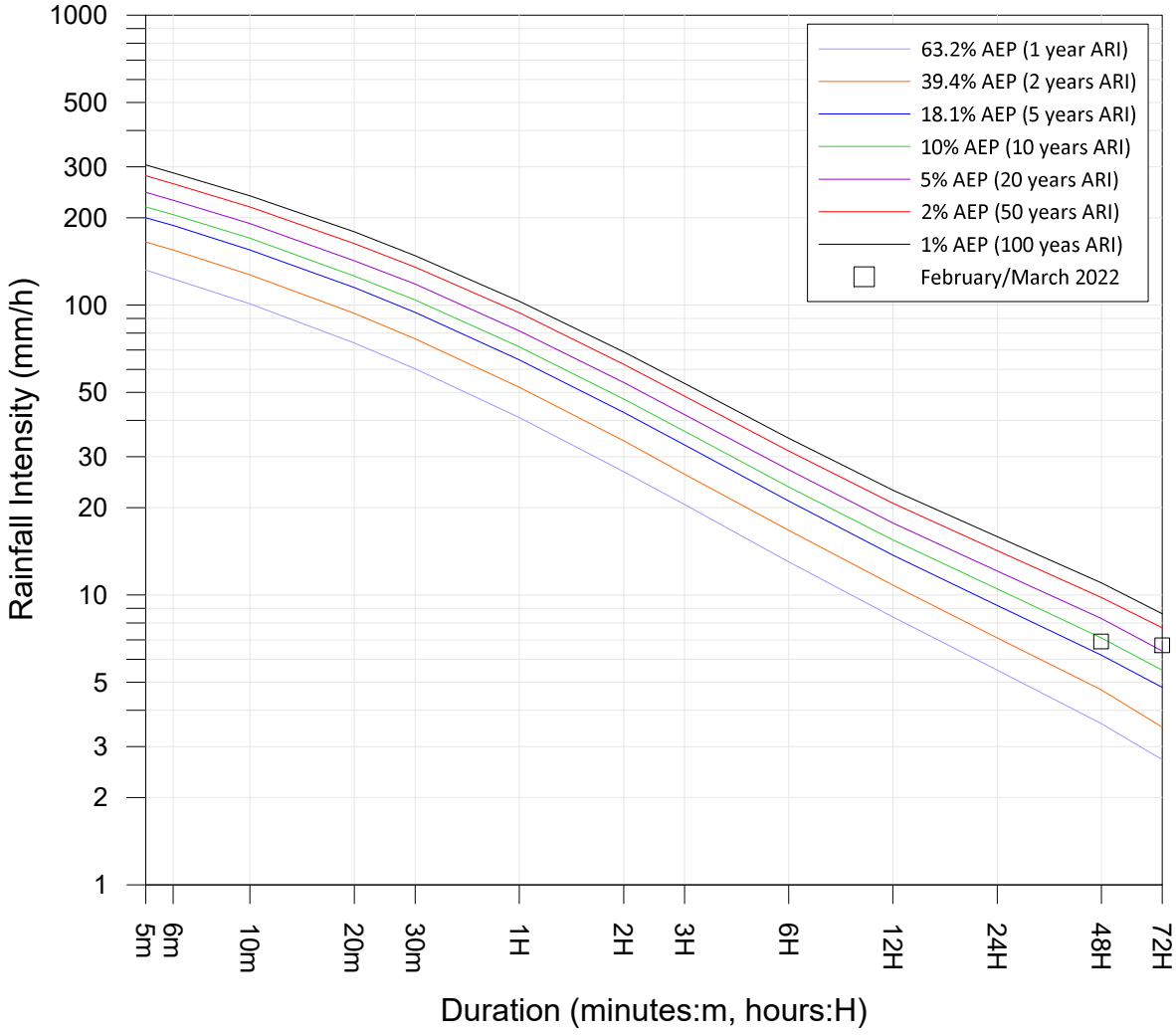
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.16

IFD_558082_Figure C.16.pdf

Site Owner: North Byron Parklands
Latitude: -28.467 Longitude:153.53

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	-	-
48H	6.9	14:03 03 Mar 2022
72H	6.7	14:07 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

WOOYUNG RD (CRABBES CREEK) (558095)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

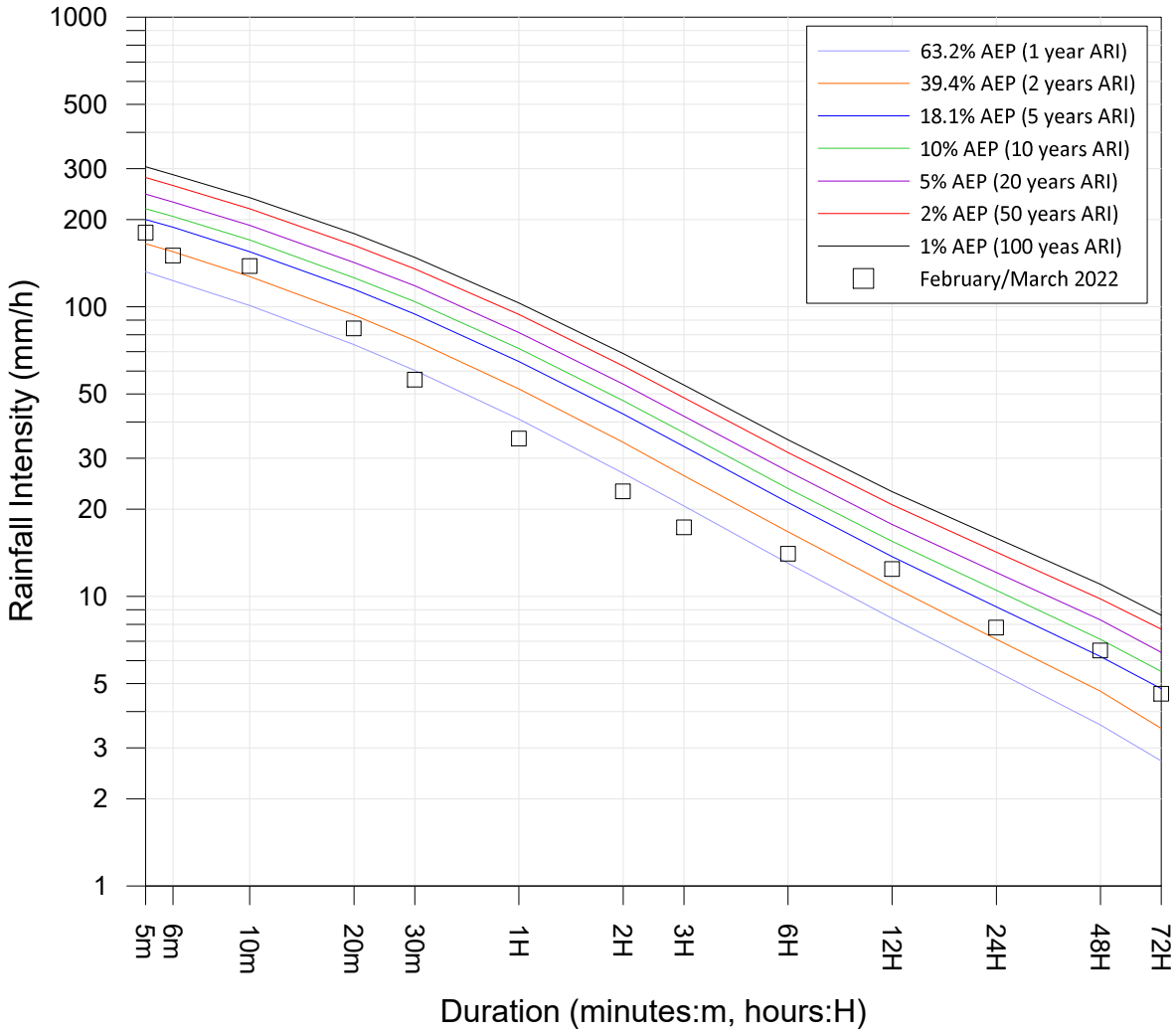
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.17

IFD_558095_Figure C.17.pdf

Site Owner: Tweed Shire Council
Latitude: -28.353 Longitude:153.56

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	180	-
6m	150	-
10m	138	-
20m	84	-
30m	56	-
1H	35	05:16 28 Feb 2022
2H	23	12:56 28 Feb 2022
3H	17.3	13:39 28 Feb 2022
6H	14	14:56 28 Feb 2022
12H	12.4	16:16 28 Feb 2022
24H	7.8	20:07 28 Feb 2022
48H	6.5	14:52 28 Feb 2022
72H	4.6	13:42 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

HASTINGS (SEWERAGE TREATMENT PLANT) (558091)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

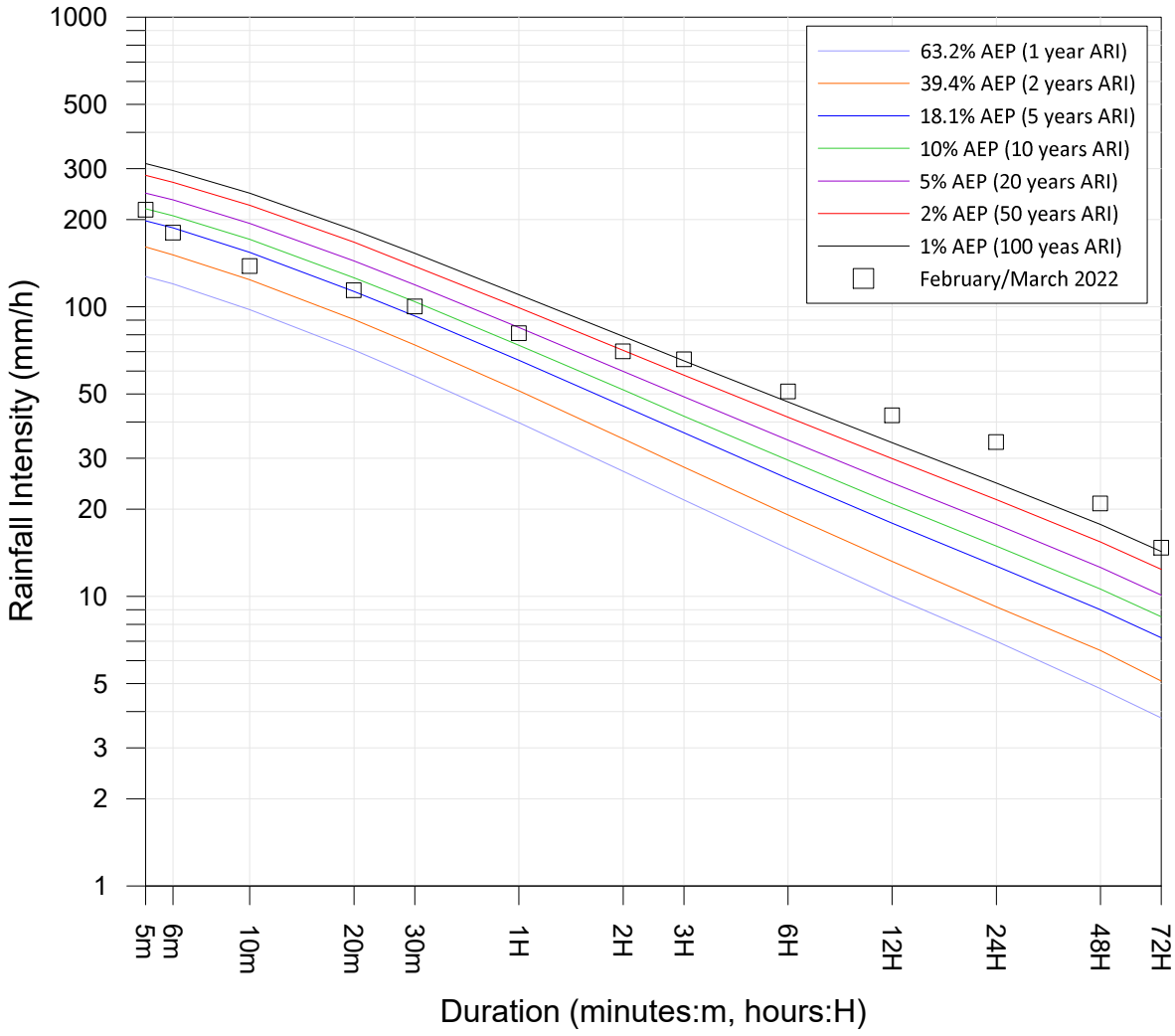
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.18

IFD_558091_Figure C.18.pdf

Site Owner: Tweed Shire Council
Latitude: -28.4531 Longitude:153.406

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	216	09:56 28 Feb 2022
6m	180	09:57 28 Feb 2022
10m	138	14:08 28 Feb 2022
20m	114	05:30 28 Feb 2022
30m	100	05:40 28 Feb 2022
1H	81	12:46 28 Feb 2022
2H	70	12:52 28 Feb 2022
3H	65.7	14:14 28 Feb 2022
6H	51	15:51 28 Feb 2022
12H	42.1	14:14 28 Feb 2022
24H	34.1	16:58 28 Feb 2022
48H	20.9	16:24 28 Feb 2022
72H	14.7	04:34 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

UPPER BURRINGBAR RD (558107)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

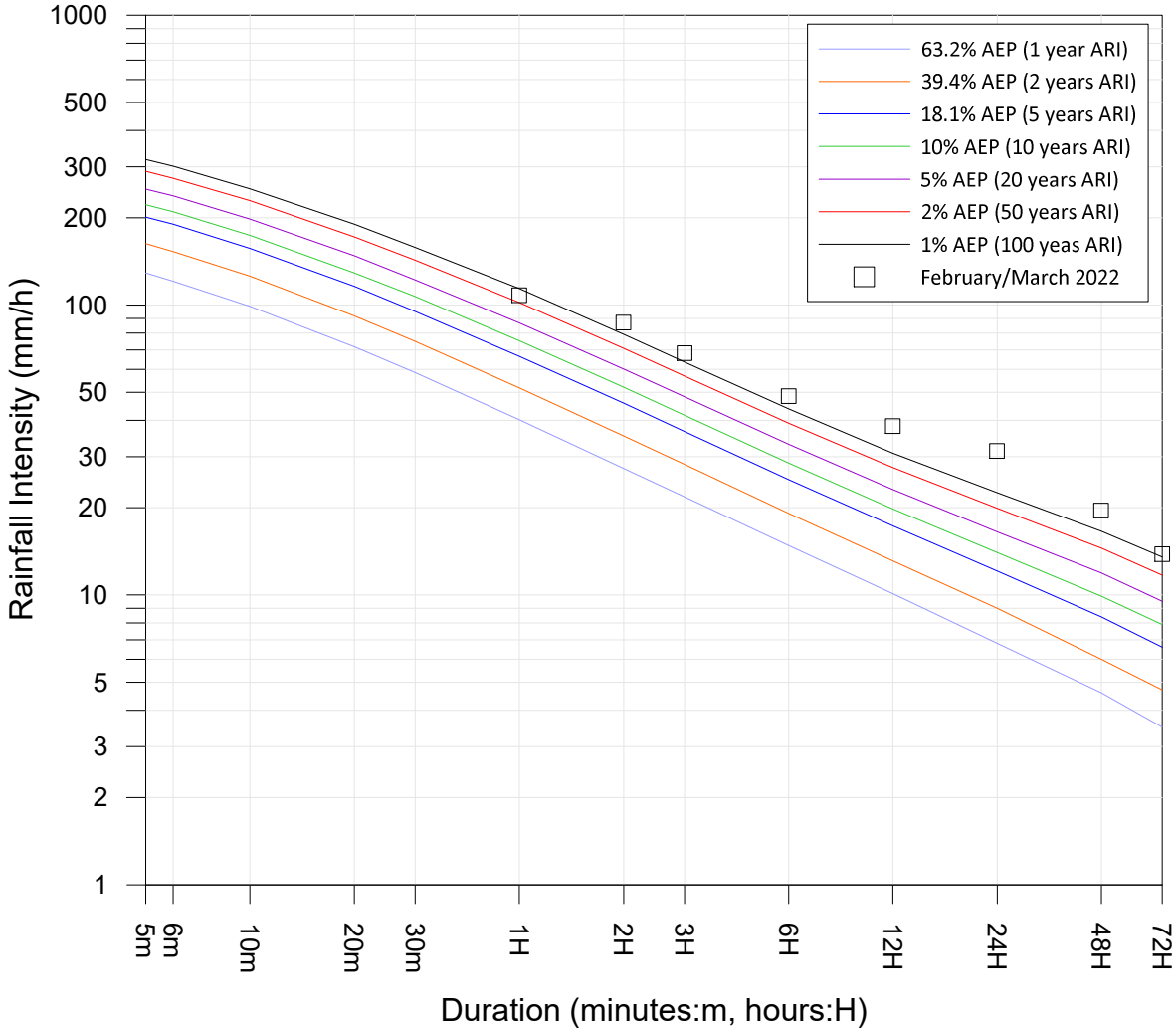
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.19

IFD_558107_Figure C.19.pdf

Site Owner: North Byron Parklands
Latitude: -28.4635 Longitude:153.4526

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	108	01:55 28 Feb 2022
2H	86.8	02:58 28 Feb 2022
3H	68.2	03:17 28 Feb 2022
6H	48.4	06:58 28 Feb 2022
12H	38.2	13:05 28 Feb 2022
24H	31.3	18:22 28 Feb 2022
48H	19.5	16:22 28 Feb 2022
72H	13.8	13:53 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

UPPER CRABBES CREEK (CRABBES CREEK RD) (558094)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

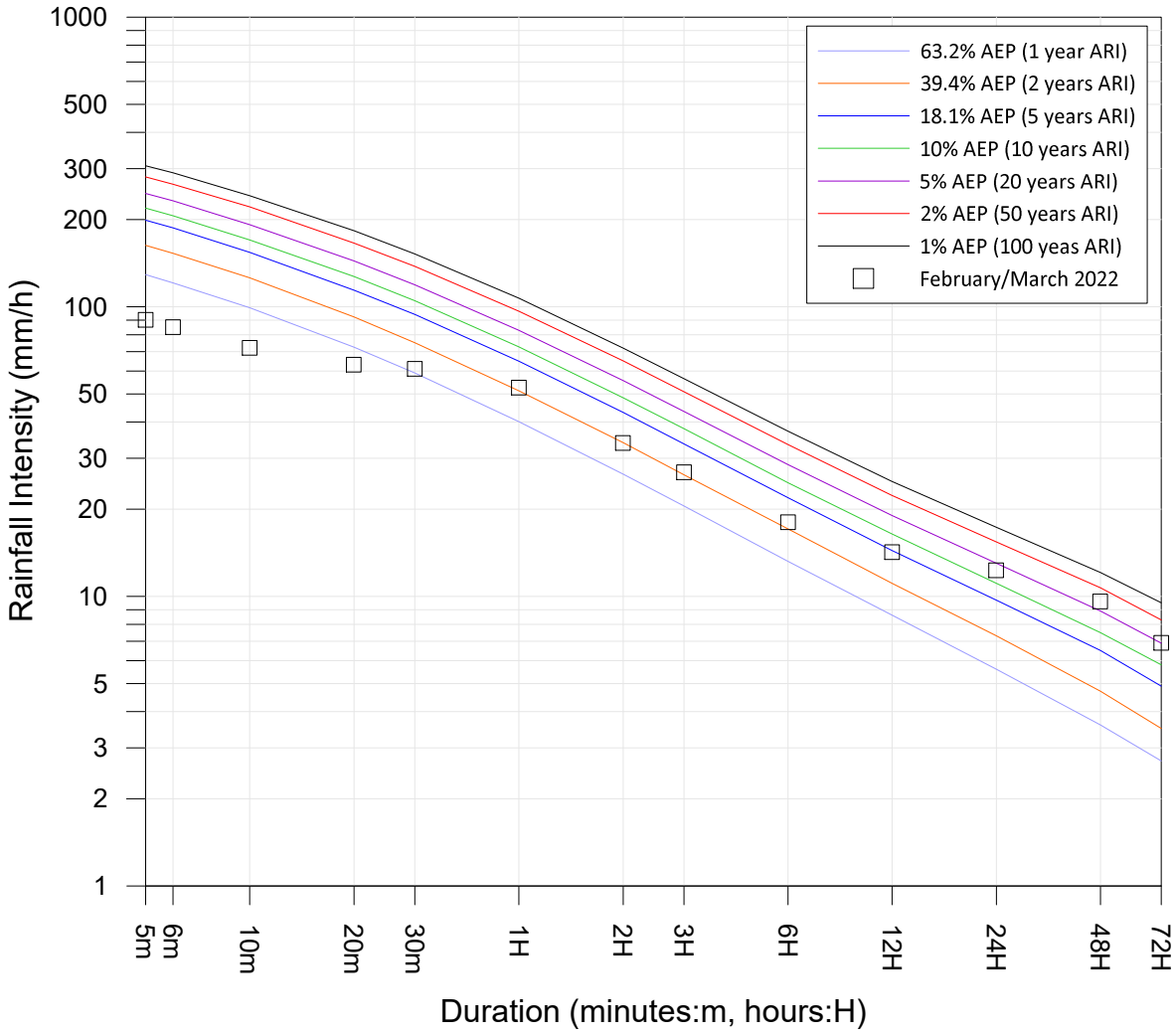
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.20

IFD_558094_Figure C.20.pdf

Site Owner: DPE BCD
Latitude: -28.5894 Longitude:153.5167

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	90	07:19 28 Feb 2022
6m	85	07:20 28 Feb 2022
10m	72	01:24 24 Feb 2022
20m	63	19:37 27 Feb 2022
30m	61	19:38 27 Feb 2022
1H	52.5	19:43 27 Feb 2022
2H	33.8	07:52 28 Feb 2022
3H	26.8	08:16 28 Feb 2022
6H	18	10:06 28 Feb 2022
12H	14.2	15:49 28 Feb 2022
24H	12.3	16:28 28 Feb 2022
48H	9.6	16:48 28 Feb 2022
72H	6.9	04:49 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

MYOCUM (558036)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

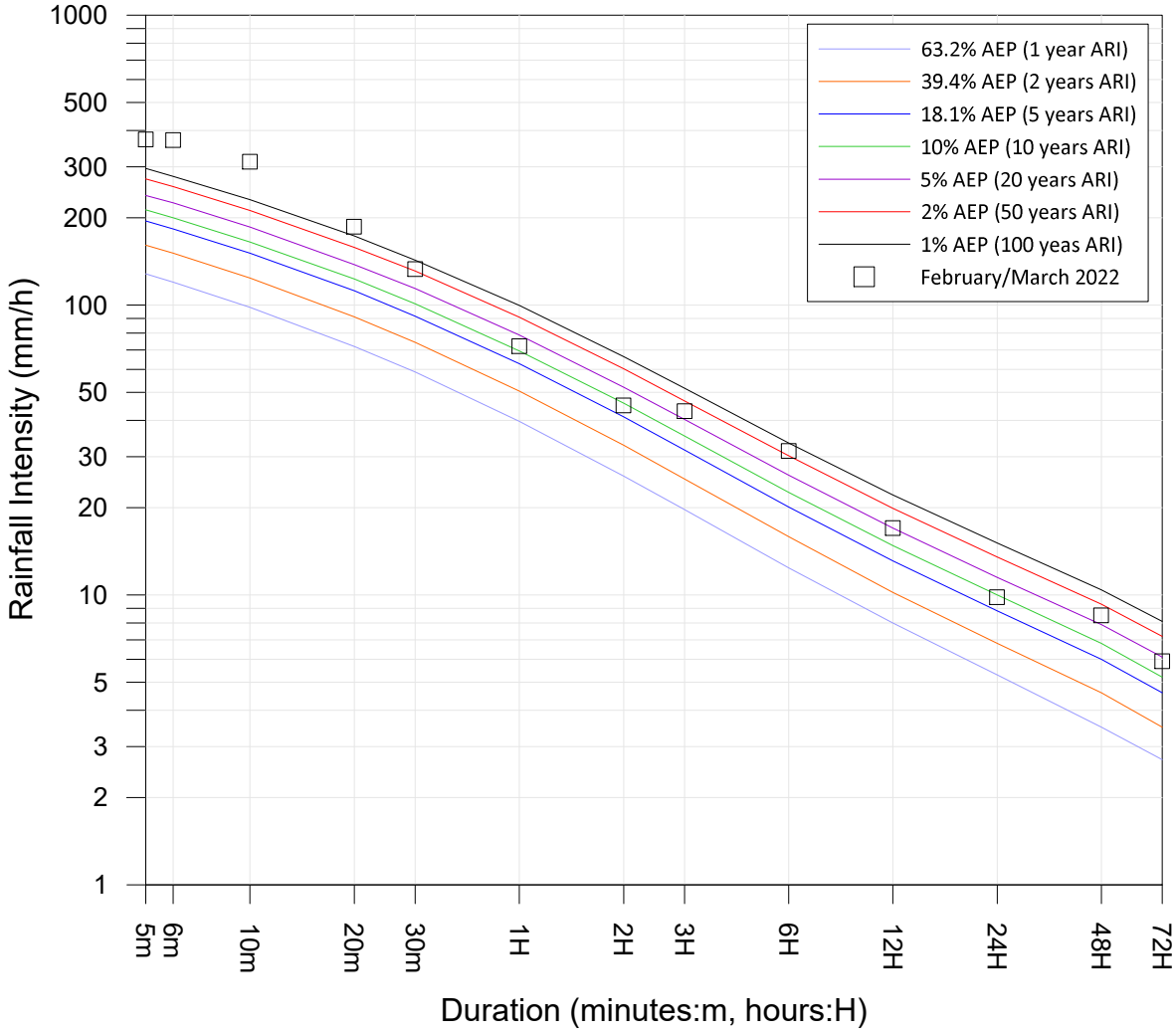
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.21

IFD_558036_Figure C.21.pdf

Site Owner: Byron Shire Council
Latitude: -28.6378 Longitude:153.5951

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	372	08:08 27 Feb 2022
6m	370	08:07 27 Feb 2022
10m	312	08:07 27 Feb 2022
20m	186	08:11 27 Feb 2022
30m	133	08:18 27 Feb 2022
1H	72	08:30 27 Feb 2022
2H	45	08:17 27 Feb 2022
3H	43	08:58 27 Feb 2022
6H	31.3	11:35 27 Feb 2022
12H	17	12:22 27 Feb 2022
24H	9.8	07:38 28 Feb 2022
48H	8.5	21:25 28 Feb 2022
72H	5.9	05:12 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BYRON BAY (BELONGIL CK BRIDGE) (558099)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

