

**BRIEFING ON THE SITUATION IN MARIENTAL BY DR VAINO P SHIVUTE, CEO
OF NAMWATER ON 28 FEBRUARY 2006 STARTING AT 12H00**

The Mariental Community, NamWater, and the whole country are devastated by the flooding event that occurred over the weekend of 24 to 26 February 2006.

I personally visited the affected area on Sunday, 26 February 2006 together with other senior officials from NamWater to assess the situation and I hereby, on behalf of NamWater, wish to extend my heartfelt sympathy to the community of Mariental and especially those who have suffered losses as a result of the flooding. When on site we attended emergency meetings with the Honourable Nangolo Mbumba and the Governor for Hardap Region. We also attended an emergency meeting called by the Secretary to Cabinet on Monday morning, 27 February 2006. During this meeting the Honourable members present were briefed extensively about the situation as it developed throughout this unfortunate period.

It was subsequently thought prudent to provide you with the factual circumstances and reasons from a NamWater, and flood control perspective, as to why it was impossible to prevent this flooding of the Town.

The Hardap Dam was constructed in 1962 and has a total capacity of approximately 300 million cubic metres of water (300 Mm³); this equates to 300 billion litres of water. The purpose of the dam is to supply irrigation water to the Hardap Scheme, as well as purified water to Mariental Town.

Prior to the construction of the dam flooding is reported to have occurred during flood events in 1923 and 1934. Since the construction of the dam major flood events were experienced in 1972, 1989, 2000, and the present one in 2006. The flood peak experienced in 1972 was the highest instantaneous flow, whereas the present flood had the second highest peak inflow in history. What is significant however is that the present flood had a much longer duration than any of those experienced in the past and that the total volume of the flood was greater than anything previously experienced.

During the beginning of the current rainy season when we also received generous inflows into the Dam, it was decided in consultation with the Town Council of Mariental to draw down and to operate the dam at a level of plus minus 80% of its full supply capacity. This was done with the aim to create more space for accommodation of floods within the dam basin without necessarily increasing the risks, or accelerating of possible future water shortages to the farming and town community.

At the time when it started raining in the catchment area of the Dam on the morning of 24 February 2006 the dam was at 82% of its full capacity and the sluices were opened to start discharging at a rate of 500 m³ per second. At this point the Dabib and Aub Rivers, which discharge into the Fish River, downstream of the Dam but upstream of Town were also flowing. The discharge from the dam was therefore kept at 500 m³ per second for a considerable period to allow flows in these two rivers to subside so as to minimise the compounded risk of flooding in the Town at the time. Previous discharge events proved that flows of 500 m³/s in the river at Mariental were capable to cause flood damage in the low-lying areas of the Town. This is aggravated by the excessive growth of reeds in the river, which partially obstructs the flow in the river.

During the day of 24 February, rain continued to fall in the catchment area resulting in a steady increase in inflow to the dam, necessitating NamWater to increase the discharge rate from the dam to 1000 m³/s. Prior to this the extensive communication and warning systems were brought into effect in the Town and the people in the low lying areas to the west of the railway line commenced evacuation procedures. During the night of 24 February heavy rainfall in the region of 130 mm, was experienced and inflow into the dam increased rapidly.

During the night the inflow into the dam peaked at 3000 m³/s and maintained levels of between 2500 m³/s and 3000 m³/s for a period of 14 hours. This resulted in NamWater having to increase the discharge rate at regular intervals throughout the night from 12:00 to a level of 3000 m³/s in the morning of 25 February. At this stage the dam level had risen to 110% of its full supply capacity and the discharge rate had to be increased to match inflow to stabilise dam stress, to protect the structural integrity of the dam and to minimise risks of dam failure. It is of paramount importance here to be cognisant of the catastrophic practical and economic consequences that would have resulted from dam failure.

Throughout the day of 25 February inflows into the dam failed to subside, following more rainfall in the catchment and the discharge rate from the dam had to be maintained at 3000 m³/s level. Inflow remained above 3000 m³/s for a period of 10 hours. During the night of 25 February inflow into the dam furthermore peaked at 4000 m³/s and the discharge rate had to be increased to 3500 m³/s. Due to the proactive earlier increased releases of NamWater, the dam level had reduced somewhat at that time allowing the discharge rate again being reduced from 3500 m³/s to 3000 m³/s after a period of only five hours. The additional 500 m³/s discharge at that stage in any case caused negligible additional damage in town to what had already been experienced.

The discharge rate was maintained at 3000 m³/s throughout Sunday, 26 February whilst a steady inflow of 1800 m³/s was still being experienced. Inflow started subsiding from Sunday evening and this enabled a gradual reduction in the dam level from in excess of 100% the previous day to 80 % in the early morning hours of Monday, 27 February. By 05:00 on Monday morning the gates were finally closed, following the gradual reduction of the discharge rate throughout the night.

During the entire event under discussion a total of plus minus 500 million m³/s was discharged from the dam; this equals one and three quarters of the dam capacity over a period of 3 days! This gives one an idea of the volumes of water, which had to be managed, and the impossibility under the circumstances to prevent the extensive and much regretted flooding of Mariental.

It is unfortunately not un-common under such circumstances for scapegoats to be sought and fingers being pointed. This is also the case now with easy and uneducated accusations being thrown NamWater's way by the public and others. This is maybe understandable but it is sincerely trusted that the facts and background as provided in this memorandum will place the matter into the correct perspective and that it will be clearly understood by all, that NamWater has done everything in its powers in acting in the most professional and pro-active manner to try and prevent this disaster.