Australian Government
Bureau of Meteorology

Severe Tropical Cyclone *Annette*

15 – 19 December 1994

Perth Tropical Cyclone Warning Centre
Bureau of Meteorology

A. Summary

Tropical cyclone *Annette*, the first in the WA region in the 1994/95 season, formed from a tropical low located to the south of Java on 12-14 December. After reaching cyclone intensity on 15 December, *Annette* developed into a large and intense tropical cyclone tracking to the southeast. The cyclone reached category four intensity before crossing the far west Kimberley coast on 18 December. The eye of the cyclone passed over Mandora station at approximately 1600 WST, where a maximum wind gust of 120 knots and a MSL pressure of 933 hPa were recorded. *Annette* caused extensive damage to Mandora and Wallal stations and to Sandfire Roadhouse.

Annette then moved rapidly to the southeast, became extra-tropical and moved into the Great Australian Bight near Eyre on the morning of 20 December. Gales and gusts to 50 knots were still being recorded on its eastern side during this period.

B. Meteorological Description

Intensity
A low to mid-level cyclonic circulation was first analysed over Java on 9 December and moved south to be near 12°S 116°E by 12 November. The low remained almost stationary for two days as weak vertical wind shear and strong cross-equatorial monsoonal flow below 700 hPa contributed to a favourable development environment. Tropical cyclone *Annette* was named early on 15 December and rapidly intensified to hurricane intensity the next day under the influence of a mid to high-level trough passing to the south.

The cyclone moved to the southeast and reached maximum intensity with estimated mean winds of 105 knots at 0800 WST (0000 UTC) 18 December prior to crossing the Western Australian coast. *Annette's* eye passed over Mandora station about 10 km inland from the coast (240 km east northeast of Port Hedland) at about 1700 WST (0900 UTC) 18 December where a minimum MSLP pressure of 933 hPa and wind gusts to 217 km/h (~115 knots) were recorded. *Annette* accelerated to the southeast on 19 December as upper-level northwesterly flow strengthened ahead of an approaching trough to the southwest. The cyclone underwent extra-tropical transition as it moved overland and the resultant low pressure system retained gale-

force mean winds with gusts to 50 knots on its eastern side as it moved into the Great Australian Bight early on 20 December.

Motion and Structure
Annette in its pre-cyclone stage moved south from Java to latitude 12.5°S due to the influence of a 500 hPa outflow near the Equator. During the next two days a major upper level trough in the Tasman Sea extended back across northern Australia. This caused the circulation to remain nearly stationary due to weak steering winds. A mid to upper level high developed to the east of *Annette* during 15 December subsequently steering the cyclone to the south and then southeast. The upper northwesterlies ahead of a broad trough directed *Annette* rapidly southeast after it crossed the coast on the afternoon of 18 December.

C. Impact

Annette caused extensive damage to Mandora and Wallal stations and to Sandfire Roadhouse. About five hundred head of cattle were driven towards the sea by the wind and subsequently drowned on the beach by the cyclone storm tide, estimated to have been about 4 m higher than the expected tide at the time. After crossing the coast, *Annette* continued inland, inflicting some damage to Telfer and Camp Nifty.

D. Observations

Wind/Pressure
Maximum wind speed reported: Mandora Gust to 217 km/h.
Minimum pressure: Mandora 933 hPa at 1600 WST 18 December.

Table 1. Best track summary for *Annette 13 – 20 December 1994*
Note: Add 8 hours to convert to WST. Refer to best track database for complete track details.

Year	Month	Day	Hour (UTC)	Position Latitude S	Position Longitude E	Max wind 10min knots	Central Pressure hPa	Rad. of Gales nm
1994	12	13	0000	12.5	116.0	0	1006	
1994	12	13	0600	12.5	116.0	0	1006	
1994	12	13	0900	12.5	116.0	20	1004	
1994	12	13	1200	12.5	116.0	20	1004	
1994	12	13	1500	12.5	116.0	20	1004	
1994	12	13	1800	12.5	116.0	20	1004	
1994	12	13	2100	12.5	116.0	20	1004	
1994	12	14	0000	12.5	116.0	25	1002	
1994	12	14	0300	12.5	115.8	25	1000	
1994	12	14	0600	12.5	115.7	25	1000	
1994	12	14	0900	12.5	115.6	30	998	
1994	12	14	1200	12.5	115.6	30	998	
1994	12	14	1500	12.5	115.6	35	996	
1994	12	14	1800	12.5	115.6	35	994	25
1994	12	14	2100	12.5	115.6	40	990	25
1994	12	15	0000	12.5	115.6	45	985	40
1994	12	15	0300	12.5	115.6	55	980	40
1994	12	15	0600	12.6	115.6	60	975	40
1994	12	15	0900	12.7	115.6	60	975	40
1994	12	15	1200	12.8	115.6	60	975	40
1994	12	15	1500	12.9	115.6	65	970	40
1994	12	15	1800	13.0	115.6	70	965	55
1994	12	15	2100	13.1	115.6	75	960	55
1994	12	16	0000	13.2	115.7	80	955	55
1994	12	16	0300	13.3	115.8	85	950	55
1994	12	16	0600	13.5	115.9	90	945	70
1994	12	16	0900	13.7	116.0	95	940	70
1994	12	16	1200	14.0	116.2	95	940	70
1994	12	16	1500	14.2	116.4	90	945	70
1994	12	16	1800	14.4	116.7	85	950	70
1994	12	16	2100	14.7	117.0	80	955	70
1994	12	17	0000	15.0	117.4	80	955	70
1994	12	17	0300	15.4	117.8	80	955	70
1994	12	17	0600	15.7	118.1	80	955	70
1994	12	17	0900	16.0	118.4	80	955	70
1994	12	17	1200	16.3	118.7	80	955	70
1994	12	17	1500	16.6	119.1	85	950	70
1994	12	17	1800	17.0	119.6	95	940	70
1994	12	17	2100	17.5	119.9	100	930	70
1994	12	18	0000	18.1	120.2	105	925	70
1994	12	18	0300	18.6	120.4	100	930	70
1994	12	18	0600	19.2	120.6	100	930	70
1994	12	18	0900	19.8	120.9	95	935	70
1994	12	18	1200	20.4	121.3	80	955	40

1994	12	18	1500	21.2	121.8	60	975	25
1994	12	18	1800	21.9	122.2	40	990	25
1994	12	18	2100	22.7	122.6	35	995	
1994	12	19	0000	23.3	123.0	35	995	
1994	12	19	0600	24.8	123.8	35	995	
1994	12	19	1200	25.4	124.9	35	995	
1994	12	19	1800	28.8	126.8	35	995	
1994	12	20	0000	31.3	129.2	35	995	
1994	12	20	0600	32.4	130.8	35	995	

Figure 1. Track of Tropical Cyclone 15 – 20 December 1994
All times in WST.