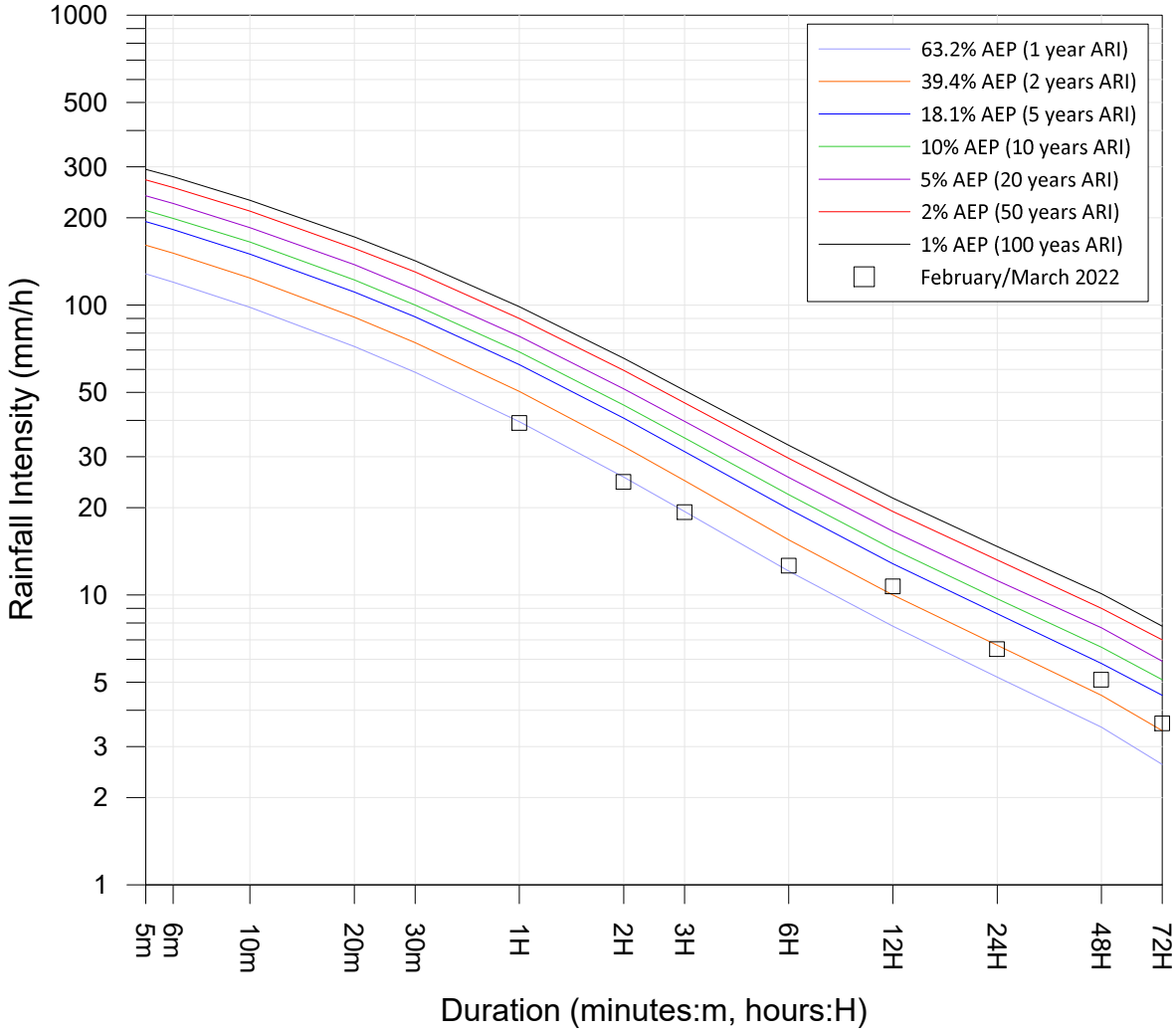
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.22

IFD_558099_Figure C.22.pdf

Site Owner: BoM
Latitude: -28.6399 Longitude:153.6358

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	39.2	07:59 28 Feb 2022
2H	24.5	08:59 28 Feb 2022
3H	19.3	08:59 28 Feb 2022
6H	12.6	10:59 28 Feb 2022
12H	10.7	16:59 28 Feb 2022
24H	6.5	22:59 28 Feb 2022
48H	5.1	21:59 28 Feb 2022
72H	3.6	06:59 01 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CAPE BYRON AWS (58216)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

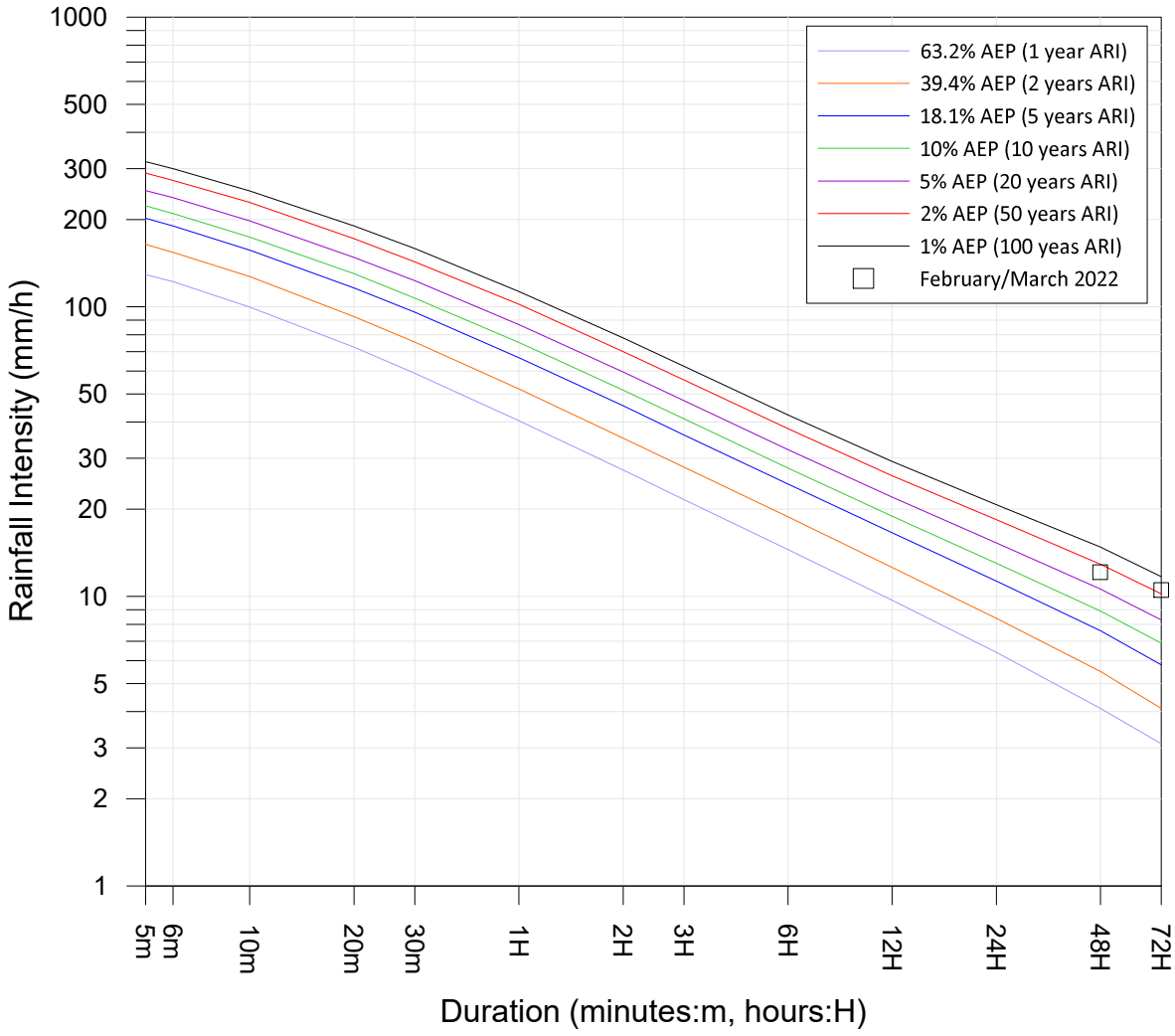
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.23

IFD_58216_Figure C.23.pdf

Site Owner: Byron Shire Council
Latitude: -28.4944 Longitude:153.4847

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	-	-
48H	12.1	13:37 03 Mar 2022
72H	10.5	13:40 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LACKS CREEK (MIDDLE POCKET) (558005)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

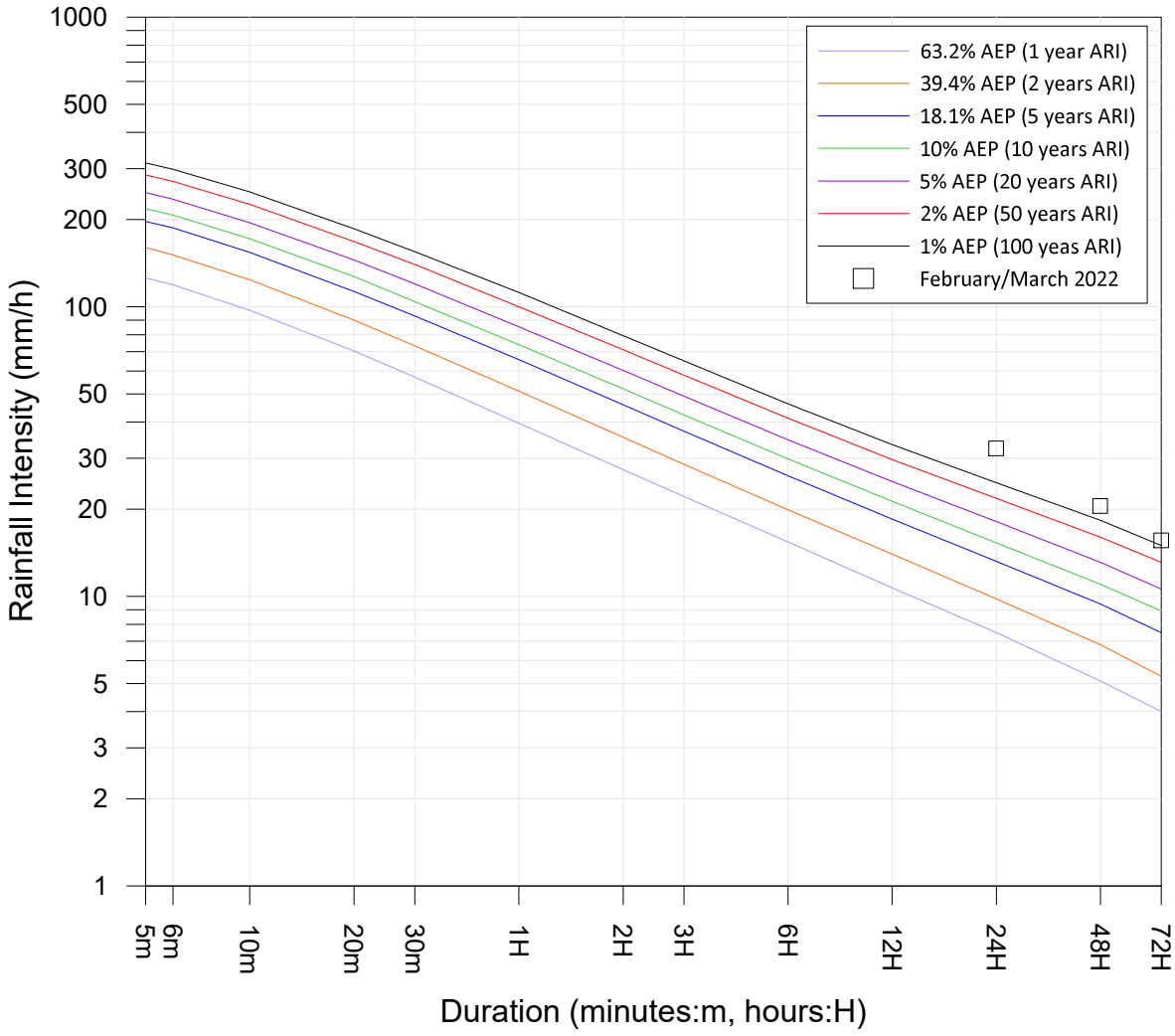
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.24

IFD_558005_Figure C.24.pdf

Site Owner: BoM
Latitude: -28.5031 Longitude:153.3817

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	32.4	13:16 28 Feb 2022
48H	20.5	01:35 01 Mar 2022
72H	15.6	03:25 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

MULLUMBIMBY (UPPER MAIN ARM) (558034)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

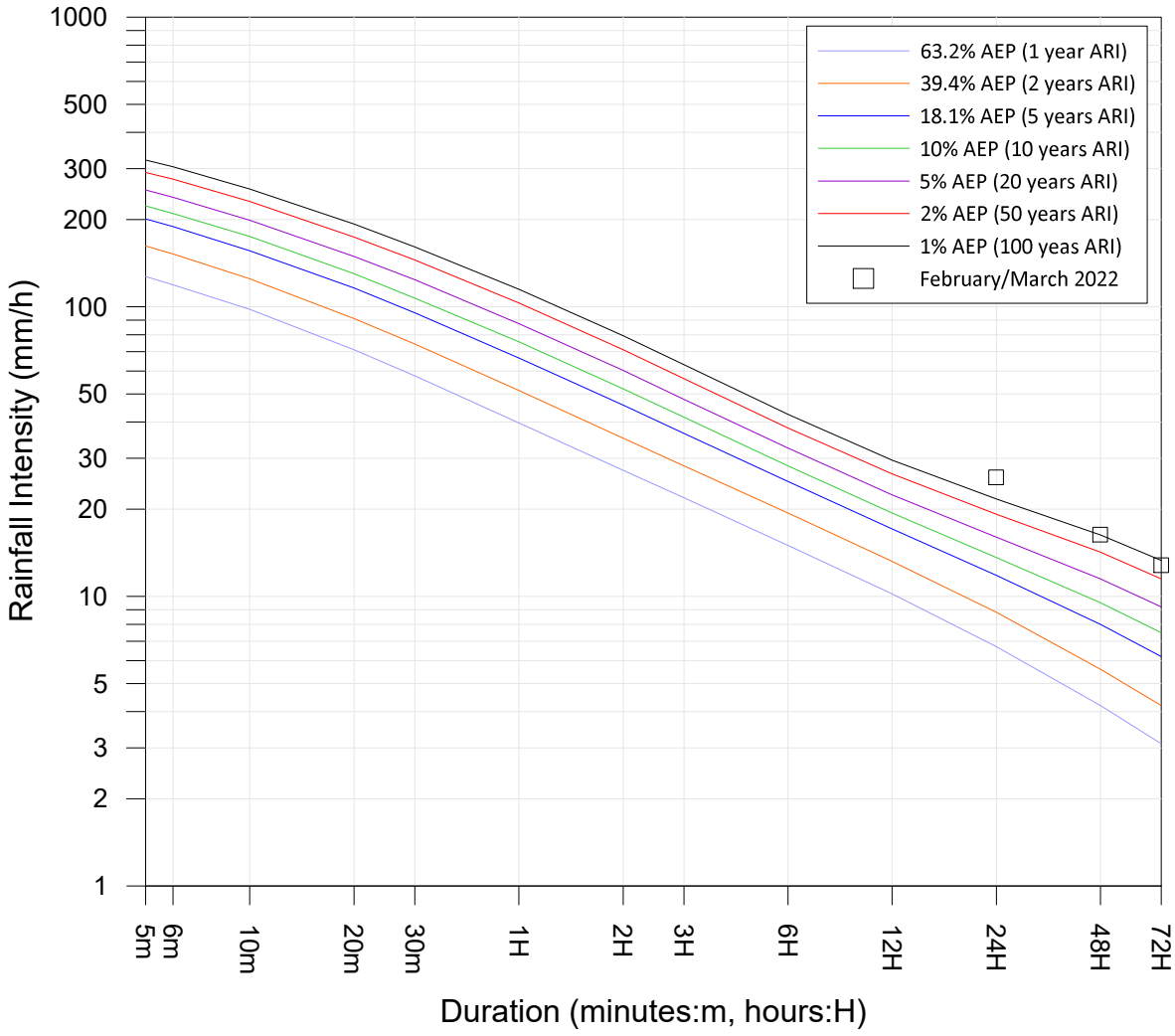
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.25

IFD_558034_Figure C.25.pdf

Site Owner: Byron Shire Council
Latitude: -28.5542 Longitude:153.4367

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	25.7	12:40 28 Feb 2022
48H	16.3	12:38 28 Feb 2022
72H	12.8	14:35 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

MULLUMBIMBY CREEK (MULLUMBIMBY CK) (558008)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

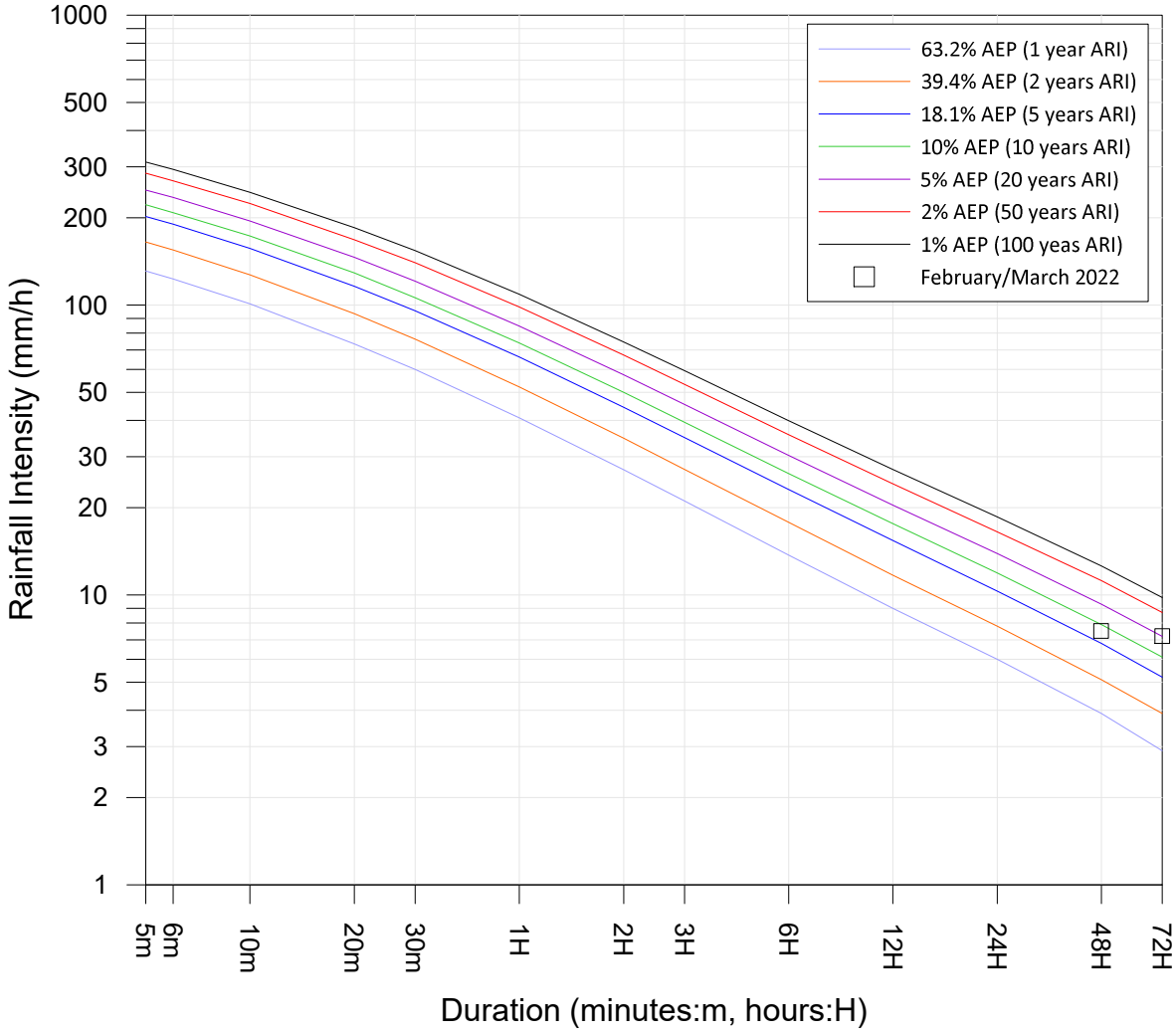
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.26

IFD_558008_Figure C.26.pdf

Site Owner: North Byron Parklands
Latitude: -28.485 Longitude:153.514

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	-	-
2H	-	-
3H	-	-
6H	-	-
12H	-	-
24H	-	-
48H	7.5	13:37 03 Mar 2022
72H	7.2	14:06 01 Mar 2022

Rainfall readings impacted by possible radio transfer interruptions.
Suspect duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

YELGUN (YELGUN CREEK) (558096)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

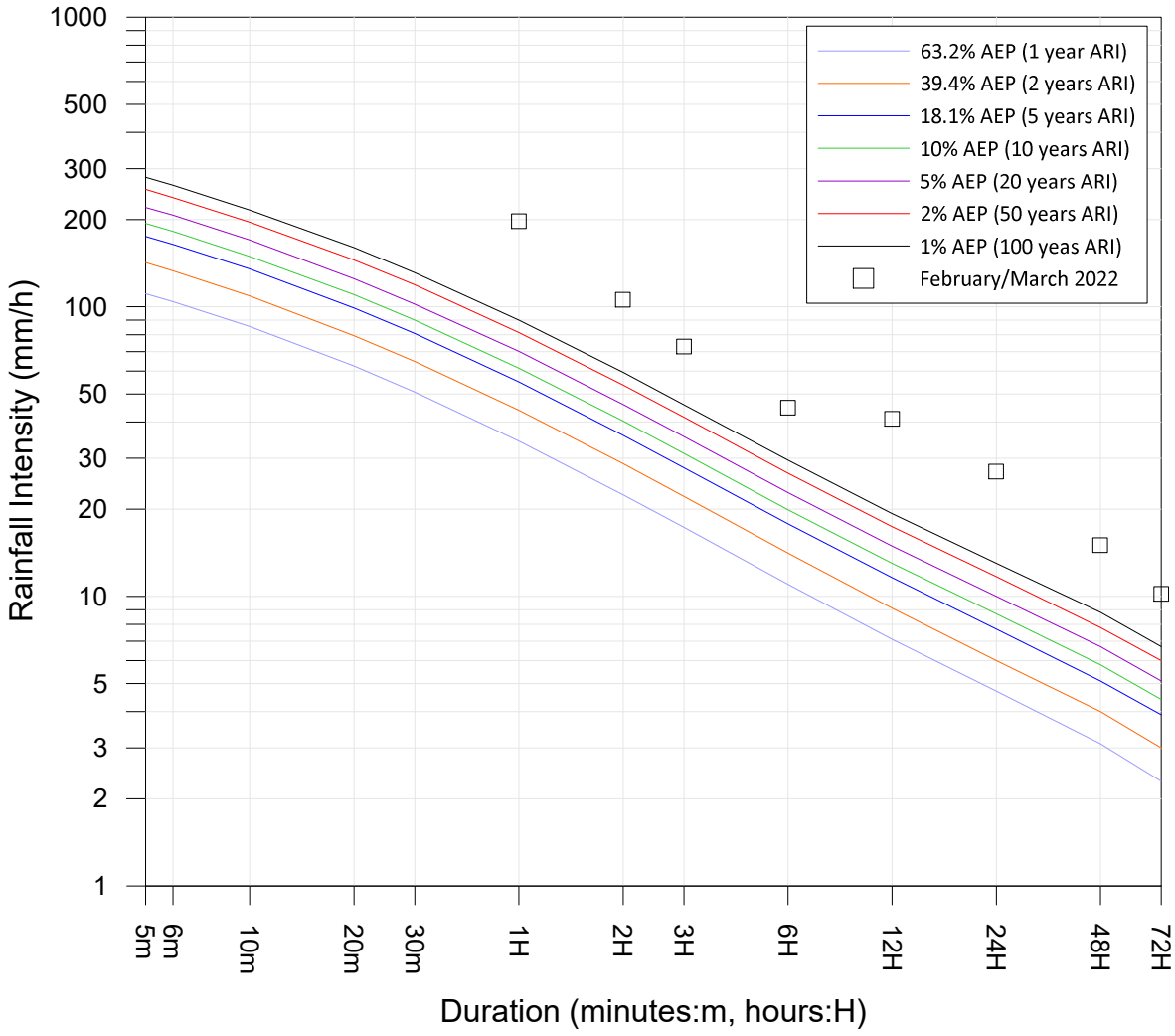
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.27

IFD_558096_Figure C.27.pdf

Site Owner: Lismore City Council
Latitude: -28.8081 Longitude:153.2818

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	197	8:59 27 Feb 2022
2H	105.5	19:59 27 Feb 2022
3H	72.7	19:59 27 Feb 2022
6H	44.8	12:59 27 Feb 2022
12H	41	19:59 27 Feb 2022
24H	26.9	06:59 28 Feb 2022
48H	15	18:59 28 Feb 2022
72H	10.2	13:59 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LISMORE DAWSON STREET (558087)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

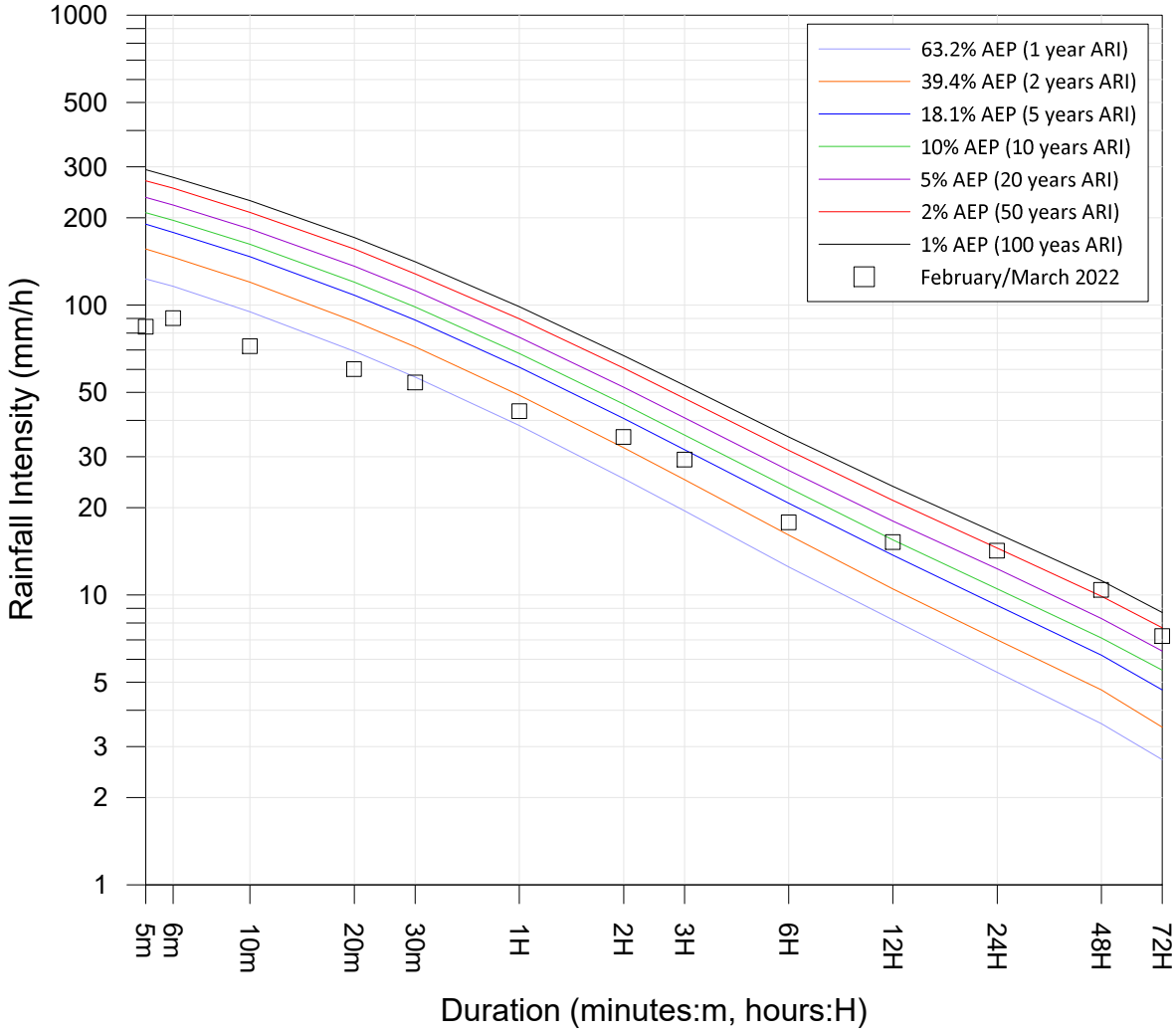
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.28

IFD_558087_Figure C.28.pdf

Site Owner: Lismore City Council
Latitude: -28.728 Longitude:153.458

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	84	07:04 28 Feb 2022
6m	90	07:03 28 Feb 2022
10m	72	07:08 28 Feb 2022
20m	60	07:08 28 Feb 2022
30m	54	07:10 28 Feb 2022
1H	43	07:27 28 Feb 2022
2H	35	19:21 27 Feb 2022
3H	29.3	20:21 27 Feb 2022
6H	17.8	10:32 28 Feb 2022
12H	15.2	16:13 28 Feb 2022
24H	14.2	17:04 28 Feb 2022
48H	10.4	17:22 28 Feb 2022
72H	7.2	15:10 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

WILSONS RIVER AT NASHUA (58162)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

