

1. Introduction

1.1 Background

The implementation design phase of the National Aquatic Ecosystem Biomonitoring Programme (NAEBP) was initiated in August 1997. This programme, subsequently renamed the River Health Programme (RHP), consists of four portfolios each focusing on different aspects of river health such as communication (including stakeholder and grassroots communication); capacity building; research, development and funding; and training. In addition to these general portfolios, each province of South Africa is represented by a regional "champion" who is responsible for the initiation of biomonitoring within their province. The overall objective of the RHP is to develop the procedures and infrastructures for implementation and ongoing maintenance of biomonitoring on a national scale.

Several organisations are using components of the biomonitoring programme depending on their particular objectives and spheres of expertise and interest. An aspect that has continually been raised in biomonitoring circles is that of reference conditions or an established benchmark with which monitoring information can be compared (see section 2.1). Southern Waters Ecological Research and Consulting cc, as part of the research and development component of the RHP, is focusing on establishing a method for the derivation of ecological reference conditions with particular attention being paid to invertebrate assemblages. This report is the first in a series of reports that focuses on such conditions and it outlines the development and application of a spatial framework designed to assist with the identification of river types and selection of reference sites.

The overall objective of the project, to derive ecological reference conditions for rivers of Mpumalanga (the study region), focused our attention on the Mpumalanga Province. However, in ecological terms the division of rivers on the basis of political regions is not particularly meaningful. The decision was therefore taken to include the entire area represented by Department of Water Affairs and Forestry (DWAF) primary drainage regions B and X at the level of spatial analysis. The Sabie, Crocodile and Olifants Rivers, which form the focus of the Mpumalanga State of the Rivers Project (Water Research Commission project K5/850/0/1), fall within these DWAF drainage regions. In future discussions within this report, when reference is made to Mpumalanga rivers, all rivers in DWAF regions B and X are being referred to. The location of these two DWAF drainage regions in relation to the boundaries of Mpumalanga and Northern Province are shown in Figure 1. B1, B2, B3, B4, B6, X1, X2, X3 and X4 fall largely or entirely within Mpumalanga Province, whilst B5, B7, B8 and B9 fall largely or entirely within Northern Province.

1.2 The purpose of this document

The purpose of this document is as follows:

- To outline developments with respect to the establishment of a spatial framework for rivers of Mpumalanga (DWAFF drainage regions B and X)
- To discuss sources of information used, methodological aspects and problems experienced during this exercise
- To characterise the whole study region in terms of bioregions, ecoregions, terrain morphology, vegetation and geology
- To characterise each DWAFF secondary catchment in terms of ecoregions, geomorphological zones or sub-regions (main rivers and tributaries only), terrain morphology, vegetation and geology
- To provide a summary table of all named rivers at 1:250 000 or 1:500 000 scale in Mpumalanga region detailing each river's "parent" river, level 1 ecoregion, vegetation type, geological or lithostratigraphic type and hydrological type

Political Region

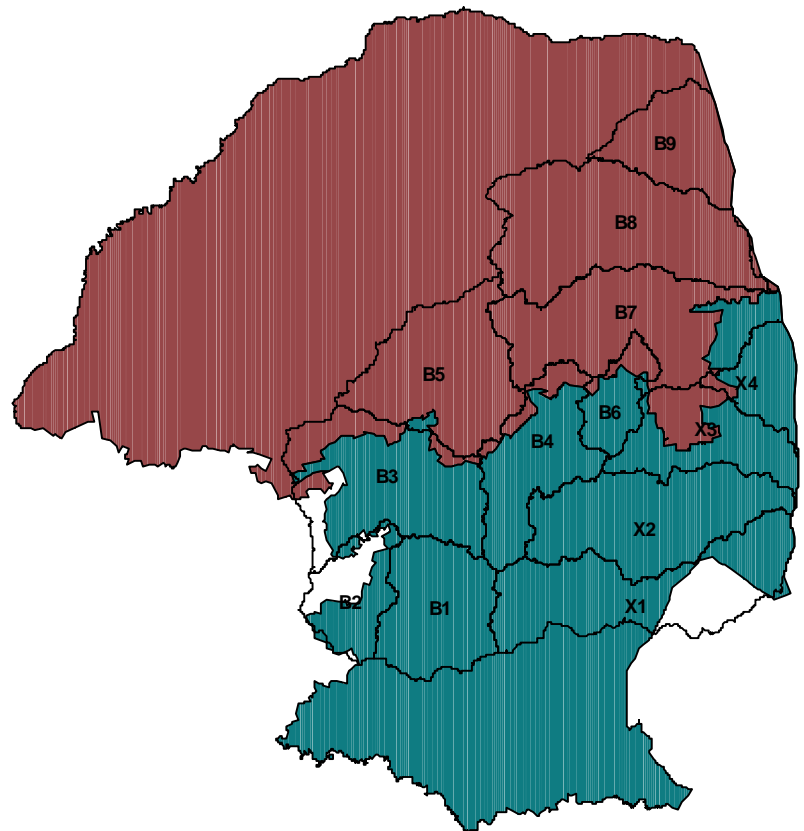
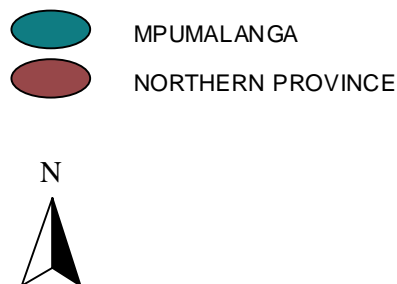


Figure 1. Department of Water Affairs and Forestry primary drainage regions B, comprising B1-B9 and X, X1-X4, in relation to the political provinces, Mpumalanga and Northern Province.