# EXECUTIVE SUMMARY

A national monitoring programme, the River Health Programme (RHP), is being designed for South Africa which focuses on measuring and assessing the ecological state of riverine ecosystems. The overall goal of the RHP is to expand the ecological basis of information on aquatic resources, in order to support the rational management of these systems.

A pilot application of the RHP is currently being undertaken on the main rivers of Mpumalanga Province. The overall project goal of which is to develop and implement biomonitoring technologies for rivers. This included the need to develop and apply a rapid index to assess the condition of riparian vegetation which could be integrated into the biomonitoring programme for the Province.

Nigel Kemper of IWR Environmental was appointed by the Water Research Commission (WRC) to undertake the development of the Riparian Vegetation Index (RVI). The appointment involved the development and testing of a relatively simple and rapid index to assess the condition of riparian vegetation over a three year period in conjunction with the WRC - Mpumalanga pilot study. The RVI was developed and refined in stages.

Initially an aerial based method was applied to satisfy information requests for riparian vegetation condition on the Crocodile River. The method involved the assessment of the relative impacts, from an aerial video of the river under assessment, of seven criteria relevant to river degradation. The method culminated in an overall assessment of river condition for different reaches of the river according to six classes relative to a hypothetical pristine condition.

A site based method was later adapted from the Index for Stream Condition (ISC), developed for similar application in Australia. Development of the RVI involved the adaptation of each of the components of the ISC to suit specific South African riparian vegetation and site characteristics, personnel constraints and information requirements. A RVI formula was subsequently developed relating each of the components which are carefully assessed at specific sites in the field.

The RVI is derived from the following formula:

$$RVI = [(EVC) + ((SI \times PCIRS) + (RIRS))]$$

Where;

- EVC is extent of vegetation cover,
- SI is structural intactness,
- PCIRS is percentage cover of indigenous riparian species, and
- RIRS is recruitment of indigenous riparian species.

The assessment of the components on site is conducted by technical staff of appropriate organisations on specific field data sheets according to a carefully tested and described method. The RVI score and component scores are derived and stored in the National Biomonitoring database with the aid of the Rivers Database programme.