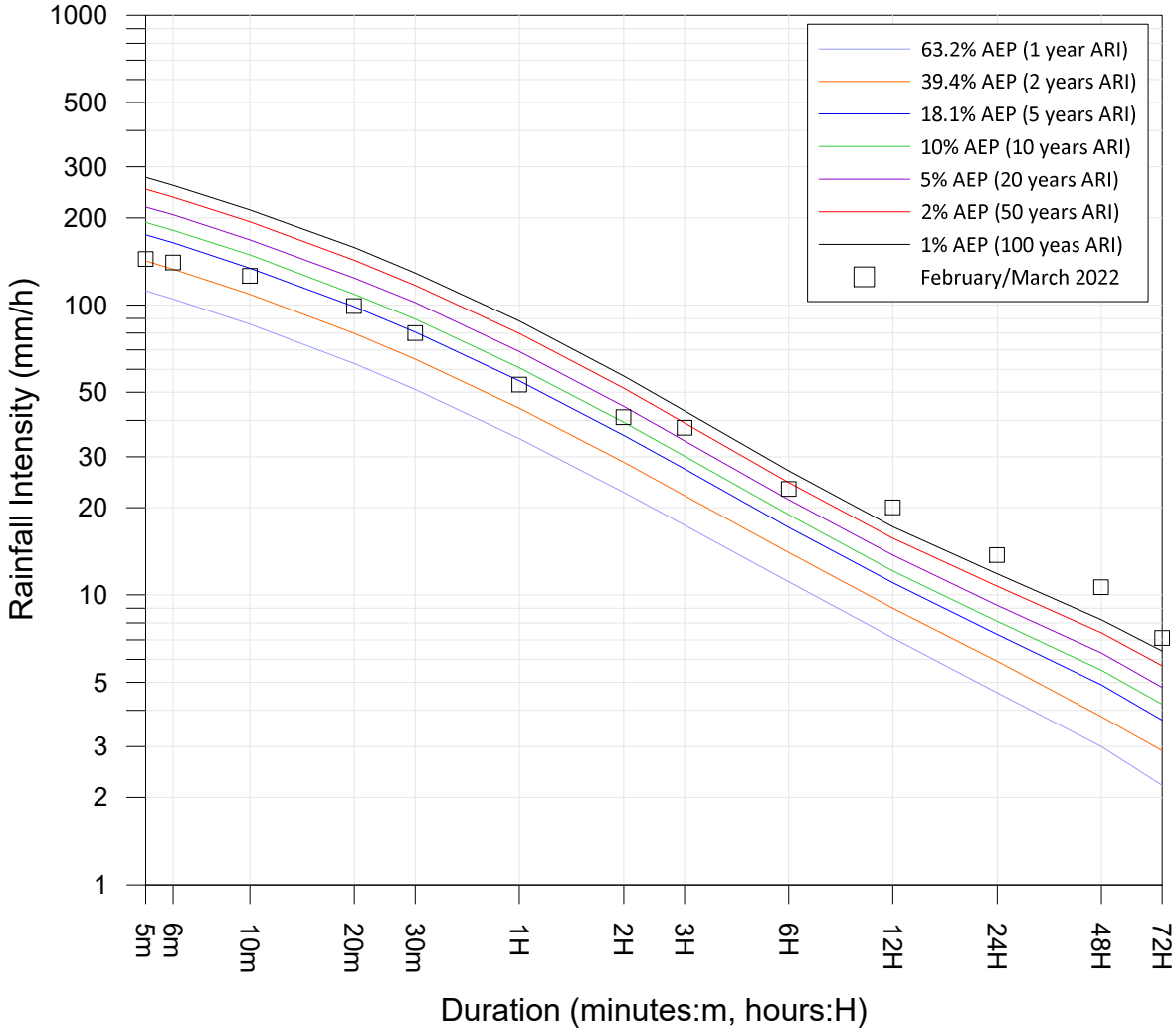
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.29

IFD_58162_Figure C.29.pdf

Site Owner: Lismore City Council
Latitude: -28.962 Longitude:153.307

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	144	15:44 06 Mar 2022
6m	140	21:52 07 Mar 2022
10m	126	15:44 06 Mar 2022
20m	99	15:44 06 Mar 2022
30m	80	15:47 06 Mar 2022
1H	53	18:54 23 Feb 2022
2H	41	23:10 27 Feb 2022
3H	37.7	23:33 27 Feb 2022
6H	23.2	23:54 27 Feb 2022
12H	20	00:19 28 Feb 2022
24H	13.7	10:02 28 Feb 2022
48H	10.6	22:16 28 Feb 2022
72H	7.1	05:45 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

WILSONS RIVER AT TUCKURIMBA (558076)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

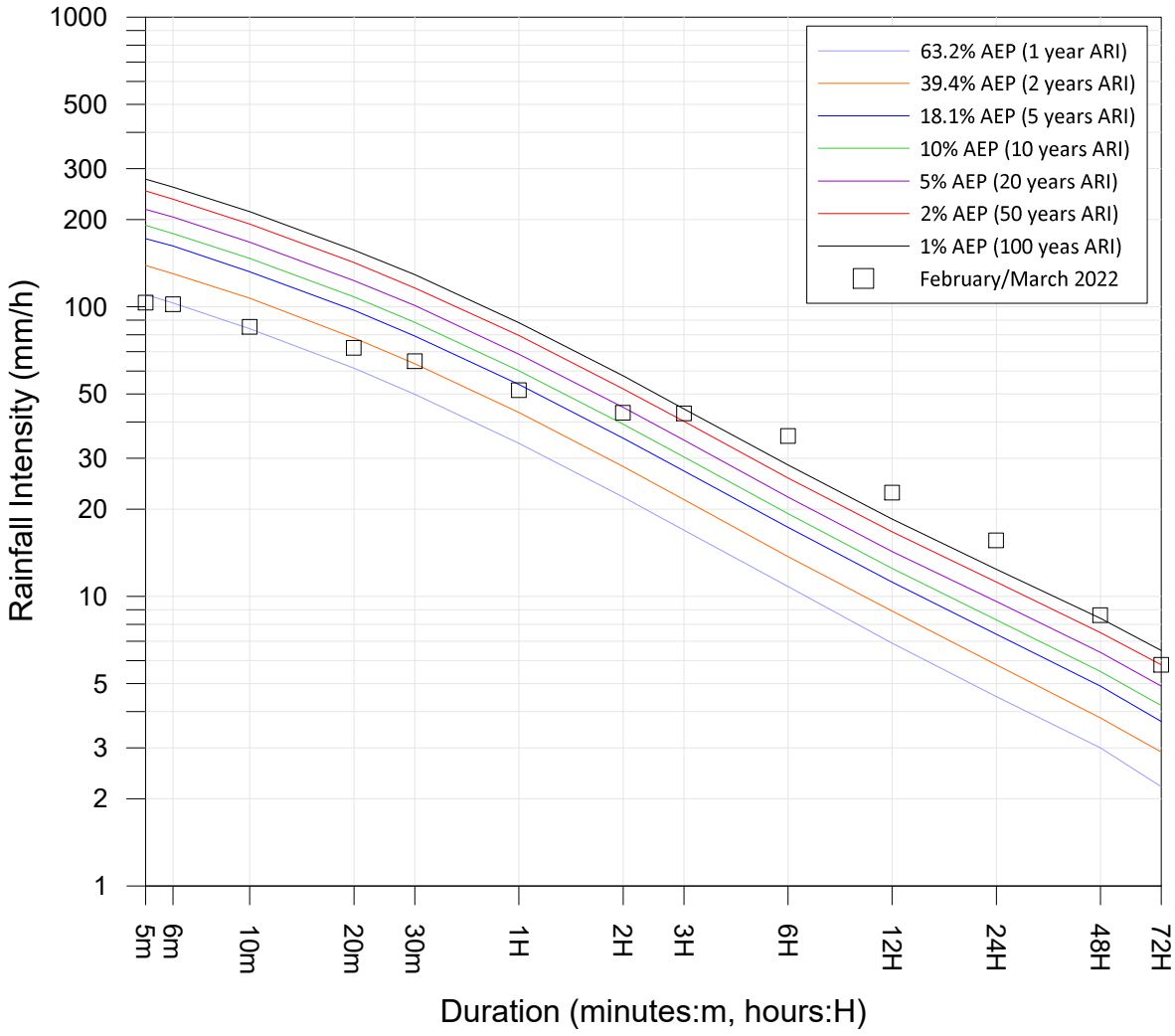
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.30

IFD_558076_Figure C.30.pdf

Site Owner: BoM
Latitude: -28.83 Longitude:153.26

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	103.2	23:50 27 Feb 2022
6m	102	23:51 27 Feb 2022
10m	85.2	23:54 27 Feb 2022
20m	72	00:05 28 Feb 2022
30m	64.8	00:14 28 Feb 2022
1H	51.4	00:43 28 Feb 2022
2H	43	23:14 27 Feb 2022
3H	42.8	00:20 28 Feb 2022
6H	35.7	01:25 28 Feb 2022
12H	22.8	01:31 28 Feb 2022
24H	15.6	01:30 28 Feb 2022
48H	8.6	02:23 28 Feb 2022
72H	5.8	06:23 28 Feb 2022

Rainfall station failed at 02:40 28 February 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LISMORE AIRPORT AWS (58214)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

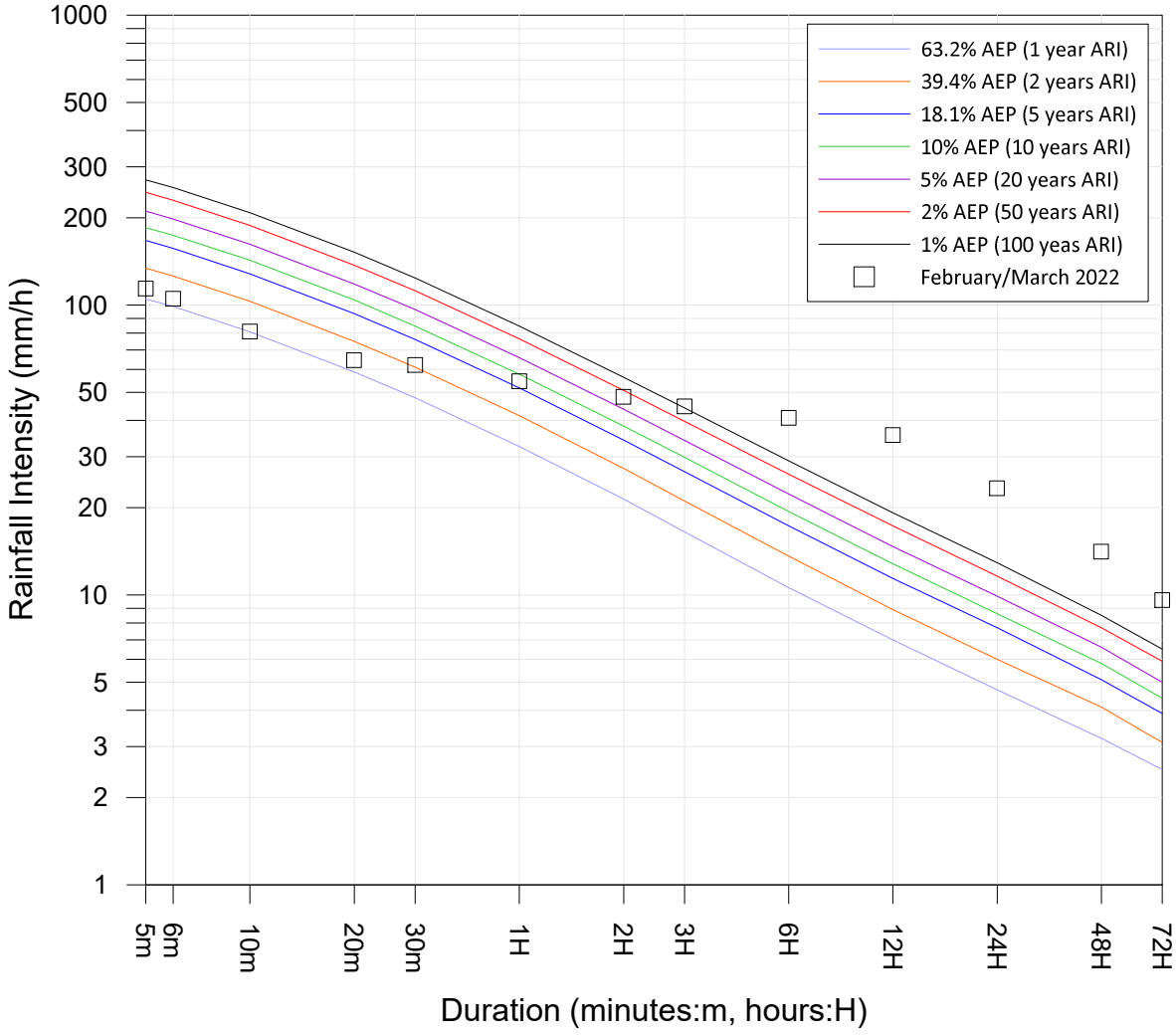
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.31

IFD_58214_Figure C.31.pdf

Site Owner: WaterNSW
Latitude: -28.7365 Longitude:153.164

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	114	17:41 02 Mar 2022
6m	105	17:41 02 Mar 2022
10m	81	04:53 28 Feb 2022
20m	64.5	08:28 28 Feb 2022
30m	62	08:28 28 Feb 2022
1H	54.5	08:38 28 Feb 2022
2H	48.2	02:56 28 Feb 2022
3H	44.7	03:43 28 Feb 2022
6H	40.8	03:26 28 Feb 2022
12H	35.6	09:17 28 Feb 2022
24H	23.3	14:12 28 Feb 2022
48H	14.1	18:20 28 Feb 2022
72H	9.6	14:56 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LEYCESTER ROCK VALLEY (203010)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

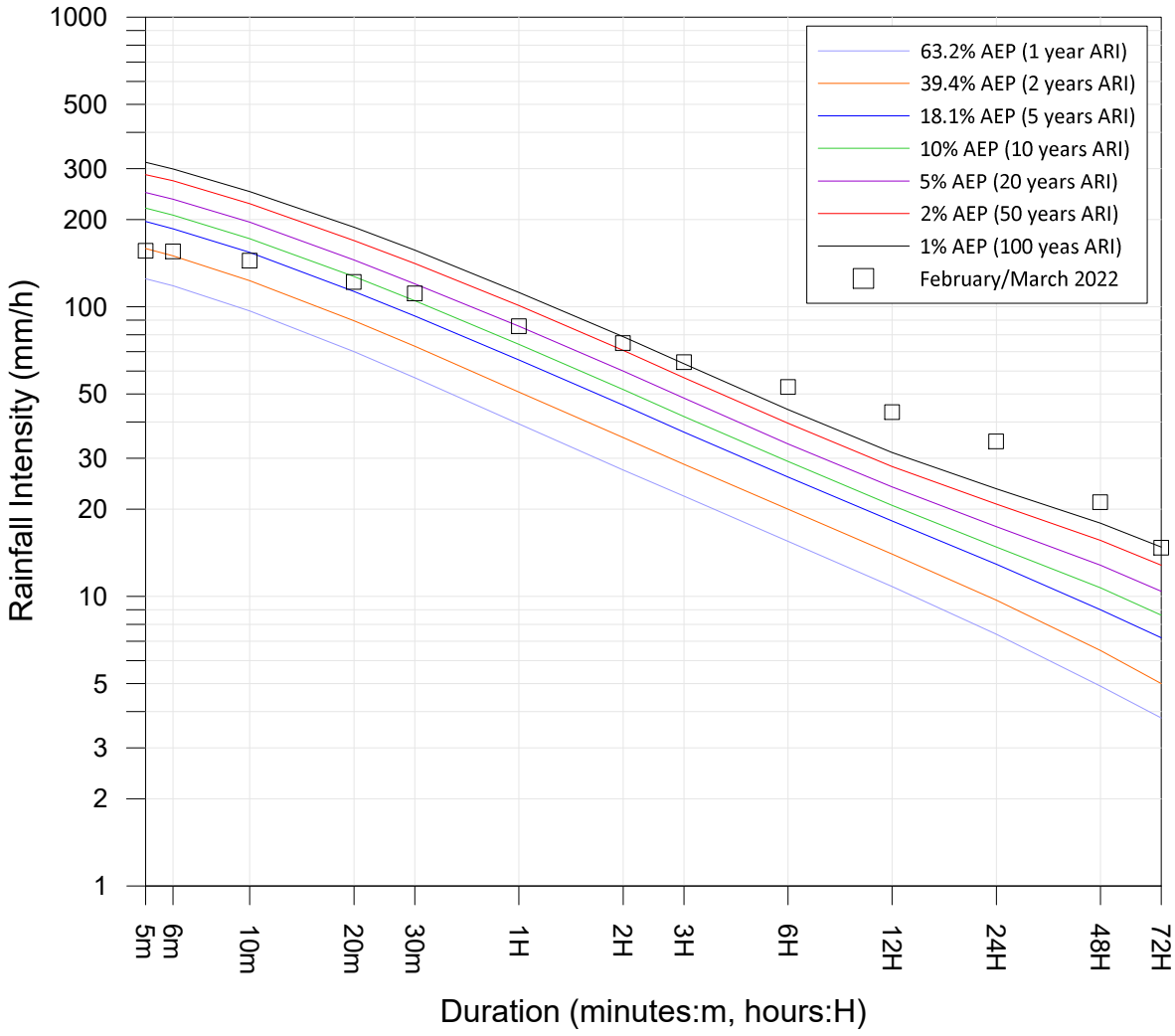
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.32

IFD_203010_Figure C.32.pdf

Site Owner: DPE BCD
Latitude: -28.5521 Longitude:153.3856

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	156	01:52 28 Feb 2022
6m	155	01:52 28 Feb 2022
10m	144	01:56 28 Feb 2022
20m	121.5	02:01 28 Feb 2022
30m	111	02:03 28 Feb 2022
1H	85.5	02:28 28 Feb 2022
2H	74.8	03:37 28 Feb 2022
3H	64.3	02:59 28 Feb 2022
6H	52.8	07:33 28 Feb 2022
12H	43.2	11:53 28 Feb 2022
24H	34.2	16:18 28 Feb 2022
48H	21.1	16:38 28 Feb 2022
72H	14.7	23:06 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

HUONBROOK (558049)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

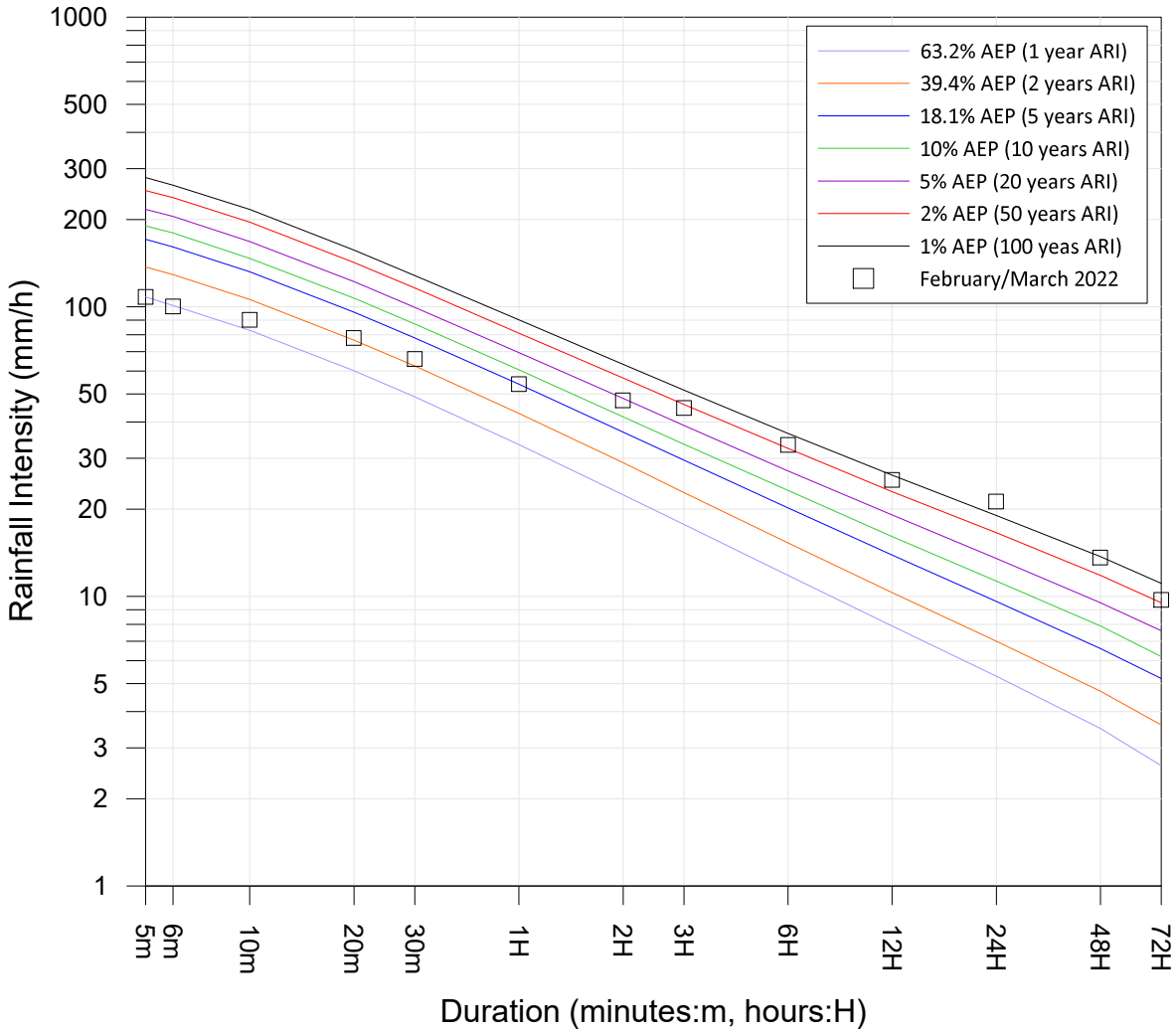
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.33

IFD_558049_Figure C.33.pdf

Site Owner: BoM
Latitude: -28.528 Longitude:153.152

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	108	11:33 28 Feb 2022
6m	100	11:34 28 Feb 2022
10m	90	09:36 28 Feb 2022
20m	78	09:36 28 Feb 2022
30m	66	09:37 28 Feb 2022
1H	54	09:42 28 Feb 2022
2H	47.5	10:34 28 Feb 2022
3H	44.7	11:34 28 Feb 2022
6H	33.3	14:34 28 Feb 2022
12H	25.2	14:04 28 Feb 2022
24H	21.2	14:45 28 Feb 2022
48H	13.6	15:45 28 Feb 2022
72H	9.7	04:50 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LILLIAN ROCK (WILLIAMS RD) (58148)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

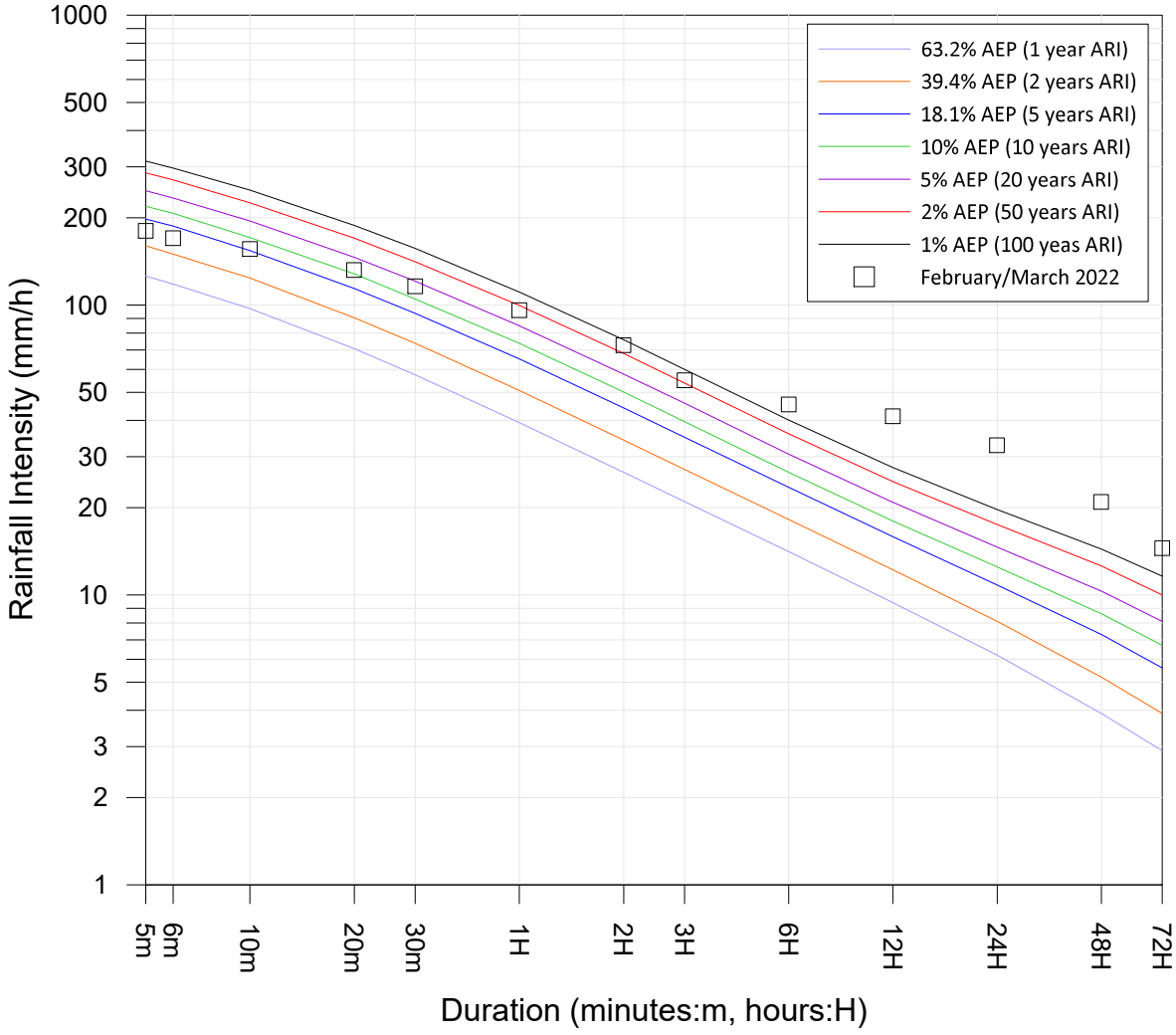
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.34

IFD_58148_Figure C.34.pdf

Site Owner: Byron Shire Council
Latitude: -28.594 Longitude:153.417

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	180	08:36 28 Feb 2022
6m	170	08:36 28 Feb 2022
10m	156	08:38 28 Feb 2022
20m	132	08:45 28 Feb 2022
30m	116	08:53 28 Feb 2022
1H	96	08:51 28 Feb 2022
2H	72.5	08:57 28 Feb 2022
3H	55	09:19 28 Feb 2022
6H	45.3	08:55 28 Feb 2022
12H	41.3	09:11 28 Feb 2022
24H	32.8	17:05 28 Feb 2022
48H	20.9	17:58 28 Feb 2022
72H	14.5	22:54 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

GOONENGERRY (ALERT) (558033)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

