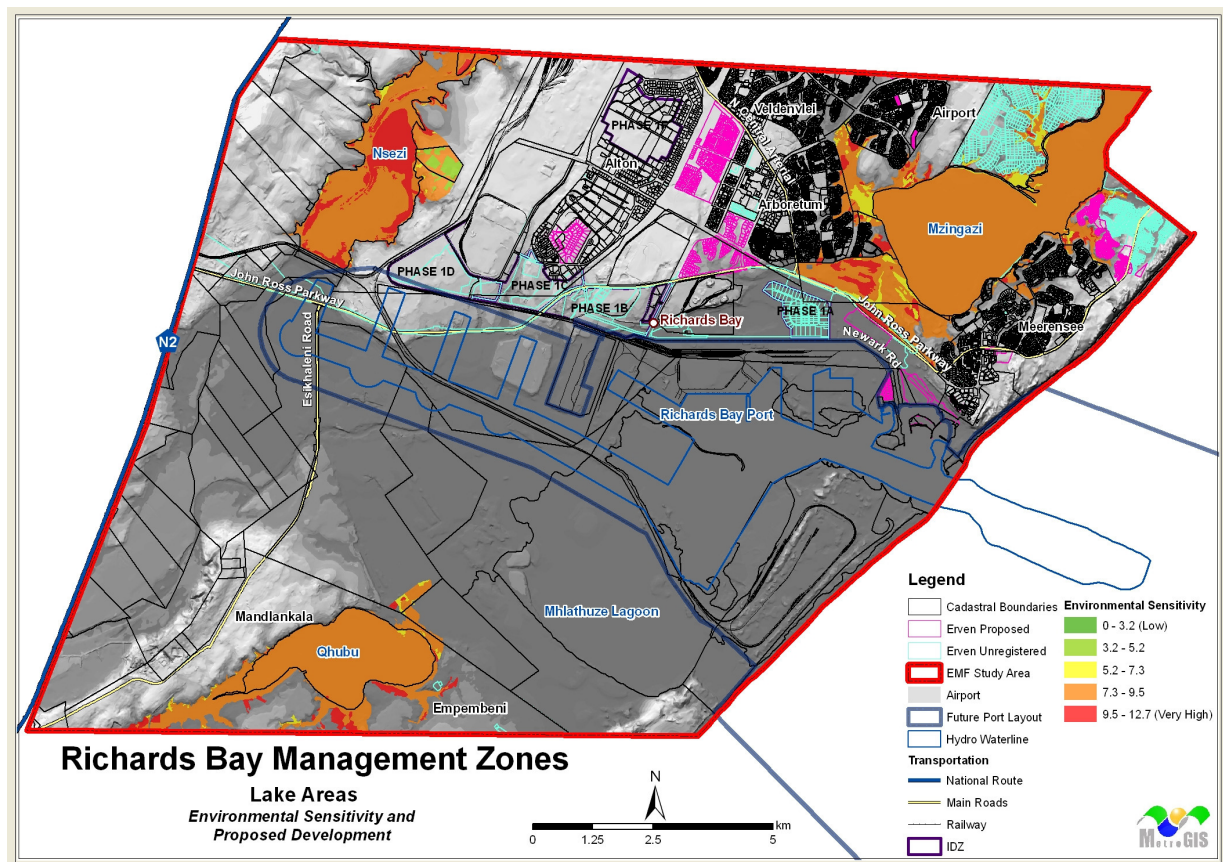


#### 4.4.1 Zone 1: Lake Areas

This management zone focuses on the three primary lakes in the area, namely Lakes Nsezi, Mzingazi and Chubu. **Figure 51** illustrates the location of these lakes. The total surface area of these three lake areas is approximately 3244 ha (12% of the study area). The total surface water resource area that includes the estuary roughly covers 40% of the study area. The primary aquifer which lies east of the N2 covers almost 90% of the study area. It is therefore clear that the hydrological attributes in the area is spatially linked and that, although the map does not show these linkages, management of water resources in this study area strongly implies management of the area as a whole. Each of the management zones that follow has a strong relationship with these three most prominent water features in the area.



**Figure 51: ZONE 1: Lake Areas (Environmental Sensitivity and Proposed Land Use)**

#### CONSTRAINTS IN THIS ZONE:

Water availability and variability is a constraint in the whole area. Excessive water demand from industry, agriculture, forestry and urban/commercial users has necessitated the development of the inter-basin transfer scheme from the Tugela to supplement the Mhlathuze runoff. Excessive withdrawal and activities in the various catchments impact the ecological reserve of the lakes with consequences for ecological systems. Lake Mzingazi has already exceeded its supply capacity in the past decade and faced risks of saline intrusion. Urban, peri-urban, subsistence agriculture and forestry activities impact on the supply and quality of Lake Chubu. A significant increase in the abstraction rates over the past 20 years has been observed in Lake Nsezi.

Encroachment of development into the riparian zones negatively affects water quality. Contamination of stream flow and groundwater impact lake water quality that leads to high recovery costs for downstream users.

The large variability of rainfall in the region creates problems for water supply management. There have been several extremely large rainfall periods with over 2000 mm in a year and other periods of severe drought with less than 750 mm

#### **OPPORTUNITIES IN THIS ZONE:**

The generally high rainfall provides a significant proportion of the main water resources which increases the level of water security for the region. The high humidities moderate the level of evapotranspiration but still constitute a very large proportion of the water use in the region. The proximity of the area to the sea also offers some opportunities for desalination to support the water resources but would require large input of energy which is a serious constraint. It is likely that reducing demand would be cheaper.

There are opportunities for rehabilitation and conservation to enhance future sustainability of the resource. The Lake areas also present opportunities for tourism and recreation.

#### **POTENTIAL CONFLICTS BETWEEN OPPORTUNITIES:**

It is inevitable that a conflict will arise between water consumers due to limited resource supply. Availability and supply must be coupled to vulnerability of consumer failure (*i.e.* assurance of supply). A potential conflict exists where the use and protection of water and associated resources may limit access for sustainable livelihoods.