

Sand Mining: what you need to know

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What is Sand Mining?

Mining is of great importance to the South African economy. It should however be recognised that the processes of prospecting, extracting, concentrating, refining and transporting minerals have great potential for disrupting the natural environment (Rabie et al., 1994). The environmental effects caused by the mining of sand from a river, is no exception, often causing adverse impacts to biota and their habitats.

The Department considers fresh water aquatic ecosystems to be "the base from which the [water] resource is derived" (DWAF, 1994). Because we depend on many services provided by healthy aquatic ecosystems, these ecosystems, as the resource base, must be effectively protected and managed to ensure that our water resources remain fit for the different water uses on a sustained basis (DWAF, 1996). The establishment of the Ecological Reserve is an important step in this direction since, under previous legislation, there was only limited provision to reserve a quantity of water for environmental protection purposes (DWAF, 1997).

As stated in the White Paper on a National Water Policy for South Africa (1997), effective resource protection requires two separate sets of measures. The first are resource-directed measures, which set clear objectives for the desired level of protection for each resource. The second are source-directed controls which aim to control what is done to the water resource - by way of registration of sources of impact, standards for waste discharges, best management practices, permits and impact assessments - so that the resource protection objectives are achieved.

Damage to resources, other than pollution such as habitat destruction, will be controlled by means of regulatory measures which will be introduced where appropriate (DWAF, 1997).

Illegal sand mining in the Inkomati Water Management Area

- a) The Inkomati Water Management Area is facing some serious challenges with regards to the illegal sand mining because of the negative impact it has on the water resource. These negative impact may include the following:
 - Excessive sand mining is a threat to bridges, river banks and nearby structures.

Figure 1: Kanyamazane bulk sewer line



- Instream sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Figure 2: Thulamahashe area in Bushbuckridge



- Soil contamination is mainly caused by oil spills by trucks and machinery used to extract sand. Even though the area of contamination would be localised, the presence of any hydrocarbons on the ground is undesirable and can lead to surface and ground water pollution. After the rain, contamination may subsequently spread over larger areas. Thus sand mining not only causes serious disturbance to soil, severe soil erosion, and loss of topsoil and removal of top cover but can indirectly cause soil and water pollution too.

Figure 3: Heavy machinery



Figure 4: Trucks collecting sand



Figure 5: Serious water pollution



- Sand mining also affects the adjoining groundwater system and the uses that local people make of the river
- Illegal sand mining may results in deep and wide pits on the riverbed and these pits, may affect the natural flow of water into the river.

b) Legal Requirement for Sand Mining in terms of the National Water Act, 36 of 1998 (NWA)

- In terms of section 21 of the NWA, in-stream mining of sand is a water use activity and requires authorisation in terms of section 22 of the NWA. The water uses related to sand mining are the following
 - Section 21 (c) of the NWA: impeding or diverting the flow of water in a watercourse;
 - Section 21(1) of the NWA: altering the bed, banks, course or characteristics of a watercourse;
- In terms of Government Notice No. 704 of 4 June 1999 in terms of NWA, Regulations of the use of water for mining and related activities aimed at the protection of the water resource, Regulation 10 (1), 10 (2) makes provision for additional regulation related to winning sand and alluvial minerals from a watercourse as follows:
 - ✓ No person may extract sand, alluvial minerals or other materials from the channel of a watercourse or estuary, unless reasonable precautions are taken to-
 - Ensure that the stability of the watercourse or estuary is not affected by such operations;
 - Prevent scouring and erosion of the watercourse or estuary which may result from such operations or work incidental thereto;
 - Prevent damage to in-stream or riparian habitat through erosion, sedimentation, alteration of vegetation or structure of the watercourse or estuary, or alteration of the flow characteristics of the watercourse or estuary; or
 - ✓ Every person winning sand, alluvial minerals or other materials from the bed of a watercourse or estuary must-
 - Construct treatment facilities to treat the water to the standard prescribed in Government Notice No. R.991 dated 26 May 1984 as amended or by any subsequent regulation under the Act before returning the water to the watercourse or estuary;
 - limit stockpiles or sand dumps established on the bank of any watercourse or estuary to that realised in two days of production, and all other production must be stockpiled or dumped outside of the 1:50 year flood-line or more than a horizontal distance of 100 metres from any watercourse or estuary; and
 - Implement control measures that will prevent the pollution of any water resource by oil, grease, fuel or chemicals