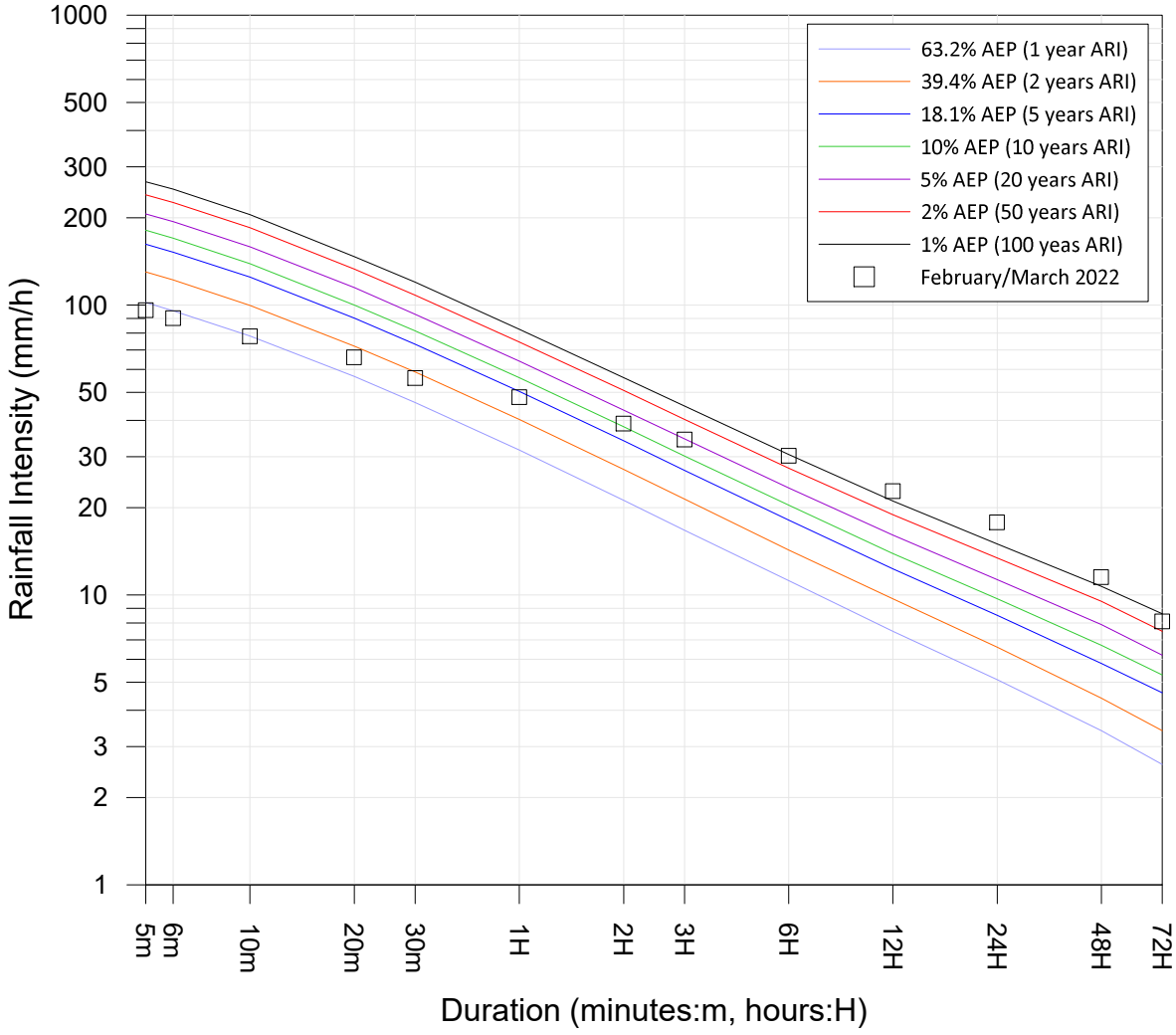
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.35

IFD_558033_Figure C.35.pdf

Site Owner: Lismore City Council
Latitude: -28.605 Longitude:153.091

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	96	10:48 28 Feb 2022
6m	90	10:49 28 Feb 2022
10m	78	10:53 28 Feb 2022
20m	66	10:57 28 Feb 2022
30m	56	11:07 28 Feb 2022
1H	48	11:37 28 Feb 2022
2H	39	12:02 28 Feb 2022
3H	34.3	12:52 28 Feb 2022
6H	30.2	12:51 28 Feb 2022
12H	22.8	13:38 28 Feb 2022
24H	17.8	14:13 28 Feb 2022
48H	11.5	16:44 28 Feb 2022
72H	8.1	03:35 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CAWONGLA (ALERT) (558024)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

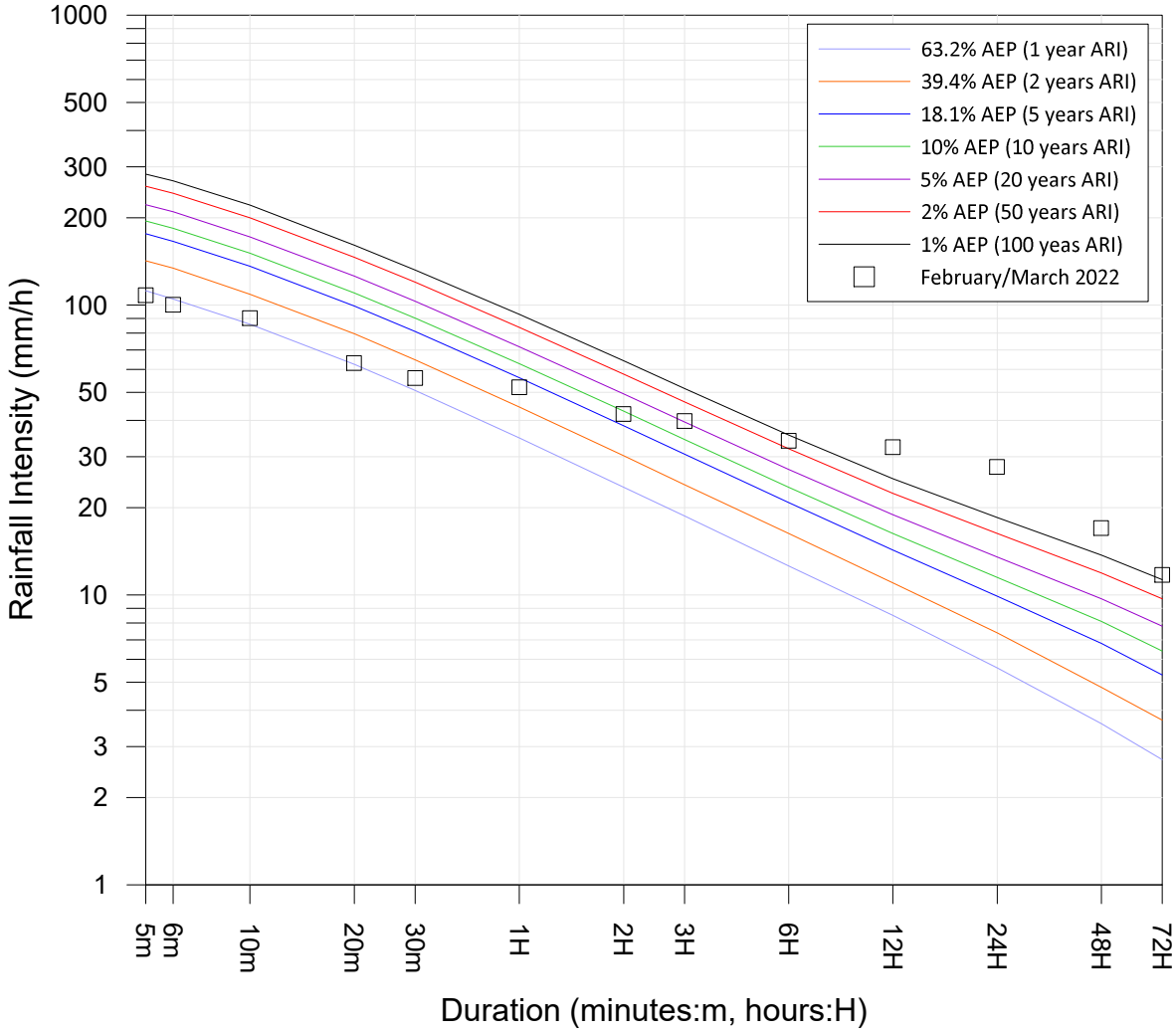
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.36

IFD_558024_Figure C.36.pdf

Site Owner: Lismore City Council
Latitude: -28.608 Longitude:153.213

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	108	01:46 24 Feb 2022
6m	100	01:47 24 Feb 2022
10m	90	01:51 24 Feb 2022
20m	63	03:26 28 Feb 2022
30m	56	11:12 28 Feb 2022
1H	52	03:57 28 Feb 2022
2H	42	03:59 28 Feb 2022
3H	39.7	13:27 28 Feb 2022
6H	34	13:24 28 Feb 2022
12H	32.3	13:24 28 Feb 2022
24H	27.6	15:10 28 Feb 2022
48H	17	16:33 28 Feb 2022
72H	11.7	07:06 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

NIMBIN (GOOLMANGAR CREEK) (58180)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

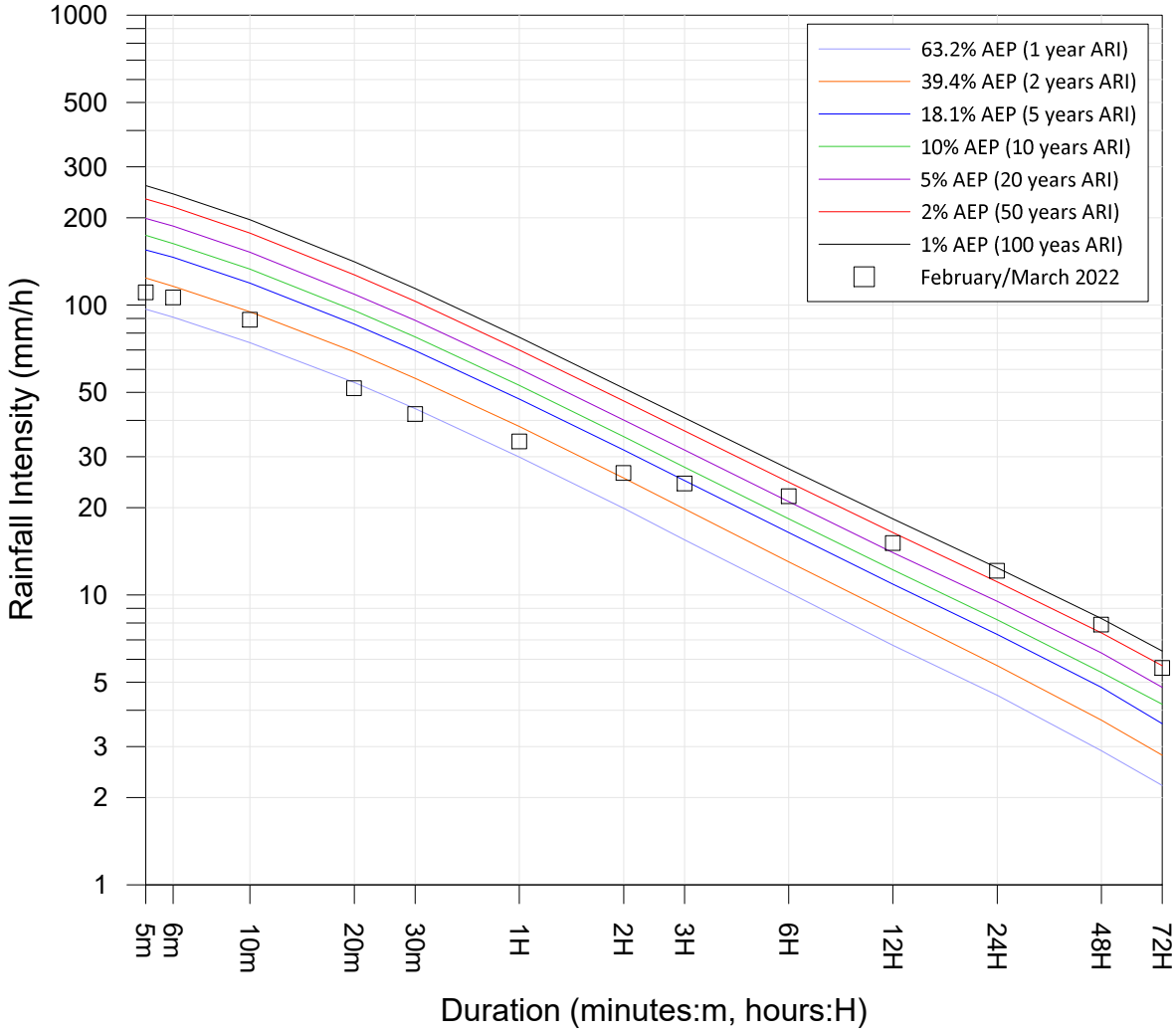
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.37

IFD_58180_Figure C.37.pdf

Site Owner: WaterNSW
Latitude: -28.621 Longitude:152.9948

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	110.4	19:45 09 Mar 2022
6m	106	19:45 09 Mar 2022
10m	88.8	19:48 09 Mar 2022
20m	51.6	19:58 09 Mar 2022
30m	42	07:47 28 Feb 2022
1H	33.8	07:47 28 Feb 2022
2H	26.3	08:24 28 Feb 2022
3H	24.2	10:24 28 Feb 2022
6H	21.9	11:57 28 Feb 2022
12H	15.1	13:01 28 Feb 2022
24H	12.1	13:36 28 Feb 2022
48H	7.9	15:59 28 Feb 2022
72H	5.6	06:43 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

RICHMOND RIVER AT KYOGLE (203900)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

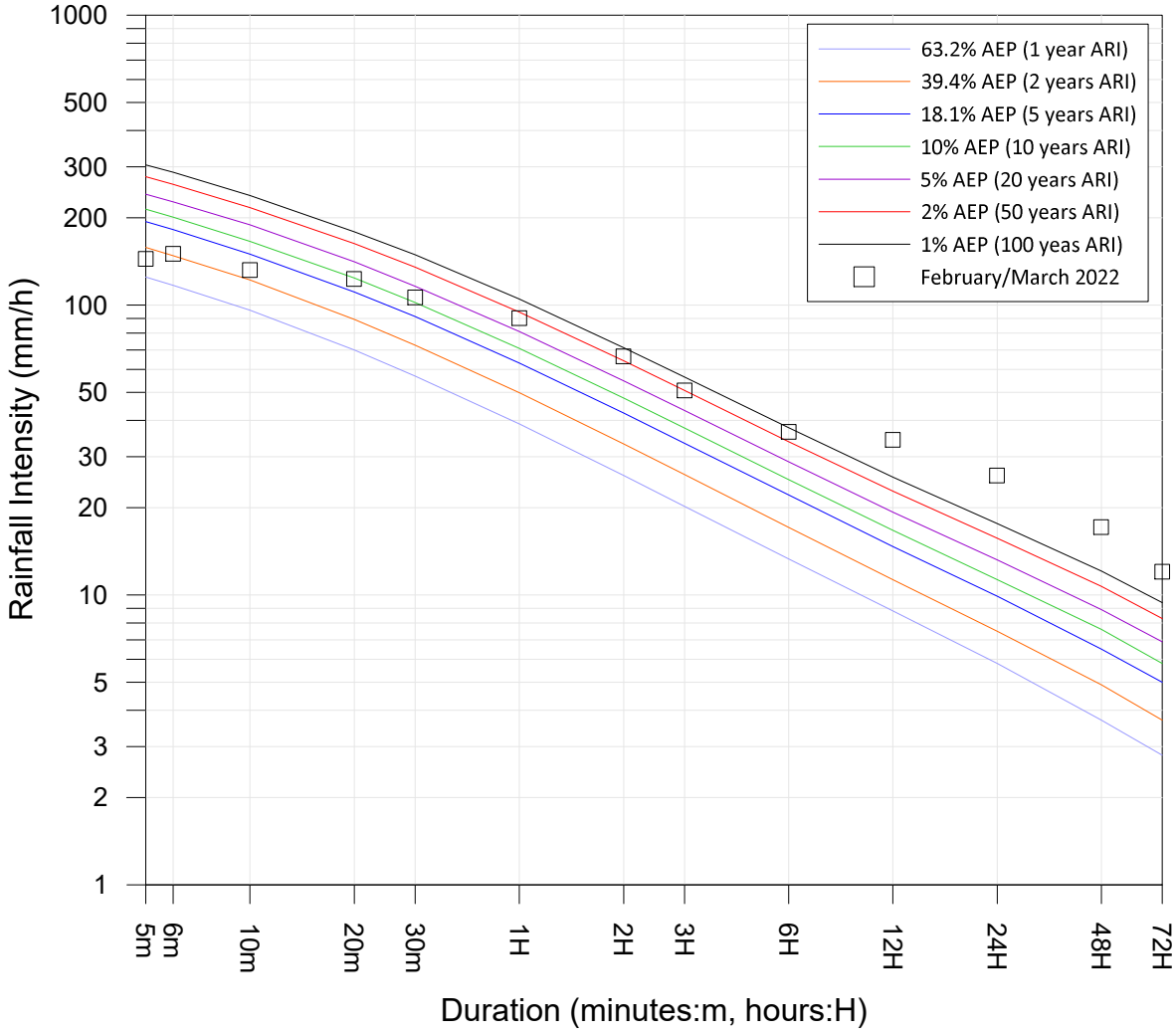
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.38

IFD_203900_Figure C.38.pdf

Site Owner: Lismore City Council
Latitude: -28.643 Longitude:153.417

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	144	08:50 28 Feb 2022
6m	150	09:04 28 Feb 2022
10m	132	09:04 28 Feb 2022
20m	123	09:05 28 Feb 2022
30m	106	09:12 28 Feb 2022
1H	90	09:10 28 Feb 2022
2H	66.5	09:22 28 Feb 2022
3H	50.7	09:51 28 Feb 2022
6H	36.5	09:12 28 Feb 2022
12H	34.2	09:12 28 Feb 2022
24H	25.8	17:16 28 Feb 2022
48H	17.1	17:41 28 Feb 2022
72H	12	06:40 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

REPENTENCE (COOPERS CK) (558000)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

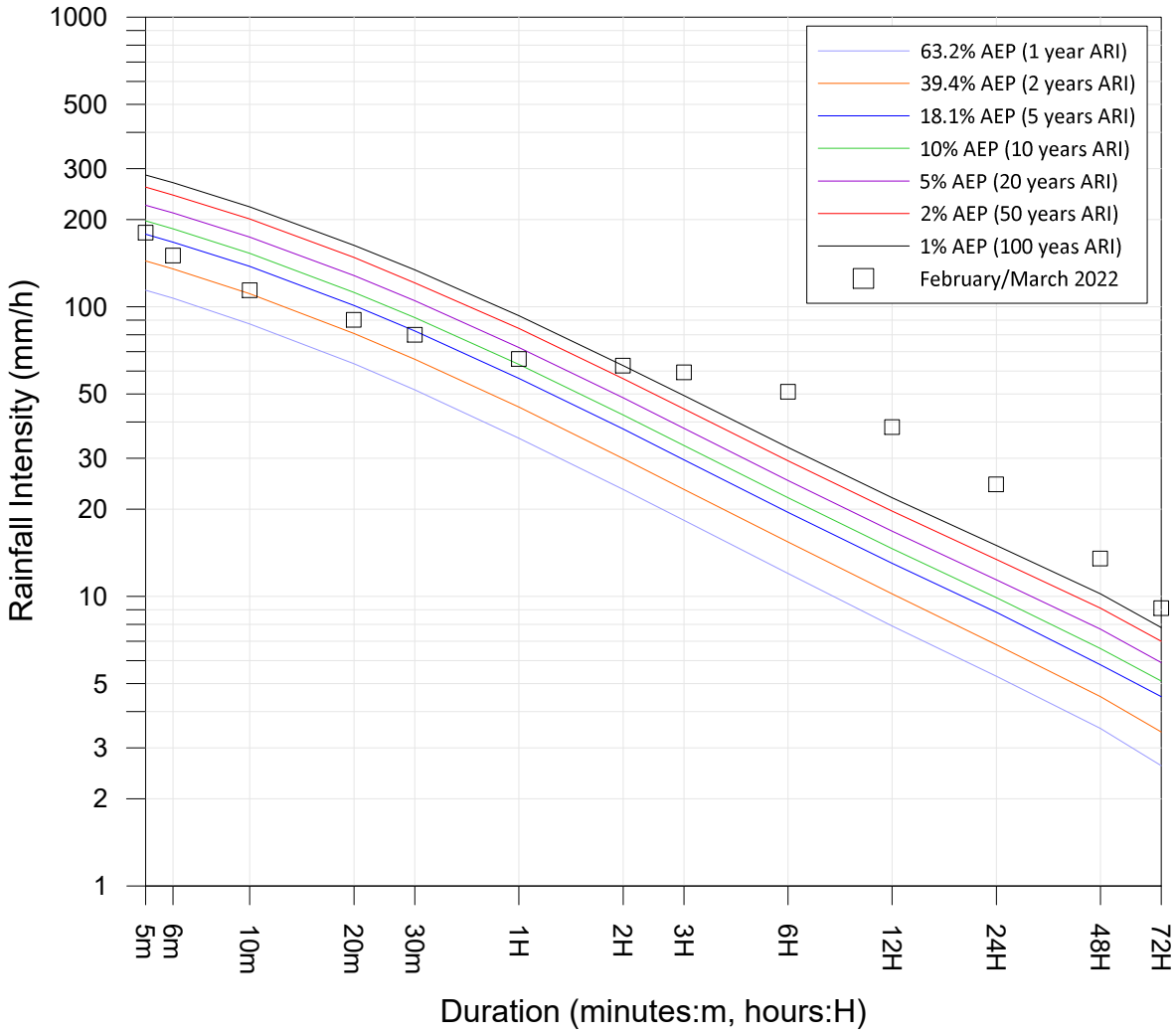
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.39

IFD_558000_Figure C.39.pdf

Site Owner: Lismore City Council
Latitude: -28.672 Longitude:153.278

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	180	04:23 28 Feb 2022
6m	150	04:24 28 Feb 2022
10m	114	04:23 28 Feb 2022
20m	90	02:34 28 Feb 2022
30m	80	02:44 28 Feb 2022
1H	66	03:14 28 Feb 2022
2H	62.5	03:15 28 Feb 2022
3H	59.3	04:23 28 Feb 2022
6H	50.8	04:23 28 Feb 2022
12H	38.4	04:25 28 Feb 2022
24H	24.3	04:29 28 Feb 2022
48H	13.5	08:10 28 Feb 2022
72H	9.1	06:52 28 Feb 2022

Rainfall station failed at 04:24 28 February 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

THE CHANNON (58147)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

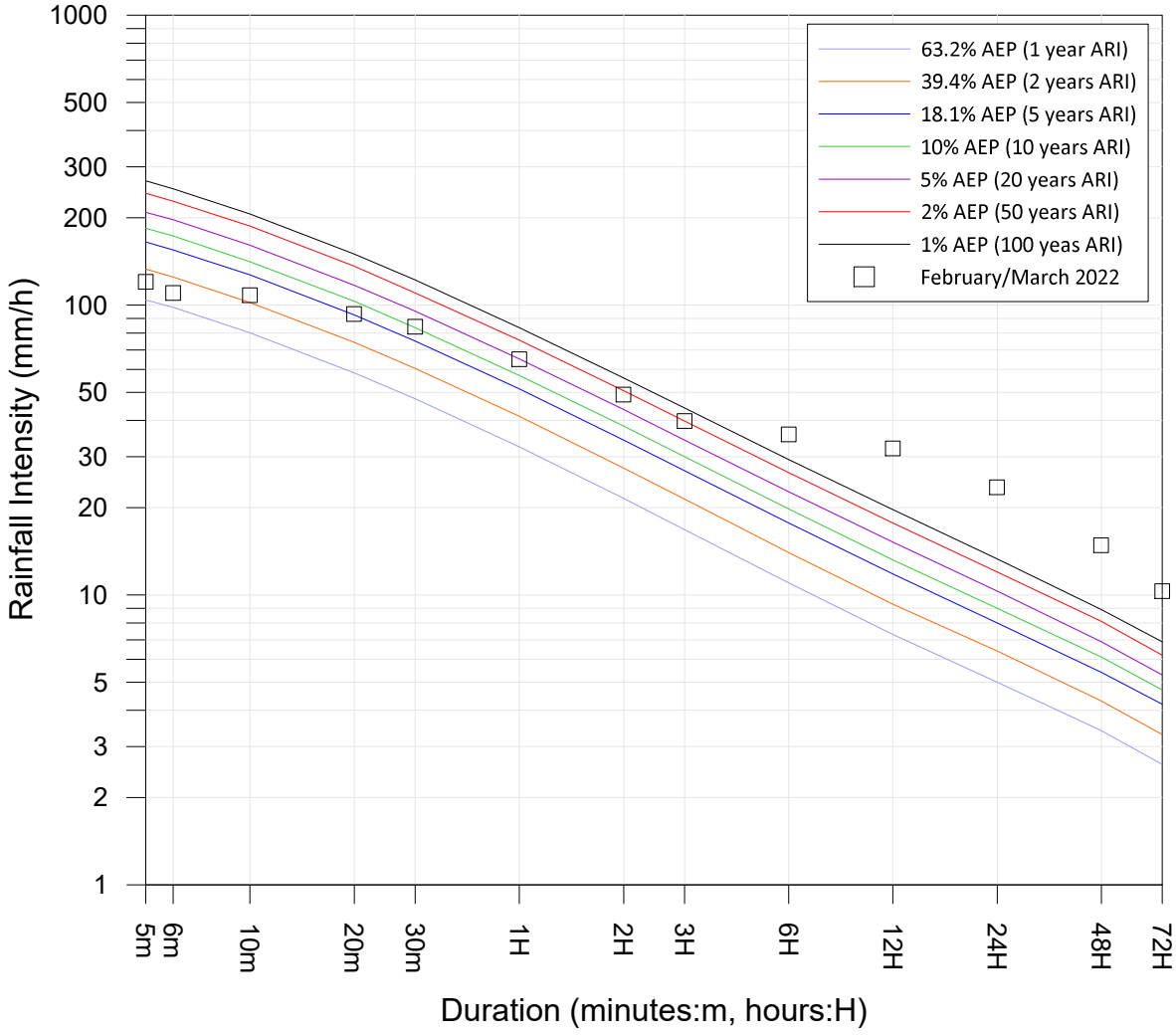
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.40

IFD_58147_Figure C.40.pdf

Site Owner: Lismore City Council
Latitude: -28.676 Longitude:153.154

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	120	09:02 28 Feb 2022
6m	110	09:03 28 Feb 2022
10m	108	09:07 28 Feb 2022
20m	93	09:10 28 Feb 2022
30m	84	09:11 28 Feb 2022
1H	65	09:13 28 Feb 2022
2H	49	00:40 28 Feb 2022
3H	39.7	09:14 28 Feb 2022
6H	35.7	04:29 28 Feb 2022
12H	32	10:40 28 Feb 2022
24H	23.5	15:43 28 Feb 2022
48H	14.8	19:07 28 Feb 2022
72H	10.3	05:27 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

JIGGI (GWYNNE ST) (558086)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

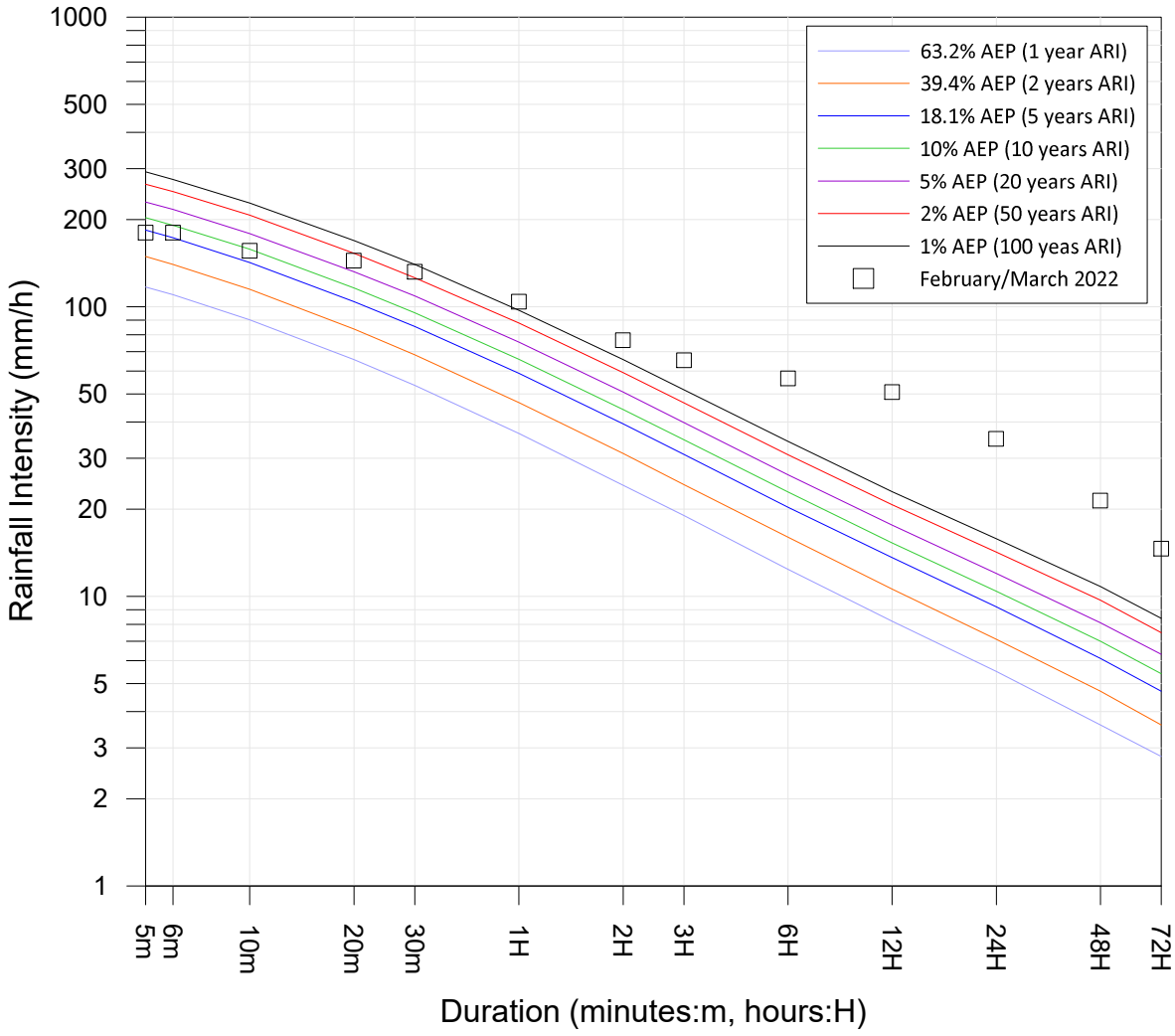
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.41

IFD_558086_Figure C.41.pdf

Site Owner: BoM
Latitude: -28.677 Longitude:153.322

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	180	09:09 28 Feb 2022
6m	180	09:09 28 Feb 2022
10m	156	09:10 28 Feb 2022
20m	144	09:10 28 Feb 2022
30m	132	09:14 28 Feb 2022
1H	104	09:24 28 Feb 2022
2H	76.5	09:27 28 Feb 2022
3H	65.3	03:00 28 Feb 2022
6H	56.5	05:19 28 Feb 2022
12H	50.7	09:23 28 Feb 2022
24H	34.9	17:32 28 Feb 2022
48H	21.4	18:29 28 Feb 2022
72H	14.6	07:27 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

DUNOON (558031)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

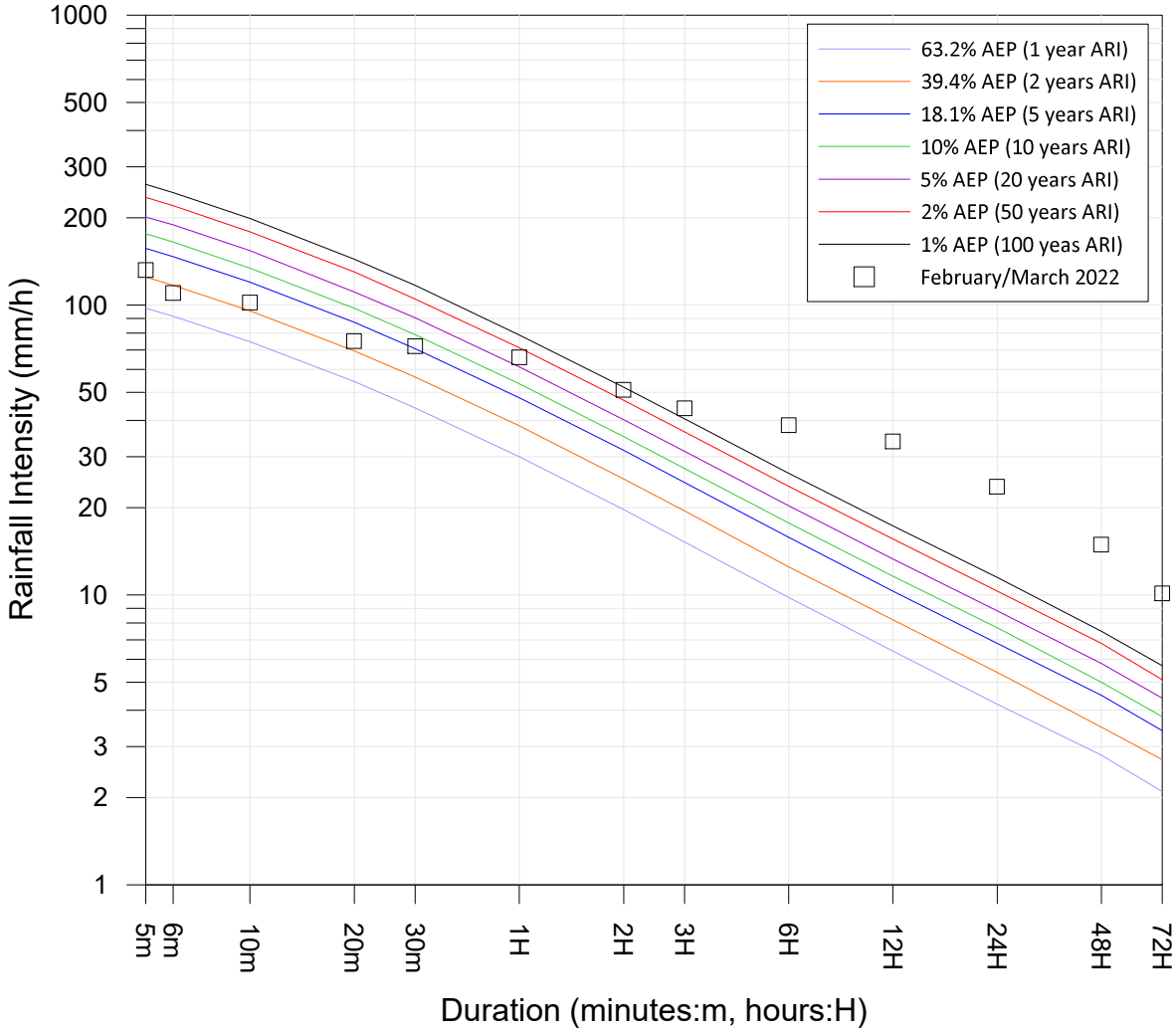
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.42

IFD_558031_Figure C.42.pdf

Site Owner: Lismore City Council
Latitude: -28.7406 Longitude:153.075

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	132	18:33 02 Mar 2022
6m	110	18:34 02 Mar 2022
10m	102	04:31 28 Feb 2022
20m	75	09:45 28 Feb 2022
30m	72	09:16 28 Feb 2022
1H	66	09:43 28 Feb 2022
2H	51	09:43 28 Feb 2022
3H	44	11:38 28 Feb 2022
6H	38.5	04:39 28 Feb 2022
12H	33.8	10:46 28 Feb 2022
24H	23.6	16:02 28 Feb 2022
48H	14.9	16:56 28 Feb 2022
72H	10.1	00:47 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BENTLEY (BACK CREEK) (58202)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

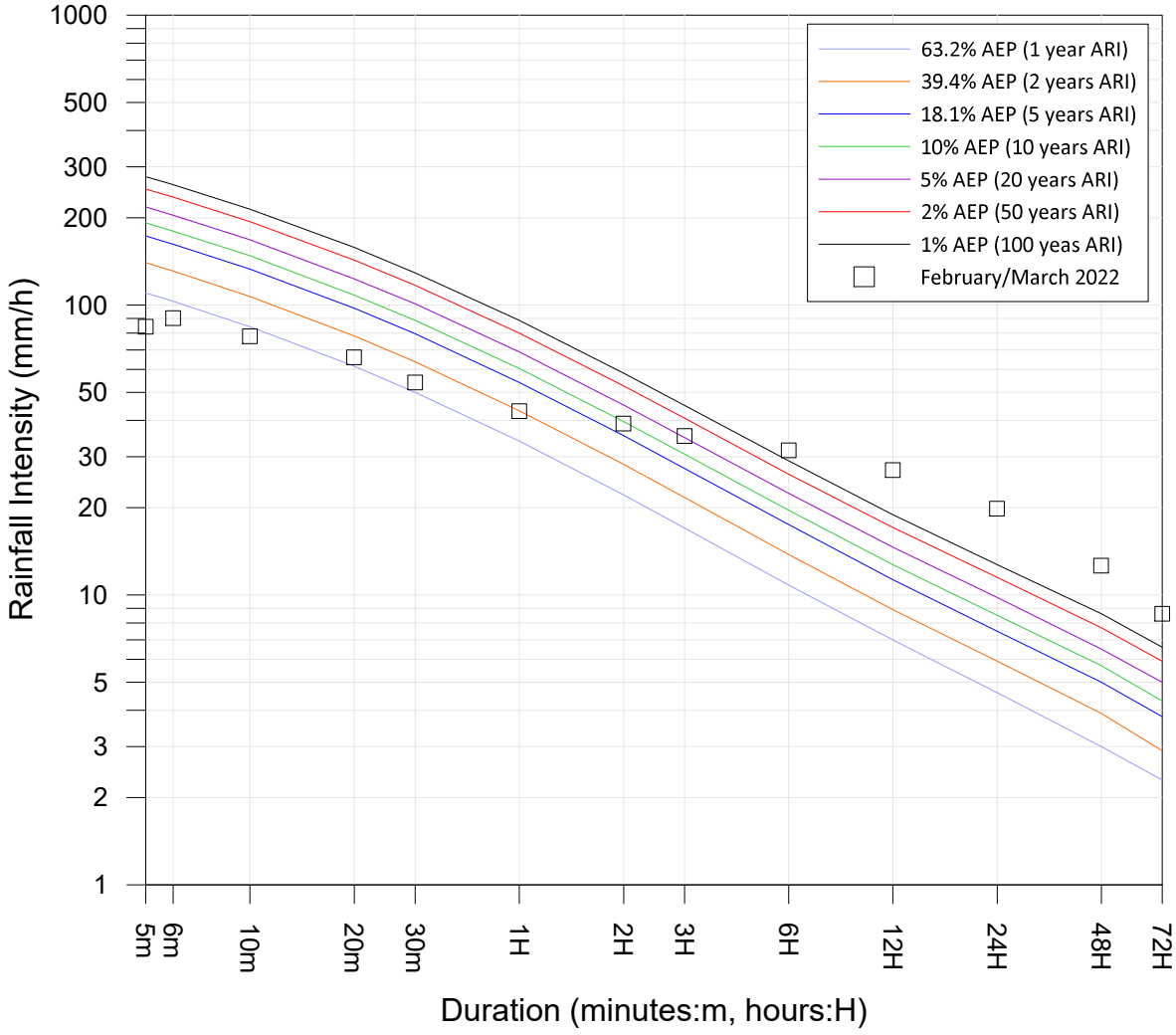
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.43

IFD_58202_Figure C.43.pdf

Site Owner: Lismore City Council
Latitude: -28.7967 Longitude:153.2386

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	84	05:22 28 Feb 2022
6m	90	00:24 24 Feb 2022
10m	78	00:28 24 Feb 2022
20m	66	00:30 24 Feb 2022
30m	54	22:06 27 Feb 2022
1H	43	22:39 27 Feb 2022
2H	39	23:38 27 Feb 2022
3H	35.3	00:40 28 Feb 2022
6H	31.5	03:40 28 Feb 2022
12H	26.9	09:41 28 Feb 2022
24H	19.8	15:11 28 Feb 2022
48H	12.6	18:41 28 Feb 2022
72H	8.6	16:17 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

TUNCESTER (58201)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

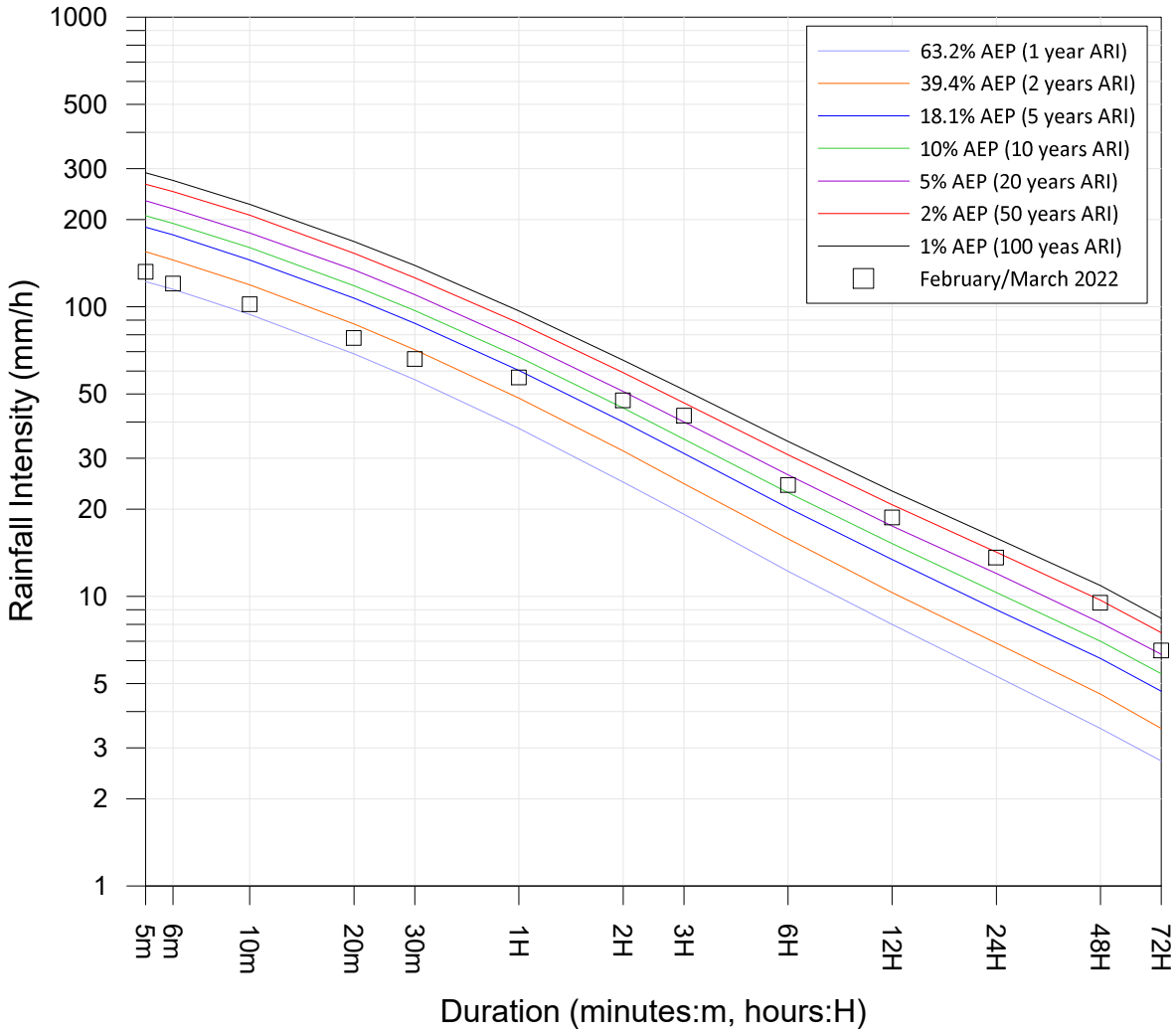
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.44

IFD_58201_Figure C.44.pdf

Site Owner: Ballina Shire Council
Latitude: -28.785 Longitude:153.474

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	132	20:16 27 Feb 2022
6m	120	02:34 24 Feb 2022
10m	102	02:36 24 Feb 2022
20m	78	02:43 24 Feb 2022
30m	66	18:50 27 Feb 2022
1H	57	19:00 27 Feb 2022
2H	47.5	19:44 27 Feb 2022
3H	42	20:32 27 Feb 2022
6H	24.2	23:29 27 Feb 2022
12H	18.7	21:02 27 Feb 2022
24H	13.6	11:08 28 Feb 2022
48H	9.5	19:41 28 Feb 2022
72H	6.5	13:31 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

HOUGHLAHANS CREEK (558069)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

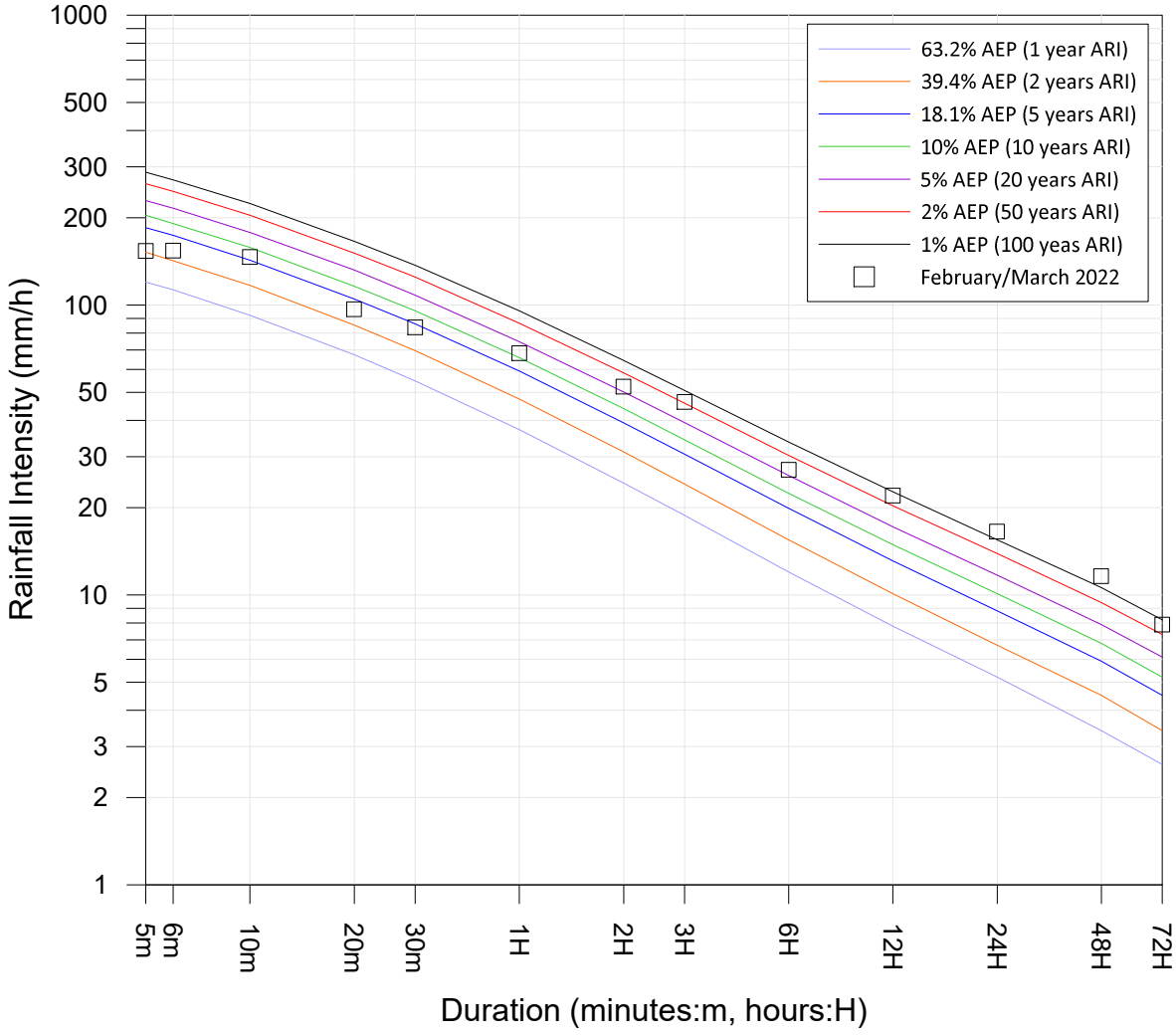
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.45

IFD_558069_Figure C.45.pdf

Site Owner: Ballina Shire Council
Latitude: -28.831 Longitude:153.444

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	153.6	15:46 06 Mar 2022
6m	154	15:46 06 Mar 2022
10m	146.4	15:47 06 Mar 2022
20m	96.6	15:55 06 Mar 2022
30m	83.6	20:02 27 Feb 2022
1H	68.2	20:11 27 Feb 2022
2H	52.2	21:05 27 Feb 2022
3H	46.3	21:01 27 Feb 2022
6H	27	22:59 27 Feb 2022
12H	22	21:17 27 Feb 2022
24H	16.5	11:33 28 Feb 2022
48H	11.6	20:26 28 Feb 2022
72H	7.9	15:15 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

ALSTONVILLE STP (558072)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

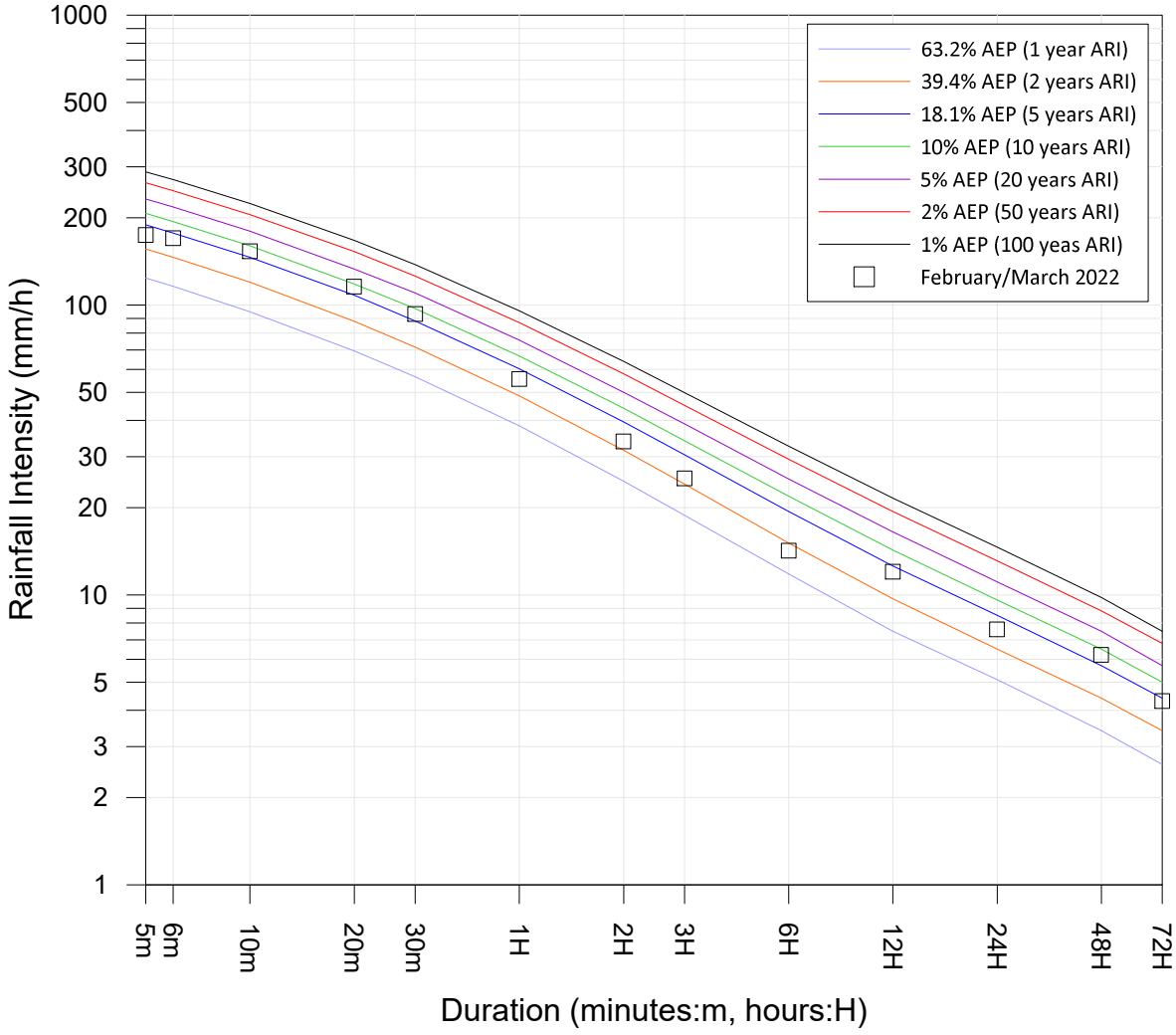
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.46

IFD_558072_Figure C.46.pdf

Site Owner: DPE BCD
Latitude: -28.7808 Longitude:153.5928

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	174	16:11 06 Mar 2022
6m	170	16:11 06 Mar 2022
10m	153	16:13 06 Mar 2022
20m	115.5	16:14 06 Mar 2022
30m	93	16:18 06 Mar 2022
1H	55.5	16:16 06 Mar 2022
2H	33.8	16:59 06 Mar 2022
3H	25.2	17:59 06 Mar 2022
6H	14.2	11:54 27 Feb 2022
12H	12	18:07 27 Feb 2022
24H	7.6	06:58 28 Feb 2022
48H	6.2	20:41 28 Feb 2022
72H	4.3	15:03 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LAKE AINSWORTH (203455)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

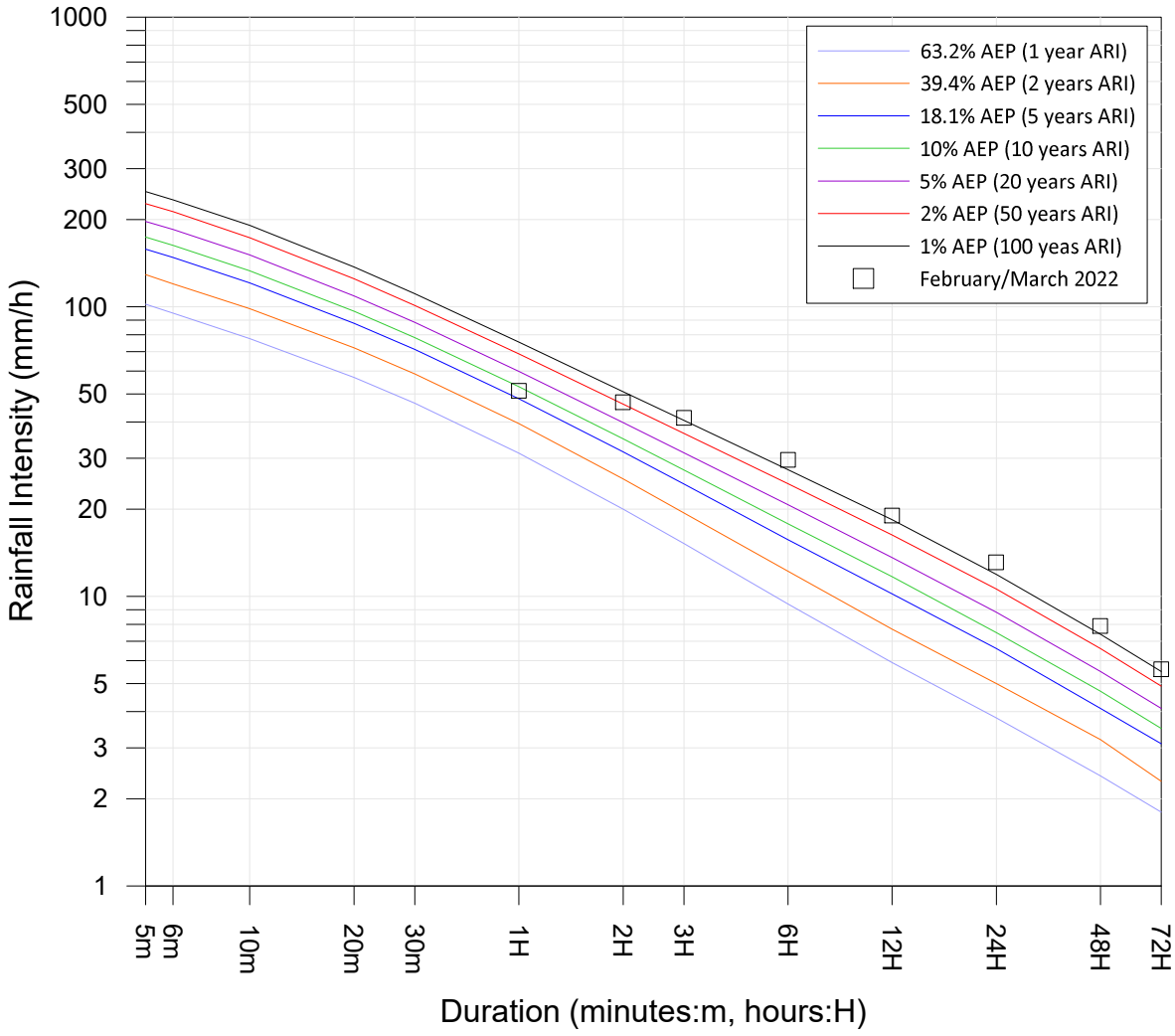
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.47

IFD_203455_Figure C.47.pdf

Site Owner: BoM
Latitude: -29.2825 Longitude:152.9892

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	51.2	05:02 28 Feb 2022
2H	46.7	05:13 28 Feb 2022
3H	41.3	05:12 28 Feb 2022
6H	29.6	06:23 28 Feb 2022
12H	19	11:52 28 Feb 2022
24H	13.1	11:50 28 Feb 2022
48H	7.9	18:01 28 Feb 2022
72H	5.6	22:15 28 Feb 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

WHIPORIE POST OFFICE (58099)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

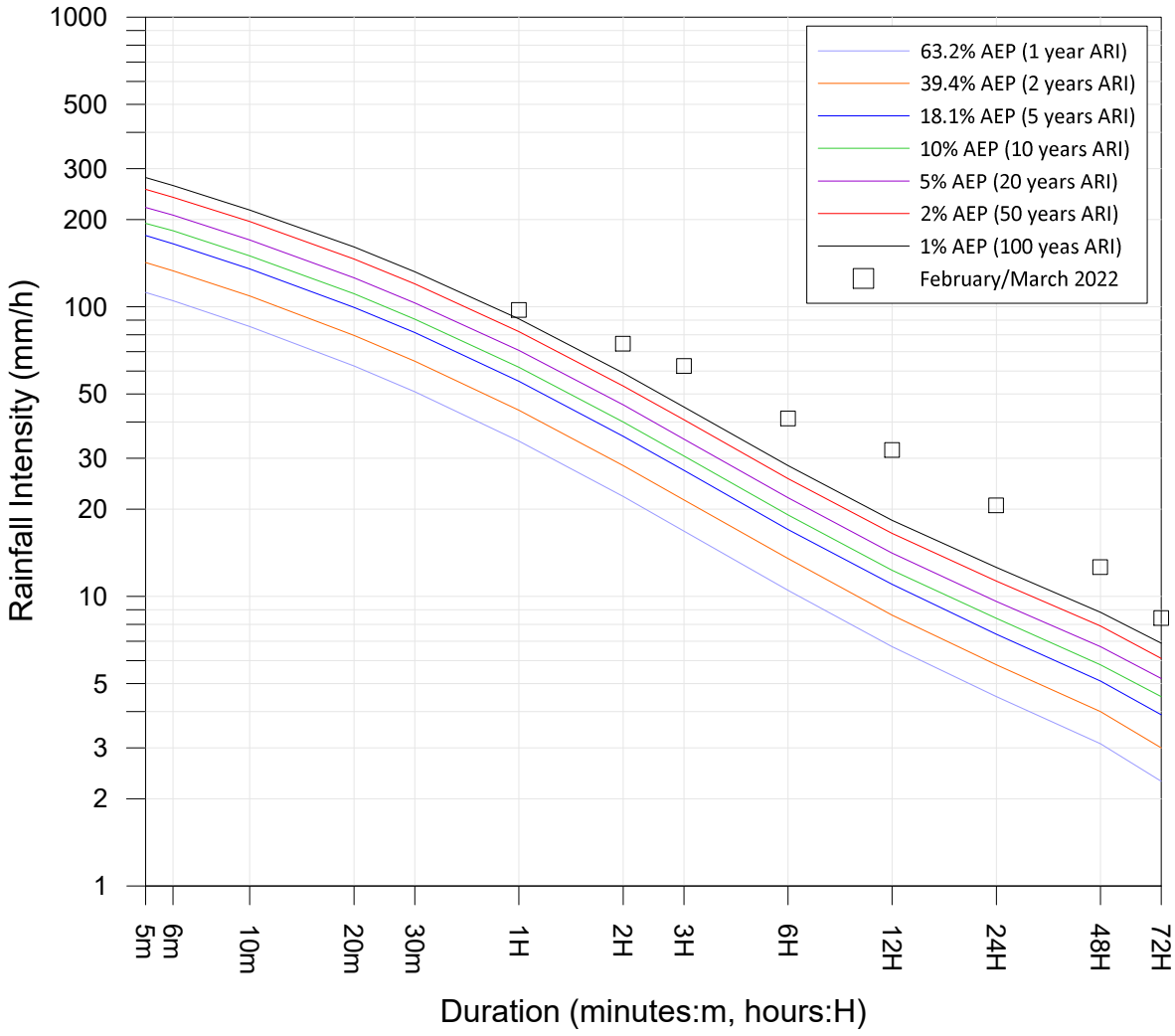
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.48

IFD_58099_Figure C.48.pdf

Site Owner: BoM
Latitude: -29.183 Longitude:153.3964

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	97.4	14:35 27 Feb 2022
2H	74.4	15:35 27 Feb 2022
3H	62.4	15:28 27 Feb 2022
6H	41.1	18:28 27 Feb 2022
12H	32	00:28 28 Feb 2022
24H	20.6	12:28 28 Feb 2022
48H	12.6	22:26 28 Feb 2022
72H	8.4	14:17 01 Mar 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

EVANS HEAD RAAF BOMBING RANGE AWS (58212)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

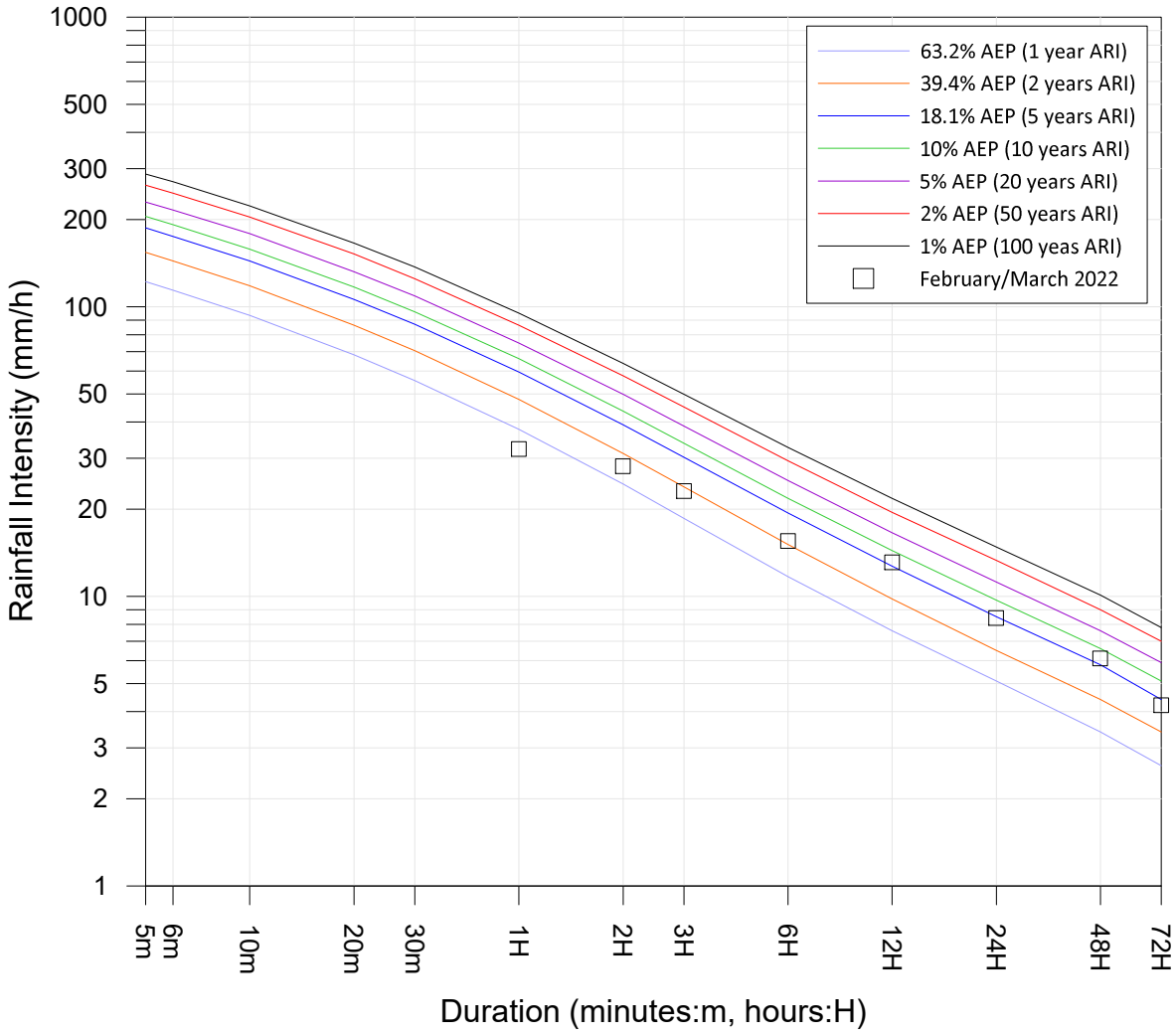
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.49

IFD_58212_Figure C.49.pdf

Site Owner: BoM
Latitude: -28.8353 Longitude:153.5585

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	32.2	18:59 27 Feb 2022
2H	28.1	19:59 27 Feb 2022
3H	23.1	19:59 27 Feb 2022
6H	15.5	12:59 27 Feb 2022
12H	13.1	19:59 27 Feb 2022
24H	8.4	06:59 28 Feb 2022
48H	6.1	18:59 28 Feb 2022
72H	4.2	13:59 01 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

BALLINA AIRPORT AWS (58198)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

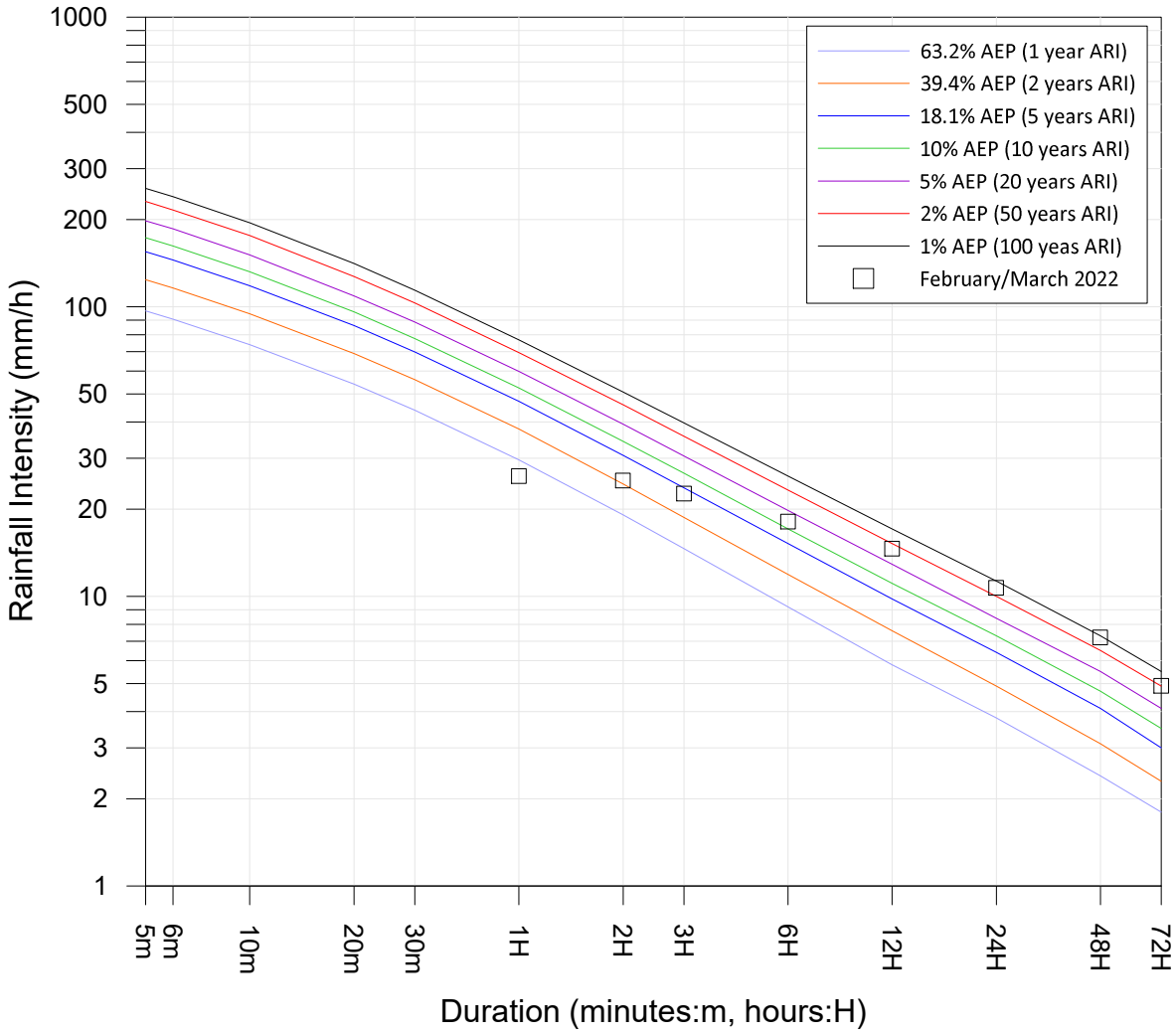
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.50

IFD_58198_Figure C.50.pdf

Site Owner: BoM
Latitude: -28.8824 Longitude:153.0618

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	26	01:59 28 Feb 2022
2H	25.1	01:59 28 Feb 2022
3H	22.6	02:59 28 Feb 2022
6H	18.1	03:59 28 Feb 2022
12H	14.6	09:59 28 Feb 2022
24H	10.7	14:59 28 Feb 2022
48H	7.2	19:59 28 Feb 2022
72H	4.9	15:59 01 Mar 2022

Rainfall data collected at hourly intervals only

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CASINO AIRPORT AWS (58208)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

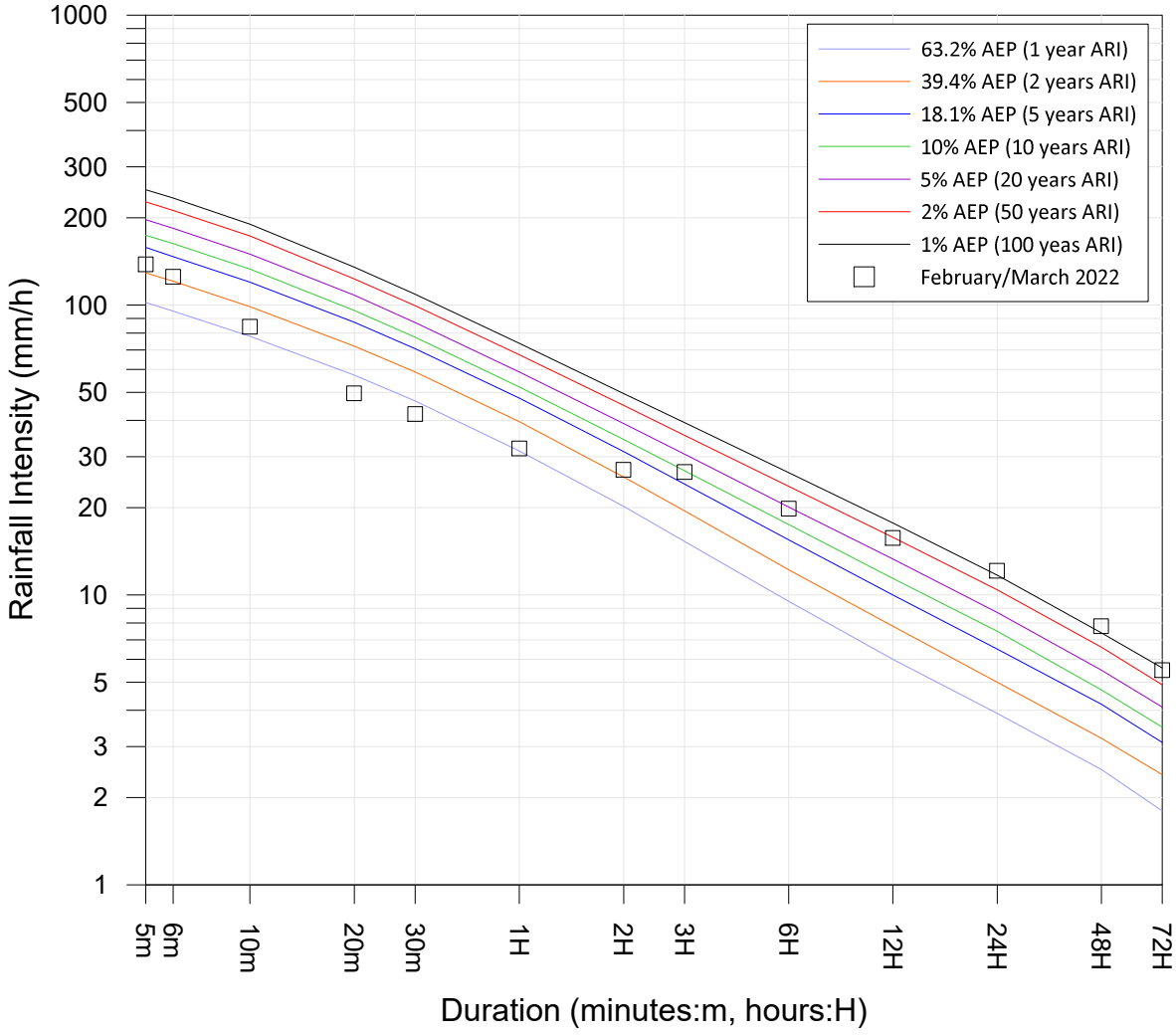
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.51

IFD_58208_Figure C.51.pdf

Site Owner: WaterNSW
Latitude: -28.7591 Longitude:152.9222

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	138	19:47 07 Mar 2022
6m	125	19:48 07 Mar 2022
10m	84	19:51 07 Mar 2022
20m	49.5	10:41 28 Feb 2022
30m	42	10:51 28 Feb 2022
1H	32	09:13 28 Feb 2022
2H	27	10:38 28 Feb 2022
3H	26.5	11:08 28 Feb 2022
6H	19.8	12:03 28 Feb 2022
12H	15.7	12:26 28 Feb 2022
24H	12.1	12:08 28 Feb 2022
48H	7.8	17:28 28 Feb 2022
72H	5.5	00:09 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

EDEN CK AT DOUBTFUL (558037)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

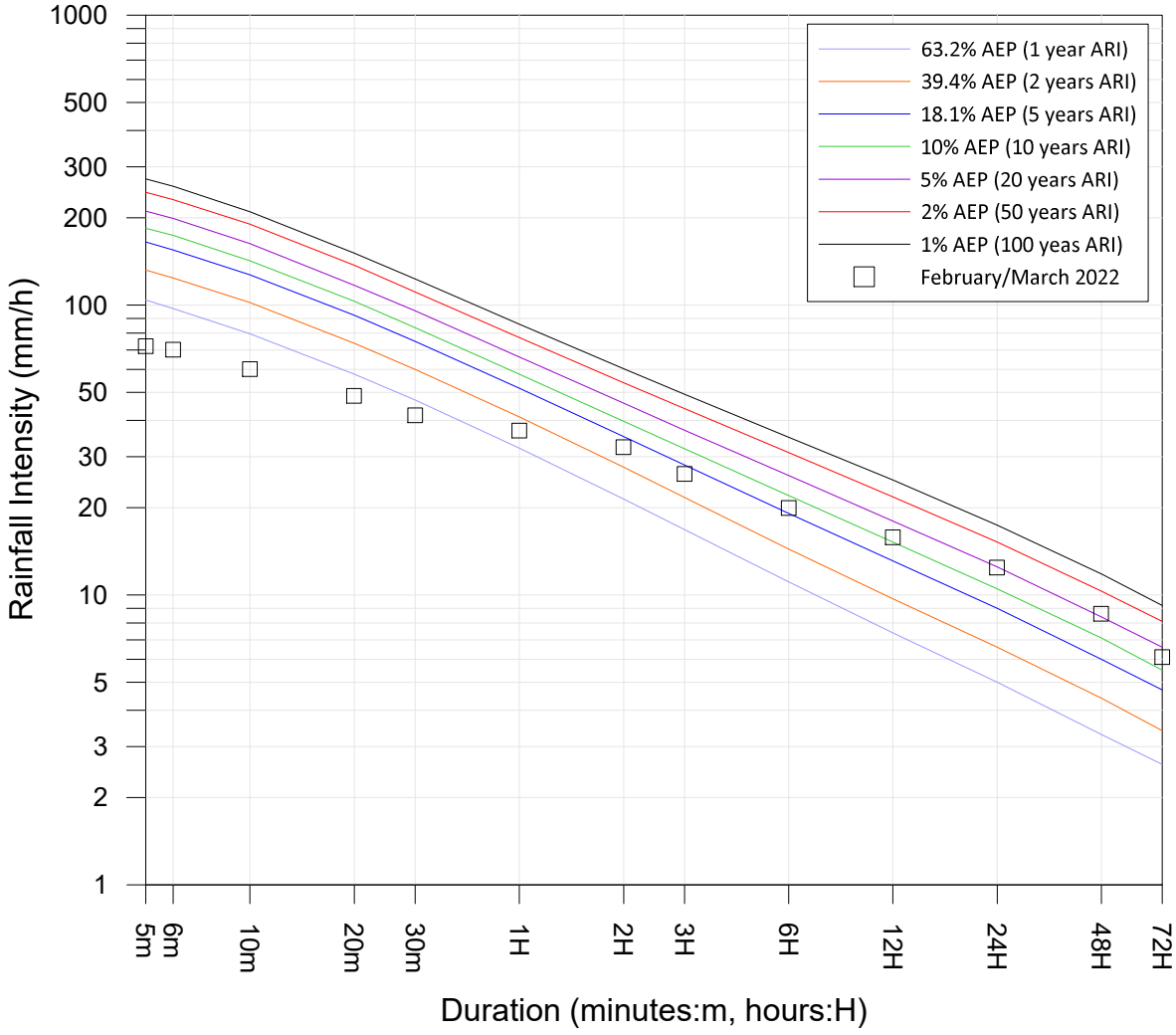
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.52

IFD_558037_Figure C.52.pdf

Site Owner: BoM
Latitude: -28.4738 Longitude:153.0861

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	72	16:38 23 Feb 2022
6m	70	16:39 23 Feb 2022
10m	60	16:43 23 Feb 2022
20m	48.6	16:53 23 Feb 2022
30m	41.6	18:01 27 Feb 2022
1H	36.8	18:14 27 Feb 2022
2H	32.3	18:22 27 Feb 2022
3H	26.1	19:15 27 Feb 2022
6H	19.9	18:32 27 Feb 2022
12H	15.8	23:42 27 Feb 2022
24H	12.4	10:41 28 Feb 2022
48H	8.6	15:14 28 Feb 2022
72H	6.1	05:55 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

GREEN PIGEON (MORNING VIEW) (58113)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

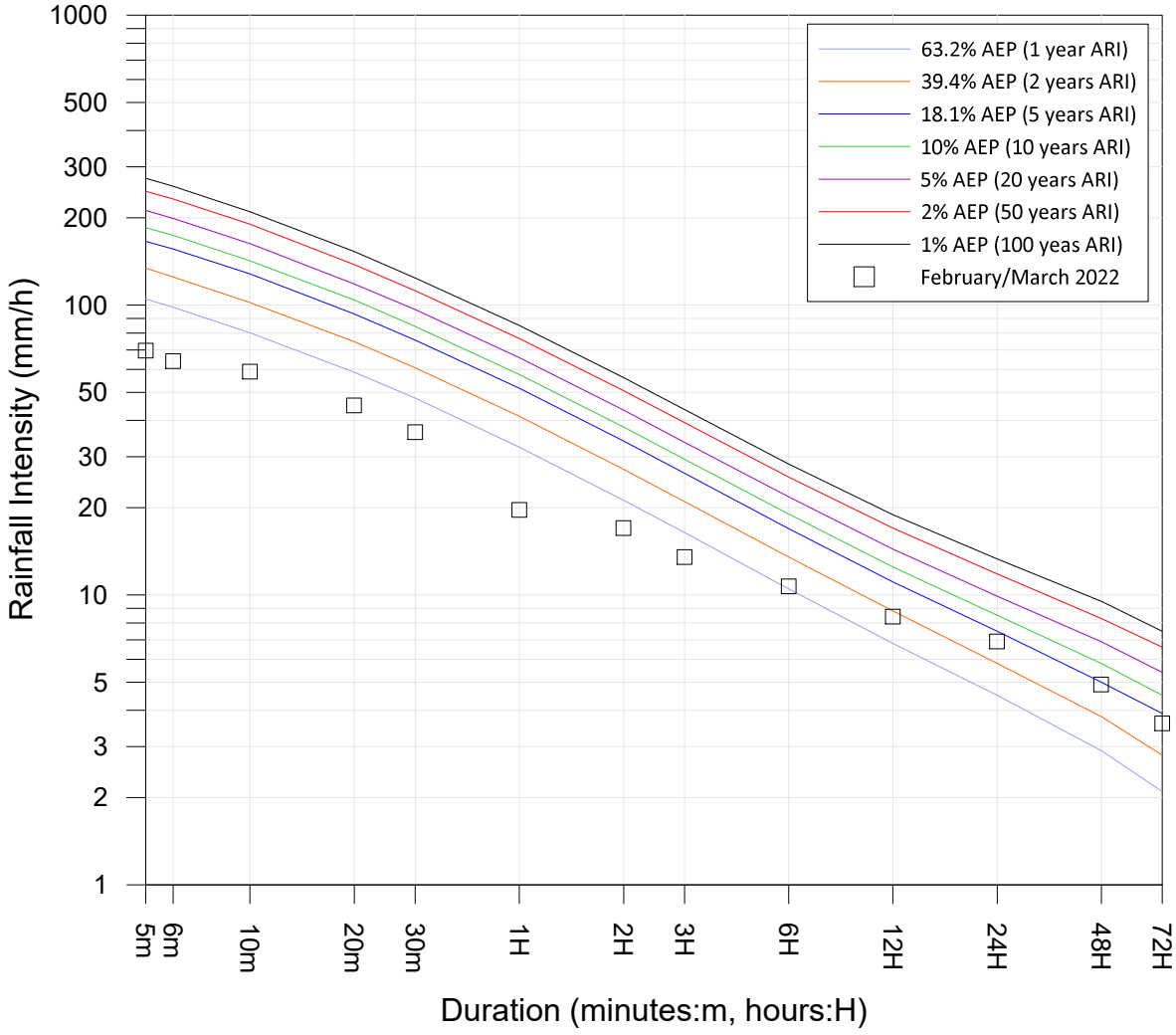
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.53

IFD_58113_Figure C.53.pdf

Site Owner: BoM
Latitude: -28.4119 Longitude:152.9827

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	69.6	16:42 23 Feb 2022
6m	64	16:42 23 Feb 2022
10m	58.8	16:54 21 Feb 2022
20m	45	16:56 21 Feb 2022
30m	36.4	17:03 21 Feb 2022
1H	19.6	17:32 21 Feb 2022
2H	17	19:03 27 Feb 2022
3H	13.5	19:39 27 Feb 2022
6H	10.7	19:17 27 Feb 2022
12H	8.4	23:53 27 Feb 2022
24H	6.9	07:43 28 Feb 2022
48H	4.9	13:21 28 Feb 2022
72H	3.6	19:31 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LOADSTONE (HIGH VIEW) (58141)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

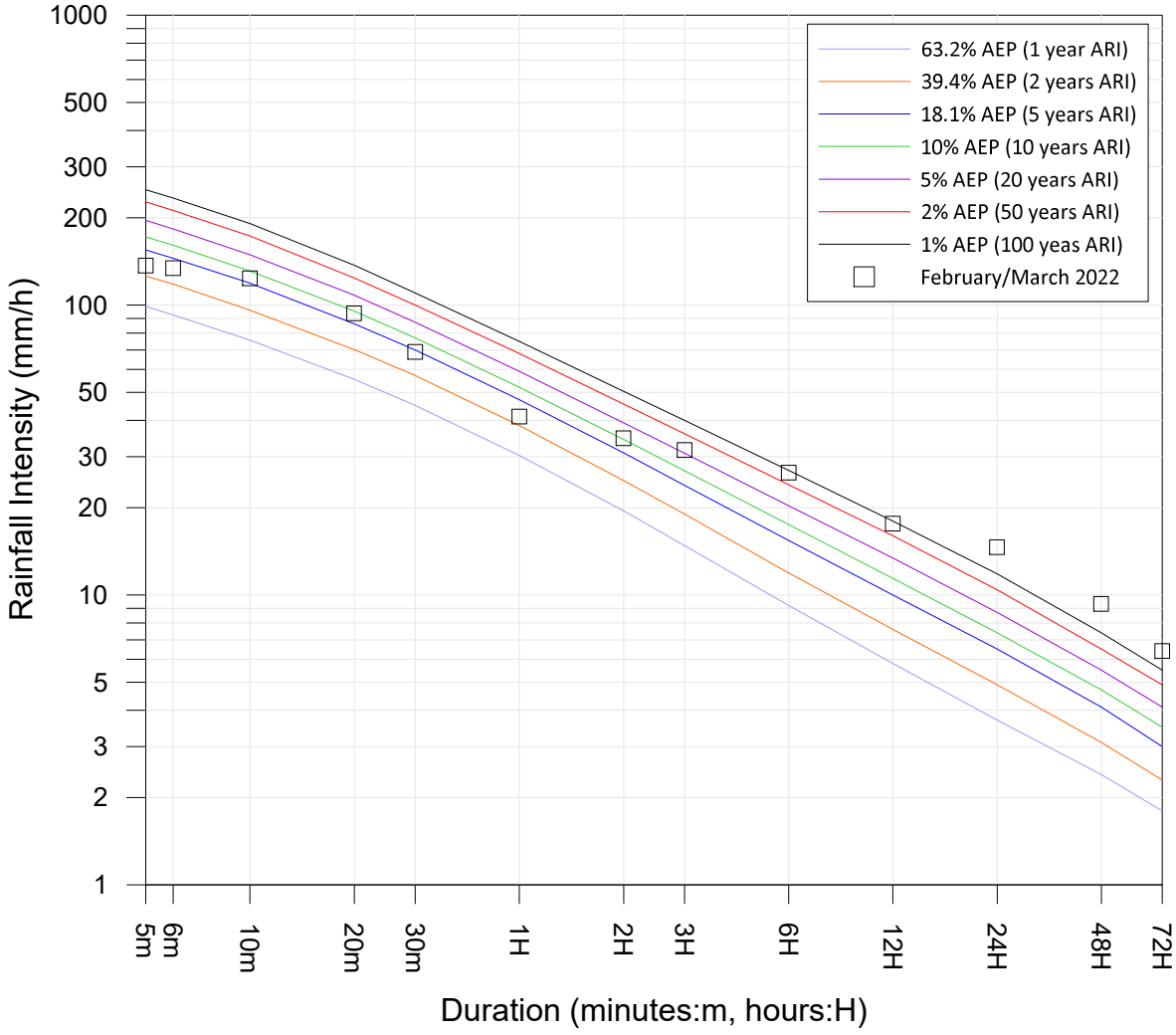
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.54

IFD_58141_Figure C.54.pdf

Site Owner: WaterNSW
Latitude: -29.1119 Longitude:152.9983

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	136.8	13:23 06 Mar 2022
6m	134	13:23 06 Mar 2022
10m	123.6	13:26 06 Mar 2022
20m	93.6	13:34 06 Mar 2022
30m	68.8	13:44 06 Mar 2022
1H	41.2	14:12 06 Mar 2022
2H	34.7	03:06 28 Feb 2022
3H	31.6	03:35 28 Feb 2022
6H	26.4	04:42 28 Feb 2022
12H	17.6	10:23 28 Feb 2022
24H	14.6	12:30 28 Feb 2022
48H	9.3	21:10 28 Feb 2022
72H	6.4	03:54 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

RAPPVILLE (MYRTLE CREEK) (558015)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

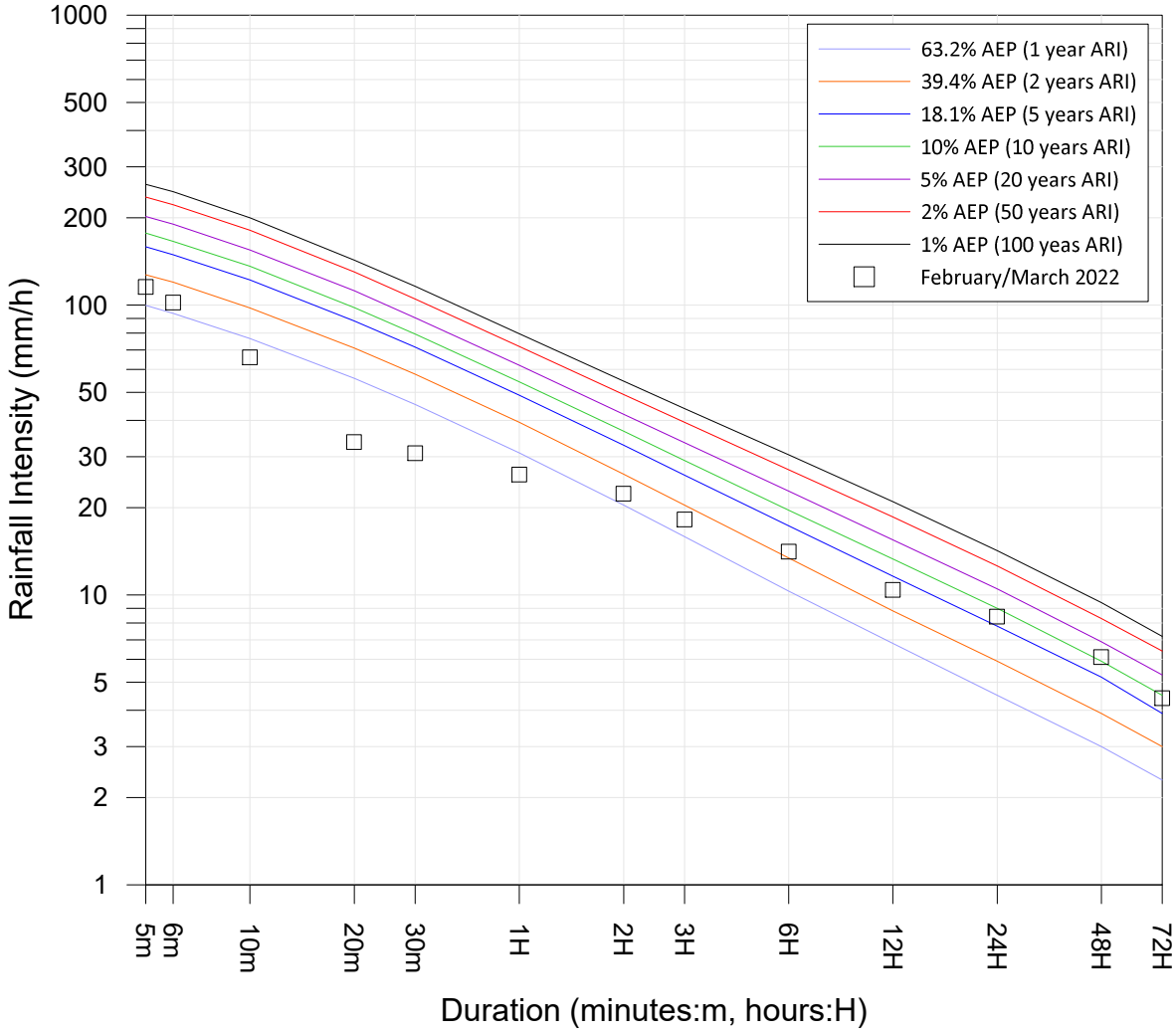
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.55

IFD_558015_Figure C.55.pdf

Site Owner: WaterNSW
Latitude: -28.5167 Longitude:152.9667

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	115.2	16:08 04 Mar 2022
6m	102	16:09 04 Mar 2022
10m	66	16:12 04 Mar 2022
20m	33.6	16:22 04 Mar 2022
30m	30.8	18:14 27 Feb 2022
1H	26	18:14 27 Feb 2022
2H	22.3	18:34 27 Feb 2022
3H	18.2	18:35 27 Feb 2022
6H	14.1	18:51 27 Feb 2022
12H	10.4	23:52 27 Feb 2022
24H	8.4	13:42 28 Feb 2022
48H	6.1	15:06 28 Feb 2022
72H	4.4	06:22 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

WIANGAREE BRIDGE (RICHMOND RIVER) (558001)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

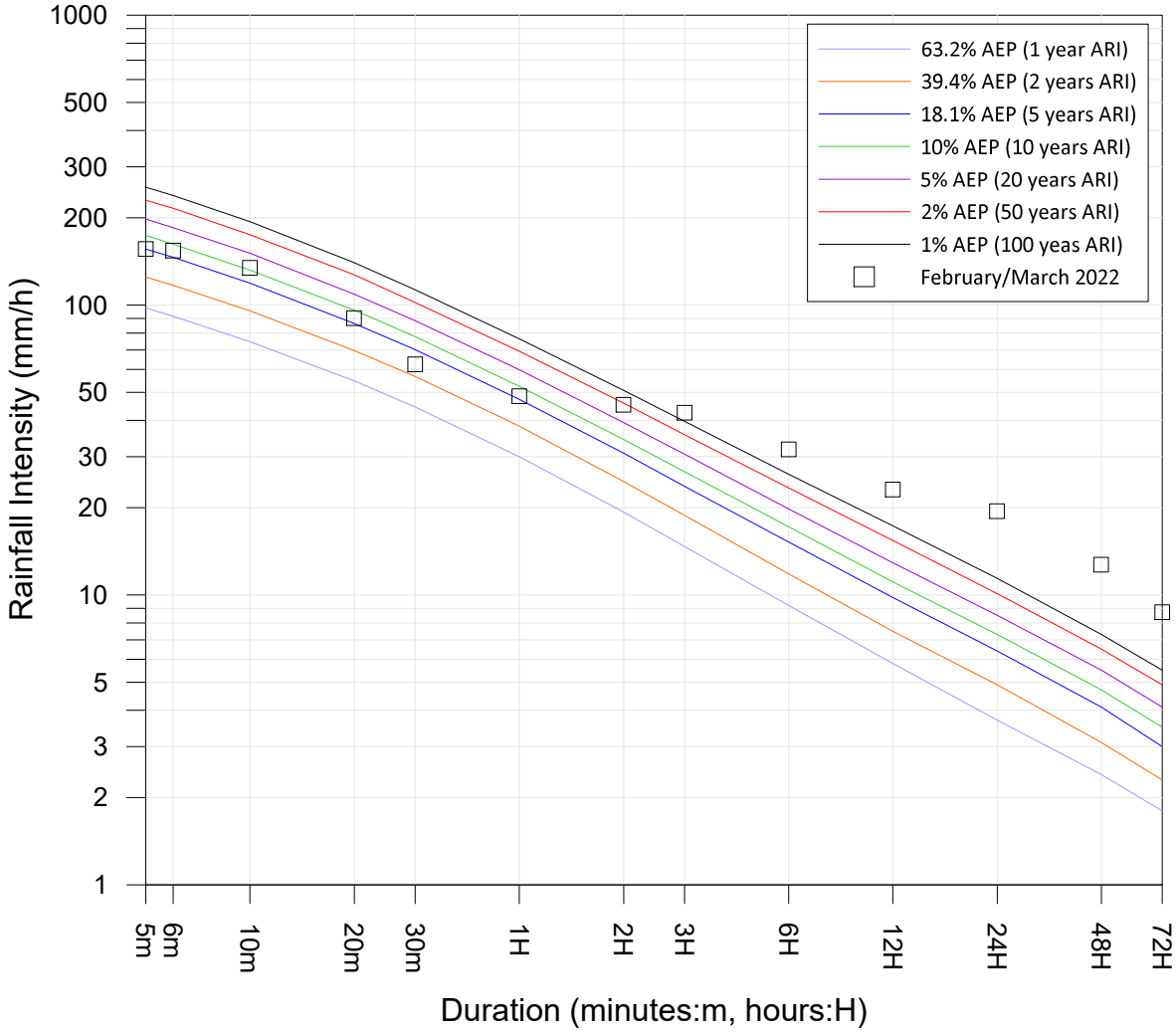
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.56

IFD_558001_Figure C.56.pdf

Site Owner: WaterNSW
Latitude: -28.9447 Longitude:153.0603

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	156	14:03 06 Mar 2022
6m	154	14:04 06 Mar 2022
10m	134.4	14:05 06 Mar 2022
20m	90	14:07 06 Mar 2022
30m	62.4	02:03 24 Feb 2022
1H	48.4	00:26 28 Feb 2022
2H	45.2	00:54 28 Feb 2022
3H	42.4	01:52 28 Feb 2022
6H	31.7	04:19 28 Feb 2022
12H	23.1	09:07 28 Feb 2022
24H	19.4	14:06 28 Feb 2022
48H	12.7	19:34 28 Feb 2022
72H	8.7	17:16 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

SHANNON BROOK AT YORKLEA (558038)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

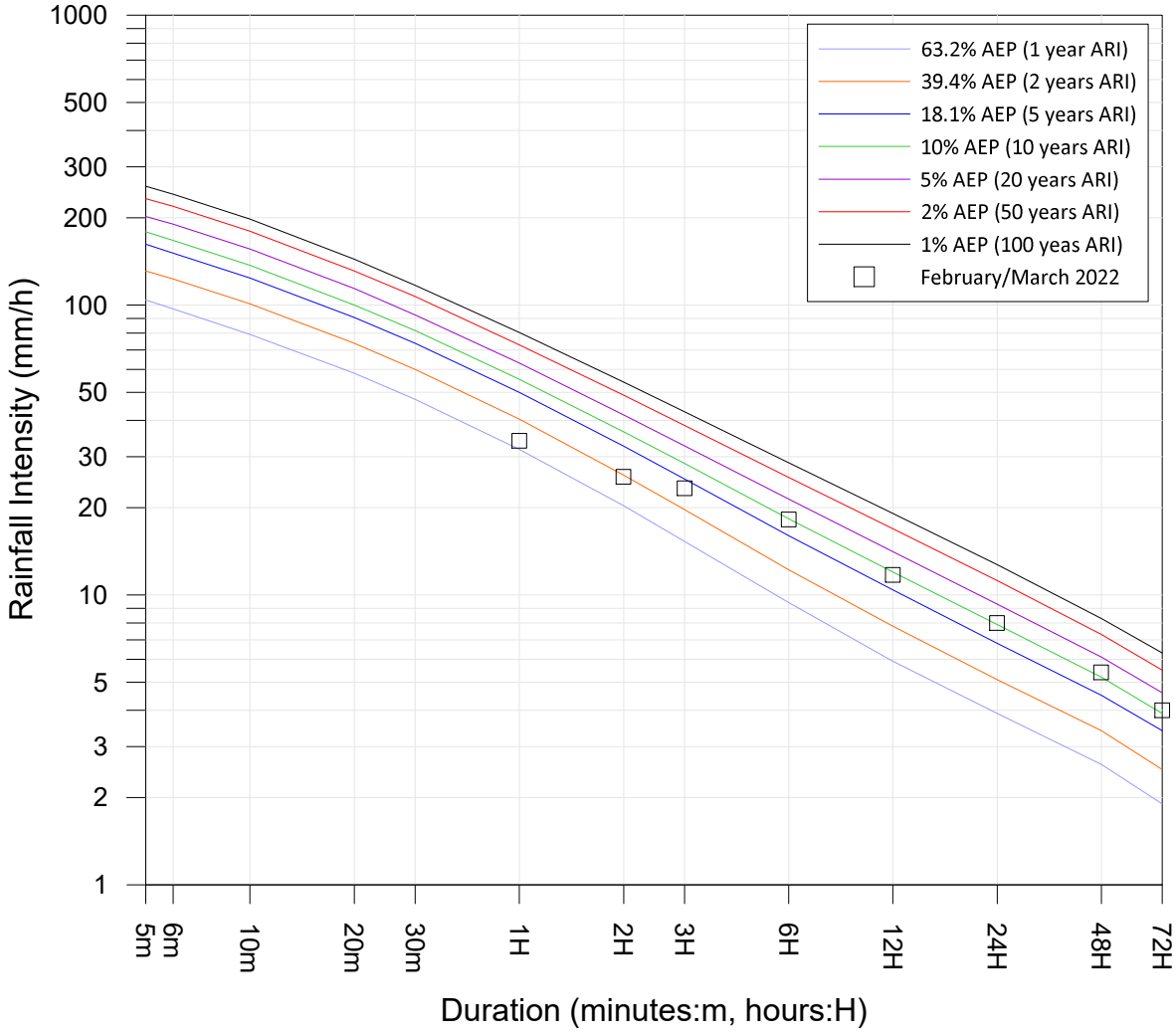
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.57

IFD_558038_Figure C.57.pdf

Site Owner: BoM
Latitude: -29.7668 Longitude:152.9288

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	34	05:59 28 Feb 2022
2H	25.5	06:59 28 Feb 2022
3H	23.3	07:25 28 Feb 2022
6H	18.2	09:48 28 Feb 2022
12H	11.7	11:27 28 Feb 2022
24H	8	09:42 28 Feb 2022
48H	5.4	17:23 28 Feb 2022
72H	4	21:02 28 Feb 2022

Short duration rainfall impacted by possible radio transfer interruptions. Suspect short duration IFD results removed by observation.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

SOUTH GRAFTON (CLARENCE REGIONAL LANDFILL) (58231)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

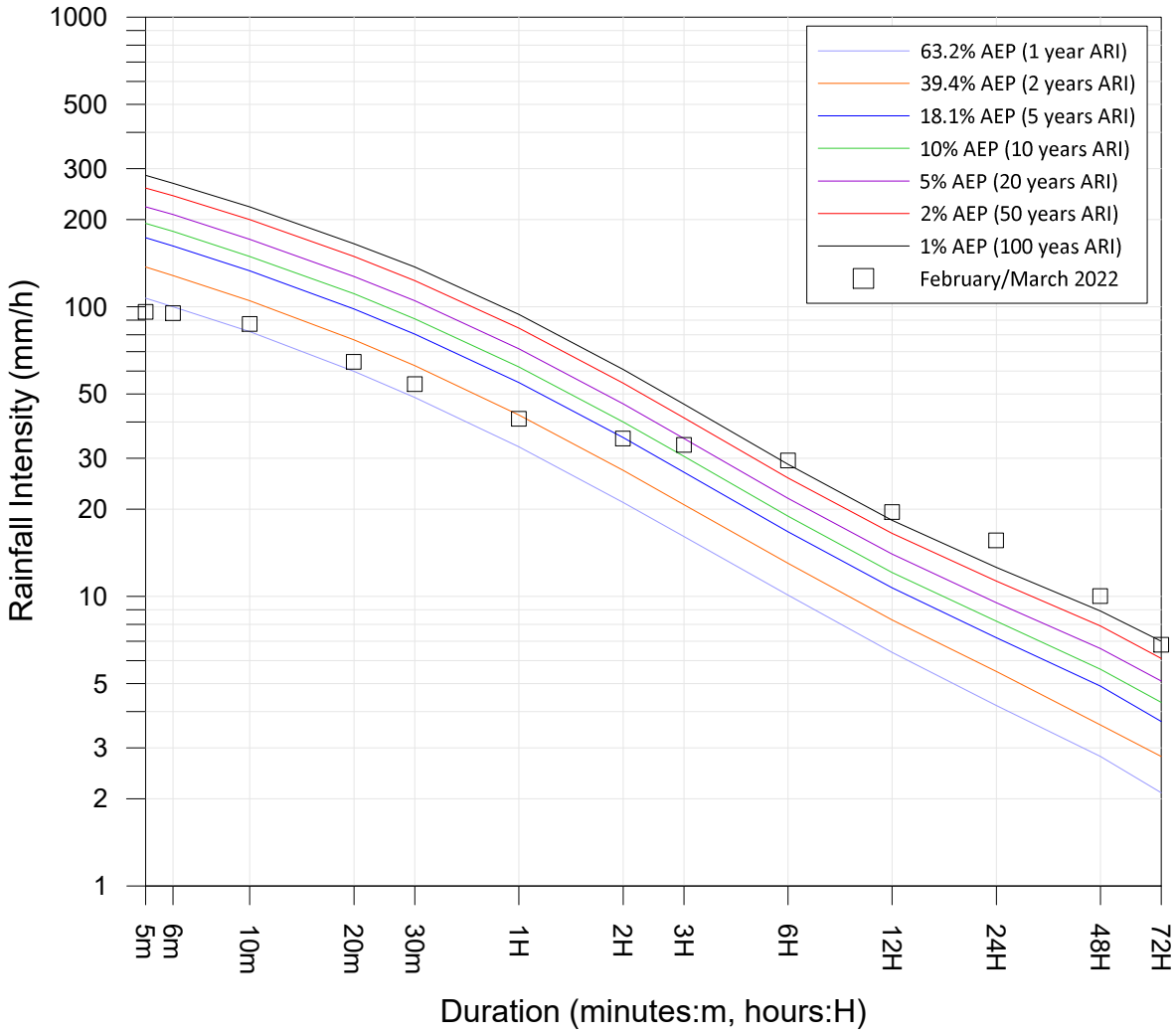
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.58

IFD_58231_Figure C.58.pdf

Site Owner: Clarence Valley Council
Latitude: -29.4326 Longitude:153.3633

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	96	11:33 28 Feb 2022
6m	95	11:33 28 Feb 2022
10m	87	11:35 28 Feb 2022
20m	64.5	11:44 28 Feb 2022
30m	54	11:53 28 Feb 2022
1H	41	12:21 28 Feb 2022
2H	35	16:59 28 Feb 2022
3H	33.3	17:45 28 Feb 2022
6H	29.4	17:24 28 Feb 2022
12H	19.5	18:32 28 Feb 2022
24H	15.6	18:50 28 Feb 2022
48H	10	01:10 01 Mar 2022
72H	6.8	04:50 01 Mar 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

YAMBA (462994)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

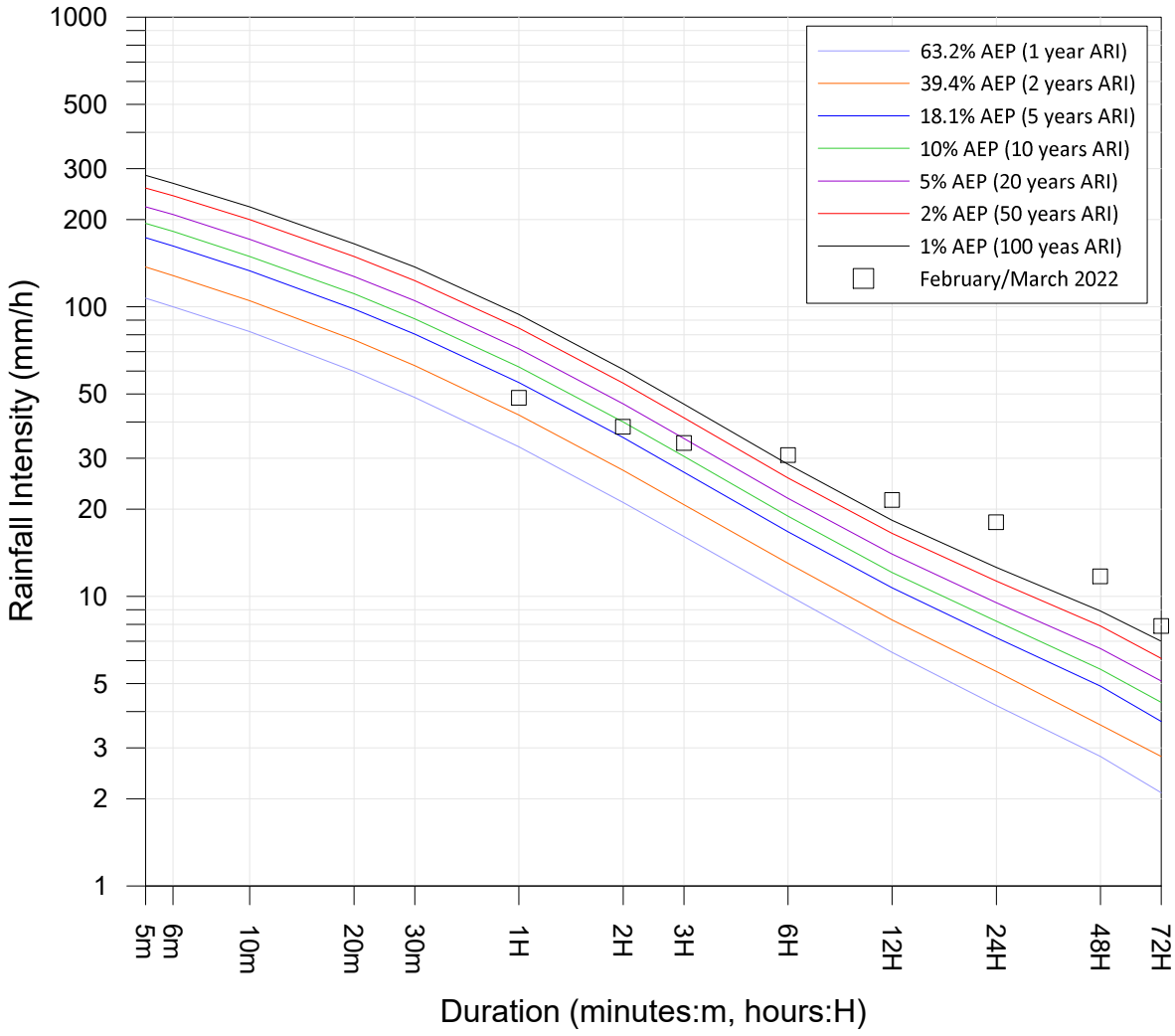
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.59

IFD_462994_Figure C.59.pdf

Site Owner: BoM
Latitude: -29.4325 Longitude:153.3632

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	48.4	00:59 28 Feb 2022
2H	38.5	00:59 28 Feb 2022
3H	33.8	18:59 28 Feb 2022
6H	30.7	17:59 28 Feb 2022
12H	21.5	18:59 28 Feb 2022
24H	18	19:59 28 Feb 2022
48H	11.7	00:59 01 Mar 2022
72H	7.9	04:59 01 Mar 2022

Rainfall data collected at hourly intervals only.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

YAMBA PILOT STATION (58012)
INTENSITY-FREQUENCY-DURATION
February/March 2022

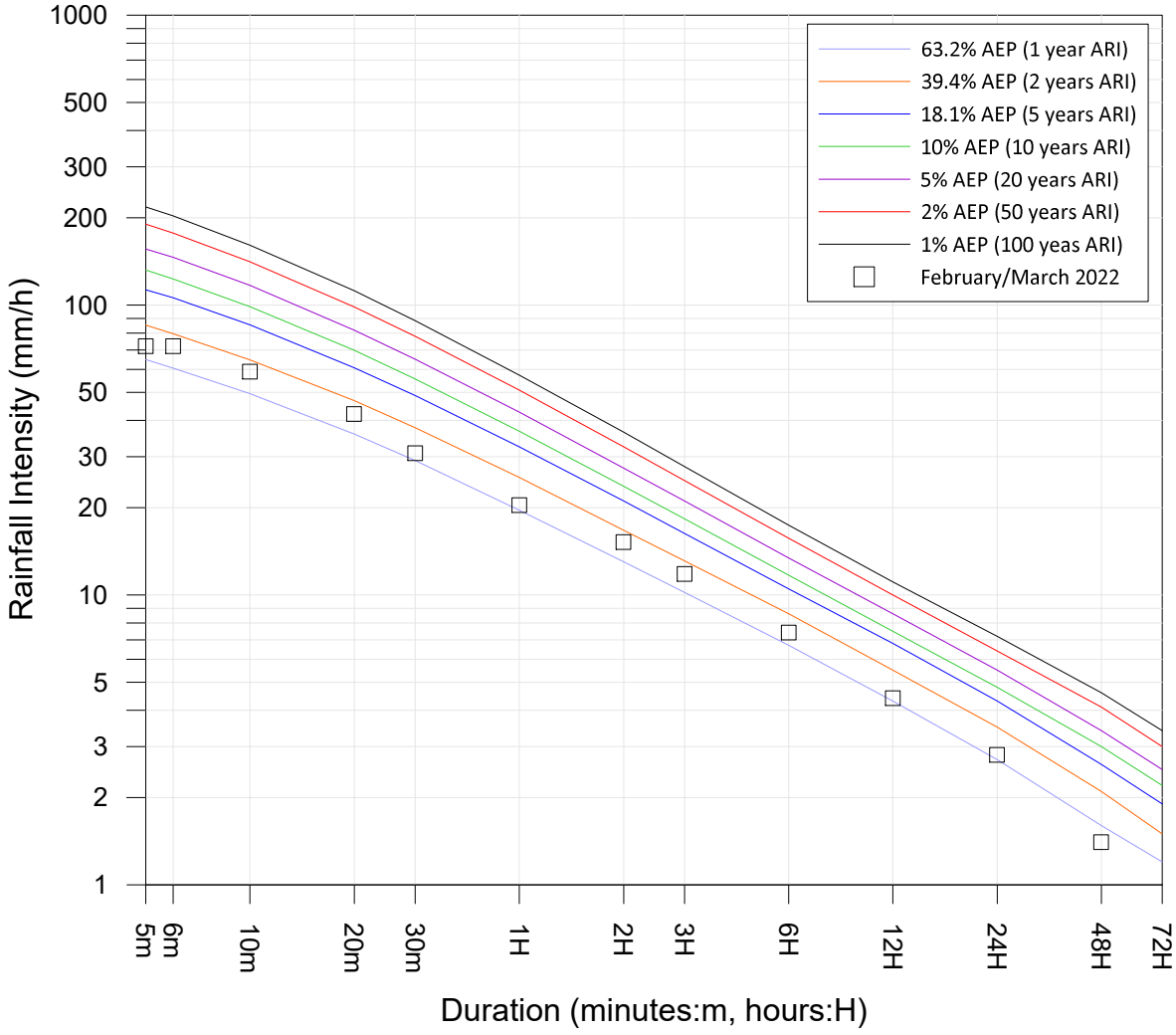
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.60

IFD_58012_Figure C.60.pdf

Site Owner: WaterNSW
Latitude: -30.2587 Longitude:152.0094

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	72	05:34 06 Mar 2022
6m	72	05:34 06 Mar 2022
10m	58.8	05:37 06 Mar 2022
20m	42	09:45 06 Mar 2022
30m	30.8	09:52 06 Mar 2022
1H	20.4	18:00 21 Feb 2022
2H	15.2	19:01 21 Feb 2022
3H	11.8	20:00 21 Feb 2022
6H	7.4	10:49 06 Mar 2022
12H	4.4	16:49 06 Mar 2022
24H	2.8	04:45 07 Mar 2022
48H	1.4	10:54 07 Mar 2022
72H	0.9	17:00 24 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

ABERFOYLE (204030)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

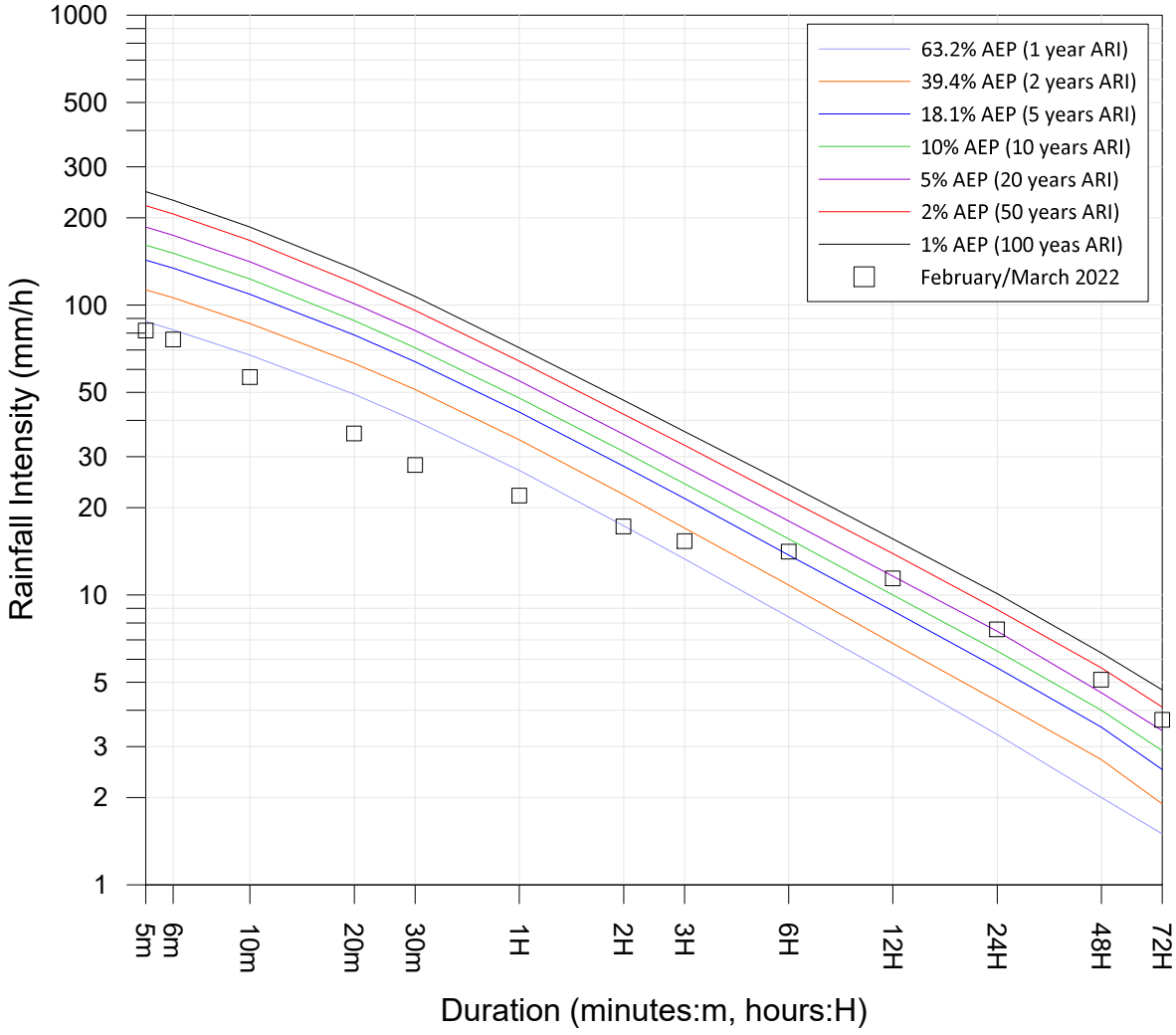
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.61

IFD_204030_Figure C.61.pdf

Site Owner: WaterNSW
Latitude: -29.1966 Longitude:152.5928

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	81.6	12:42 06 Mar 2022
6m	76	16:00 02 Mar 2022
10m	56.4	16:02 02 Mar 2022
20m	36	03:08 24 Feb 2022
30m	28	03:25 24 Feb 2022
1H	22	03:29 24 Feb 2022
2H	17.2	08:37 28 Feb 2022
3H	15.3	09:04 28 Feb 2022
6H	14.1	08:48 28 Feb 2022
12H	11.4	11:26 28 Feb 2022
24H	7.6	11:26 28 Feb 2022
48H	5.1	14:35 28 Feb 2022
72H	3.7	14:26 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

CLARENCE RIVER AT BARYULGIL (204900)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

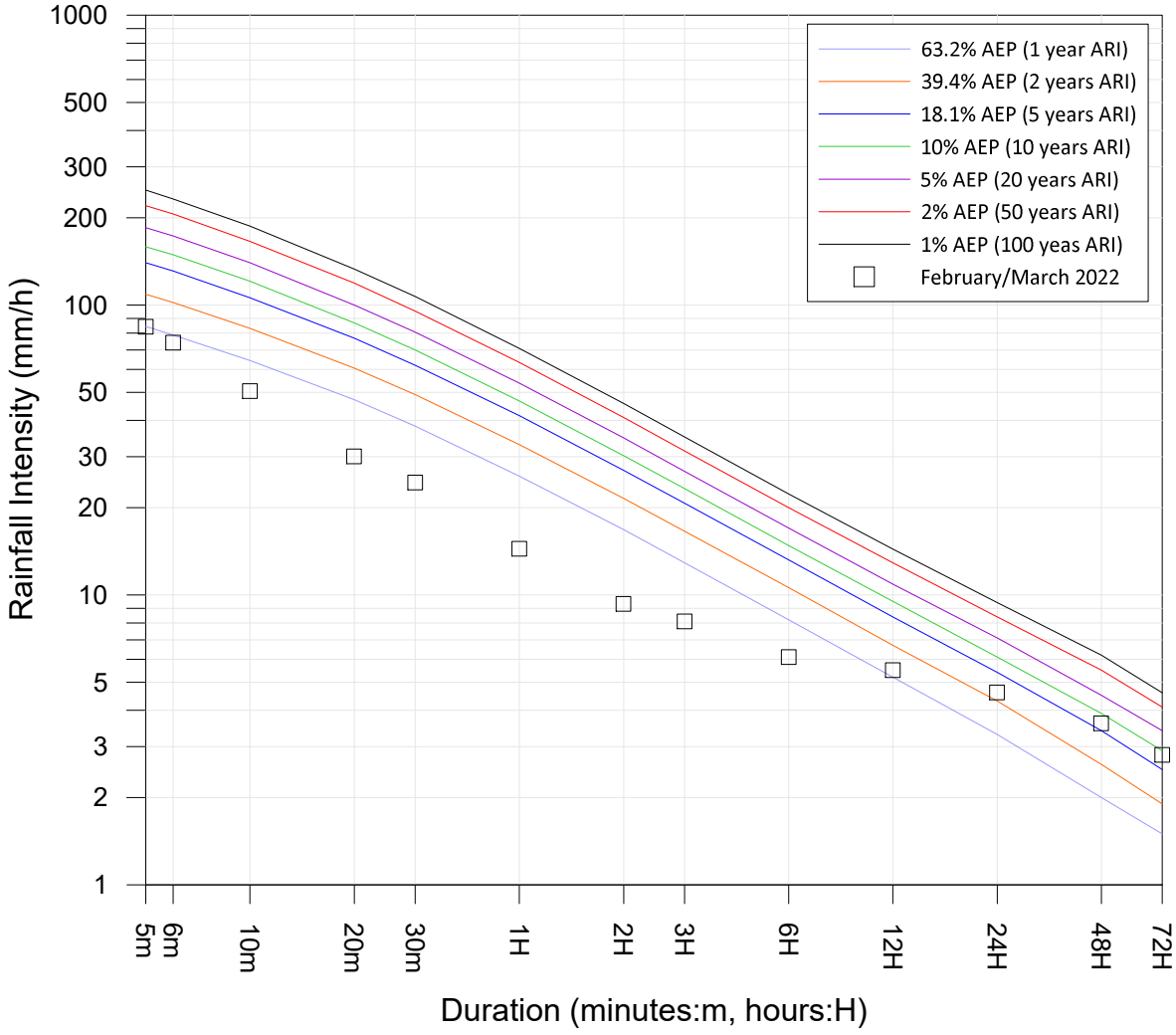
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.62

IFD_204900_Figure C.62.pdf

Site Owner: WaterNSW
Latitude: -28.8858 Longitude:152.5657

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	84	18:57 01 Mar 2022
6m	74	18:57 01 Mar 2022
10m	50.4	19:00 01 Mar 2022
20m	30	00:38 24 Feb 2022
30m	24.4	00:46 24 Feb 2022
1H	14.4	00:58 24 Feb 2022
2H	9.3	04:16 28 Feb 2022
3H	8.1	02:34 24 Feb 2022
6H	6.1	05:33 28 Feb 2022
12H	5.5	11:43 28 Feb 2022
24H	4.6	12:09 28 Feb 2022
48H	3.6	14:54 28 Feb 2022
72H	2.8	15:42 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

TABULAM (204002)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

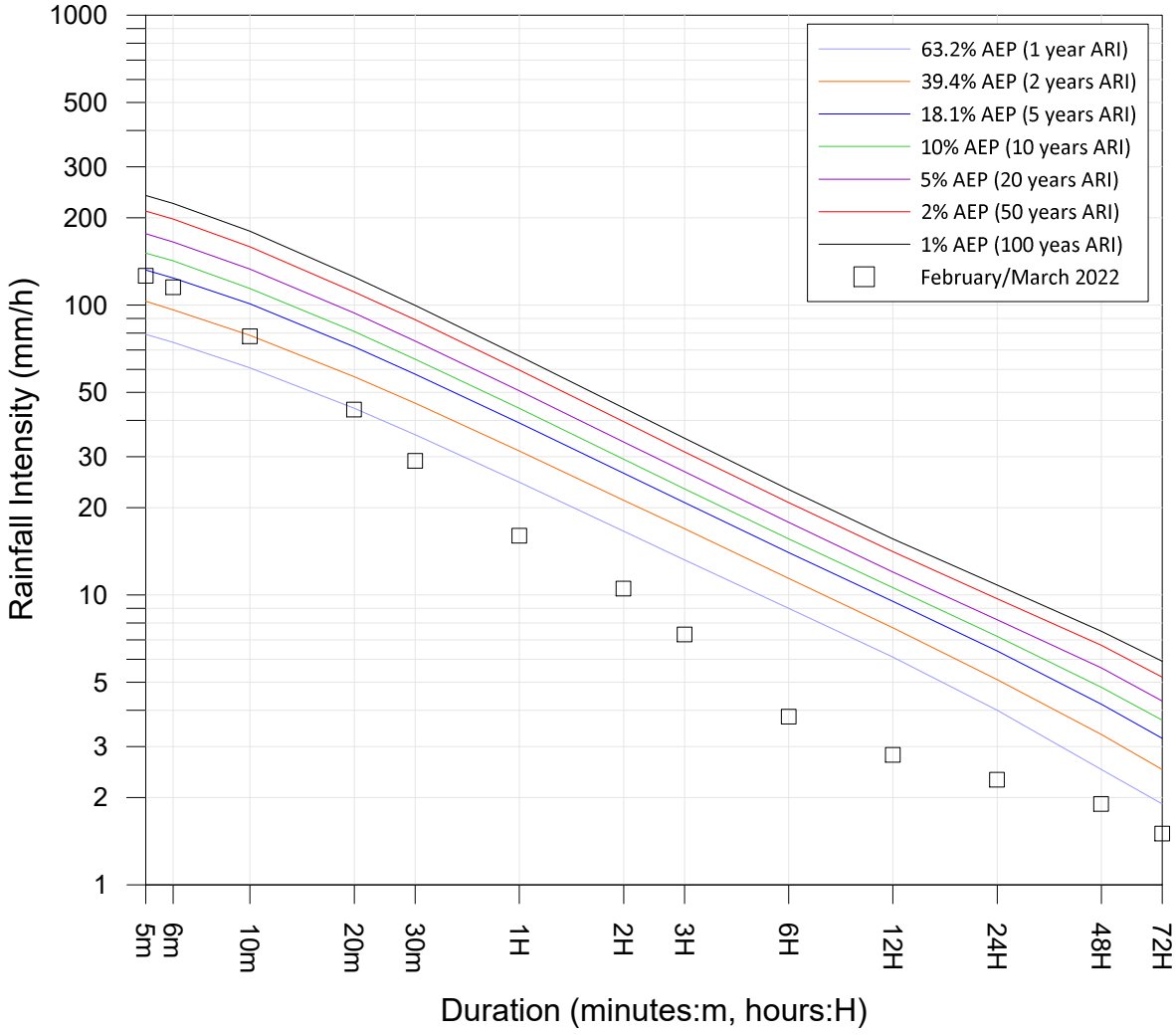
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.63

IFD_204002_Figure C.63.pdf

Site Owner: WaterNSW
Latitude: -28.9319 Longitude:152.2181

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	126	18:47 01 Mar 2022
6m	115	18:48 01 Mar 2022
10m	78	18:50 01 Mar 2022
20m	43.5	18:58 01 Mar 2022
30m	29	19:08 01 Mar 2022
1H	16	09:26 23 Feb 2022
2H	10.5	10:18 23 Feb 2022
3H	7.3	11:22 23 Feb 2022
6H	3.8	15:56 27 Feb 2022
12H	2.8	17:23 27 Feb 2022
24H	2.3	15:29 27 Feb 2022
48H	1.9	11:02 28 Feb 2022
72H	1.5	11:30 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

SANDY HILL (204036)
INTENSITY-FREQUENCY-DURATION
FEBRUARY/MARCH 2022

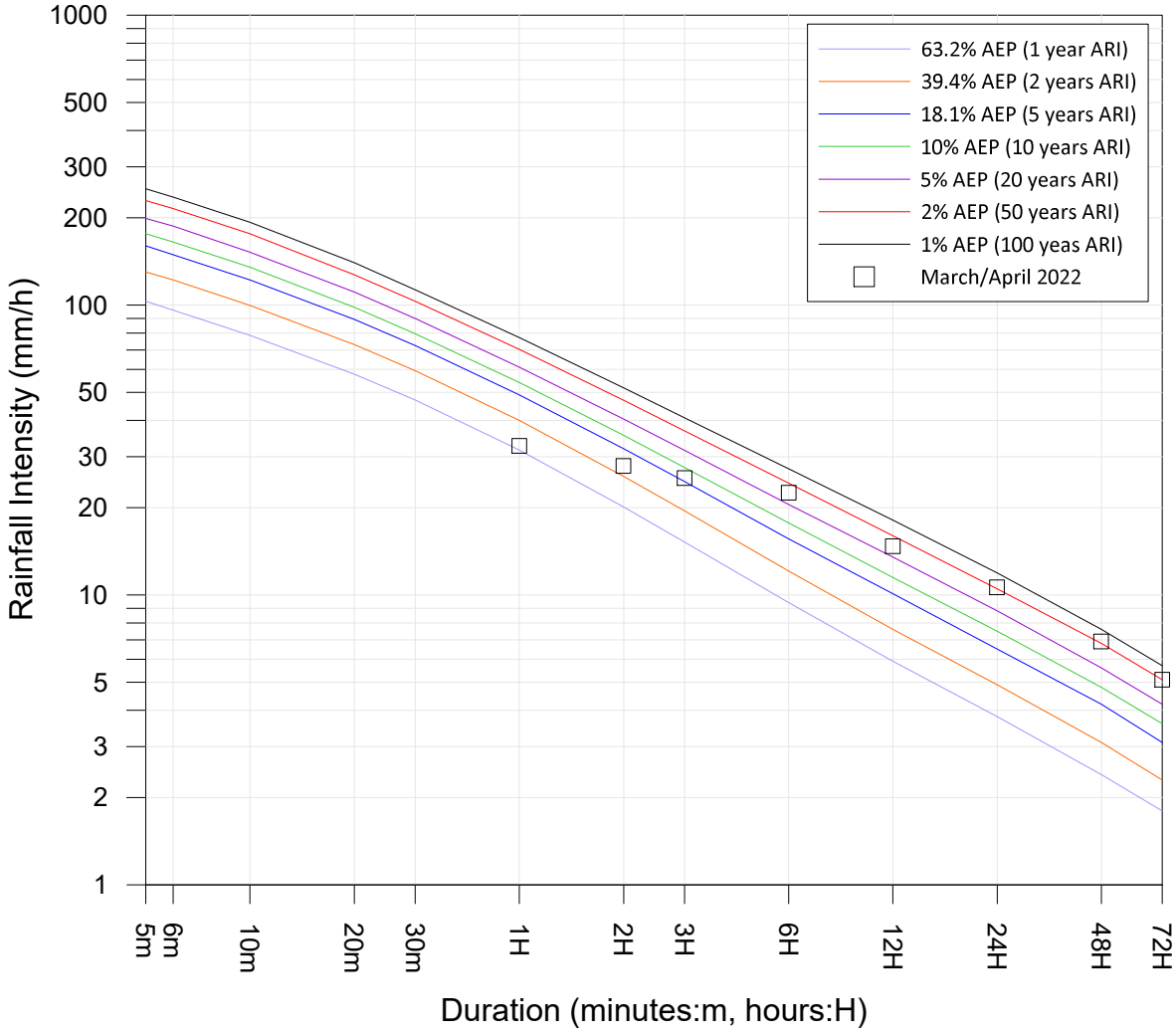
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.64

IFD_204036_Figure C.64.pdf

Site Owner: BoM
Latitude: -29.6224 Longitude:152.9605

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	-	-
6m	-	-
10m	-	-
20m	-	-
30m	-	-
1H	32.6	03:59 28 Feb 2022
2H	27.8	04:59 28 Feb 2022
3H	25.3	05:59 28 Feb 2022
6H	22.5	07:59 28 Feb 2022
12H	14.7	13:59 28 Feb 2022
24H	10.6	09:59 28 Feb 2022
48H	6.9	16:59 28 Feb 2022
72H	5.1	23:59 28 Feb 2022

Rainfall data collected at hourly intervals only.

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

GRAFTON RESEARCH STN (58077)
INTENSITY-FREQUENCY-DURATION
February/March 2022

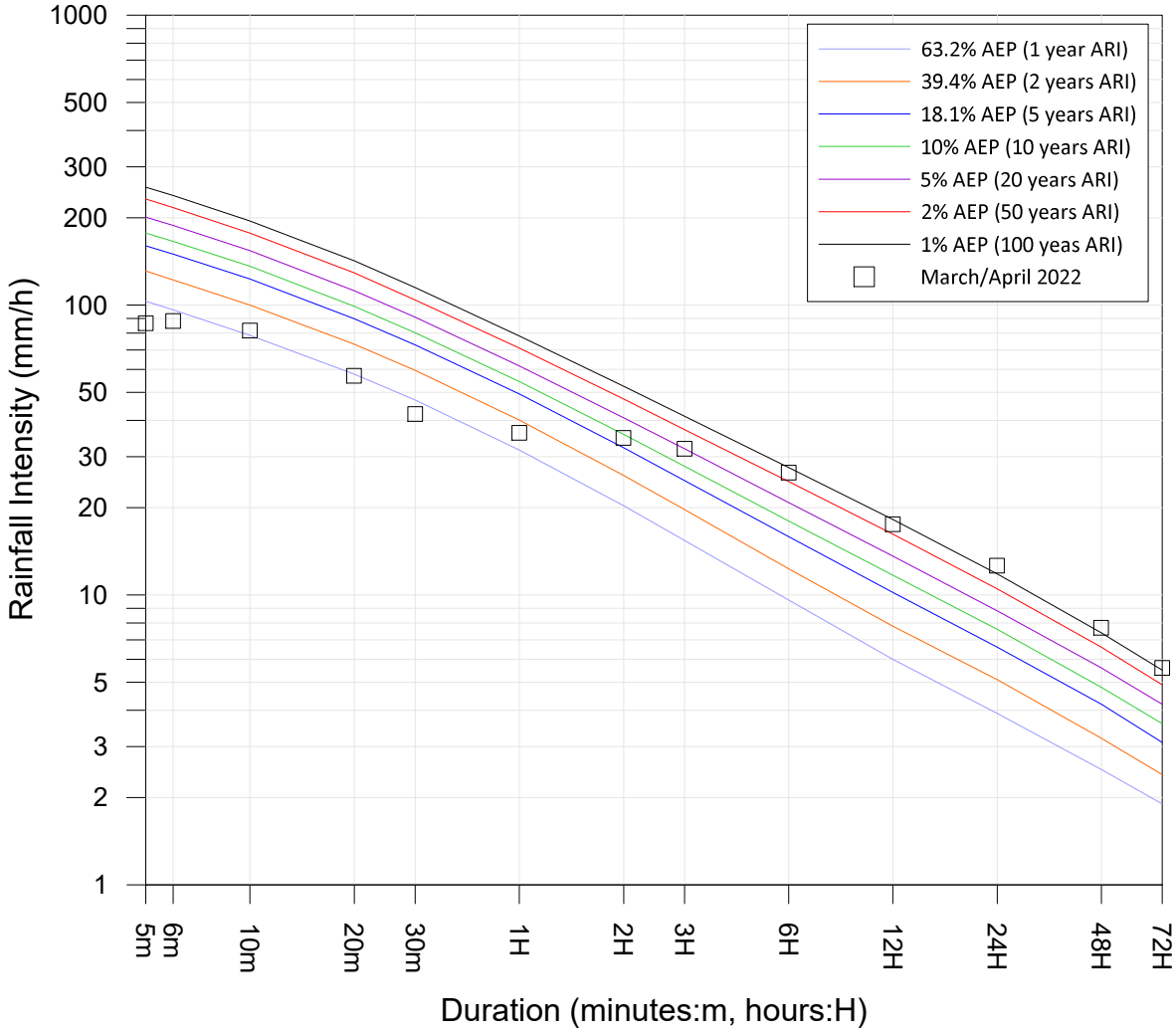
Manly Hydraulics Laboratory

Report MHL2880
Figure
C.65

IFD_58077_Figure C.65.pdf

Site Owner: BoM
Latitude: -29.4133 Longitude:153.0153

AEP = Annual Exceedance Probability
ARI = Average Recurrence Interval



Duration (minutes:m) (hours:H)	Rainfall Intensity (mm/hr)	Time/Date
5m	86.4	16:34 06 Mar 2022
6m	88	14:07 18 Feb 2022
10m	81.6	14:10 18 Feb 2022
20m	57	14:19 18 Feb 2022
30m	42	14:29 18 Feb 2022
1H	36.2	03:06 28 Feb 2022
2H	34.8	03:48 28 Feb 2022
3H	31.9	03:51 28 Feb 2022
6H	26.4	05:38 28 Feb 2022
12H	17.5	08:27 28 Feb 2022
24H	12.6	12:29 28 Feb 2022
48H	7.7	16:29 28 Feb 2022
72H	5.6	21:06 28 Feb 2022

Reference: Australian Rainfall and Runoff (1987)

NSW GOVERNMENT

LAWRENCE ROAD (PRINGLES WAY) (58068)
INTENSITY-FREQUENCY-DURATION
February/March 2022

Manly Hydraulics Laboratory

Report MHL2880
Figure
C.66

IFD_58068_Figure C.66.pdf

Appendix D WaterNSW water level station local datum to AHD conversion

Appendix D provides the conversion from local gauge datum to Australian Height Datum for stations managed by WaterNSW.

Table D.1 WaterNSW station conversion to AHD

Station name	Station number	Datum conversion	AHD gauge zero (m)
Oxley River at Eungella	201001	Local datum to AHD	13.285
Uki	201900	Local datum to AHD	8.966
Wilsons at Lavertys Gap Weir	203062	Local datum to AHD	116.029
Richmond River at Kyogle	203900	Local datum to AHD	40.251
Coopers Creek at Repentence	203002	Local datum to AHD	42.938
Coopers at Ewing Bridge	203024	Local datum to AHD	9.588
Goolmangar Creek at McNamara Bridge Weir	203061	Local datum to AHD	9.36
Leycester Rock Valley	203010	Local datum to AHD	13.196
Coopers Creek at Fairmeadow	203060	Local datum to AHD	6.77
Wilsons River at Eltham	203014	Local datum to AHD	6.455
Casino (Richmond River)	558013	Local datum to AHD	5.02
Shannon Brook at Yorklea	558038	Local datum to AHD	13.133
Rappville (Myrtle Creek)	558015	Local datum to AHD	31.380
Tabulam	204002	Local datum to AHD	112.299
Sandy Hill	204036	Local datum to AHD	562.335
Clarence River at Baryulgil	204900	Local datum to AHD	72.089
Jackadgery	204004	Local datum to AHD	92.105
Aberfoyle	204030	Assumed datum to AHD	12.355

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