

PRACTICAL ASPECTS OF VITICULTURAL ZONING IN SOUTH AFRICA

LES ASPECTS PRATIQUES DU ZONAGE VITIVINICOLE EN AFRIQUE DU SUD

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ABSTRACT

Legislation for demarcating 'wine of origin' units in South Africa, took effect in 1973 and is administered by the statutory Wine & Spirits Board. The Western Cape Province is an umbrella geographical entity, which encompass all wine of origin units, excepting four wards situated in the Northern Cape and Orange Free State. The Western Cape encompasses an area with a predominant Mediterranean climate, largely conforming to what is known as the 'Winter Rainfall Region'. Four categories of units of origin exist, viz. regions, districts, wards and estates. Regions are large, encompassing units, but with borders largely following macro geographical features like mountain ranges and rivers, representing broad climatic zones. To demarcate districts, divisional (administrative) boundaries were mostly used, but in such a manner as to represent more homogenous macro climatic zones. Wards are at present the most strictly zoned. Natural environmental factors, viz. climate, topography and soils/geology, are mainly used for demarcation. The smallest units are estates. The basic requirements are that the property must be owned by one producer or organisation, that adequate vinification facilities must exist, that the wine must be made on the property, and that only wine from grapes from the property may be marketed under the estate's name.

Having only about 340 years of viticultural history, more emphasis is placed on natural factors than on tradition and demarcated units are allowed to develop their own character in terms varieties, cultural practices and wine styles. Applications for demarcation go to the Wine & Spirits Board, which has a Demarcation Committee dealing with this. This committee consists of technical experts in the fields of viticulture, enology and soil/environmental sciences. Members are drawn from industry, research and educational institutions, without representing any of these. The applicant must supply data on natural factors. Usually these are climatic patterns, topography, natural features like rivers, mountains or hills, and in the absence of detailed soil maps, land types. The latter is a concept unique to South Africa. The Committee then studies this data and the area and then propose a demarcated unit. This proposal is negotiated with the applicant(s), and when consent is reached, without sacrificing the technical principals involved, the demarcation is advertised to ensure the consent of other possibly interested parties. Producers in the demarcated unit are obliged to register with the Wine & Spirits Board and to record all movement of grapes, musts and wine for random inspection, if they want to claim 'wine of origin' on their labels. The Board guards against misleading information on labels and all wines of origin have to pass chemical and sensorial testing to ensure minimum standards.

RESUME

Depuis 1973, une commission statutaire administre la législation qui régit le zonage vitivinicole en Afrique du Sud. La province «Le Cap de l'ouest» cerne toutes les zones viticoles sauf quatre unités. Pour la plupart, le Cap de l'ouest a un climat méditerranéen. Les zones viticoles - qui produisent les "vins d'origine" - sont des régions, des districts, des quartiers et des domaines. Les régions sont vastes, séparées par la topographie, par ex. des chaînes de montagnes et des fleuves. Généralement, chaque région représente une zone climatique. Le climat de chaque district est plus homogène. Les quartiers sont exactement délimités par le climat, la topographie et la géologie. Les domaines sont les plus petits. Chaque domaine doit avoir un seul propriétaire.

En Afrique du Sud, chaque zone viticole peut développer un caractère unique. Pour la répartition en zones, on s'adresse à un comité. Le comité comporte des experts techniques qui sont spécialisés en sciences naturelles et viticoles, des membres venant de l'industrie et des institutions de recherches et d'éducation. Le candidat doit soumettre des données sur les variations climatologiques, la topographie, et les types de sols. Le comité approfondit les données et propose une zone viticole. Ensuite, le comité entre en pourparlers avec le(s) candidat(s), et annonce la délimitation pour assurer l'accord de chaque parti intéressé. Les producteurs doivent se soumettre à l'inspection faite au hasard, pour revendiquer le droit d'imprimer "vin d'origine" sur des marques. La commission se méfie des renseignements trompeurs sur des marques. Pour assurer un degré d'excellence, le vin doit subir des épreuves chimiques et sensorielles avec succès.

HISTORICAL BACKGROUND

From the first vineyard planting in 1655 at the Cape by the first Dutch settlers, viticulture spread fairly rapidly to adjacent coastal villages such as Stellenbosch and Somerset West. The advent of the French Huguenots in 1688 was a marked stimulus for viticulture (PEROLD, 1963), their legacy still very much evident in the village of Franschhoek and in the names of many wine farms. During the period 1780-1890, the region of Constantia at the Cape became internationally famous for its natural sweet wines and can truly be regarded as the first authentic wine of origin of repute from South Africa (SAAYMAN, 1998). The quality potential of Cape grapes were recognised by several governing officials, like Governor W. A. van der Stel, Governor-General Baron von Imhoff and Commissary De Mist, who respectively developed farms, recommended the acquisition of European expertise and propagated the importation of European vines (SAAYMAN, 1998). The latter was only realised in 1910 by the importation of about 100 of the best grape varieties from Europe and Algeria by PEROLD on behalf of the Government (PEROLD, 1936). Because of preference tariffs, viticulture was further dramatically stimulated during the British occupation of the Cape in the beginning of the nineteenth century (Burger, 1977). Towards the end of that century there were about 18 000 ha under vines in the Western Cape. Phylloxera broke out in 1886, but was readily overcome by the importation of American vine material from France (PEROLD, 1936).

Vineyards were mainly established along the south-western coastal zone of the Cape and eventually also in adjacent inland valleys where irrigation water was available (SAAYMAN, 1998), environment and cultural aspect playing a major role (SAAYMAN, 1988). In 2000 there were 105 566 ha under vines in South Africa, yielding 1.05 million tons of grapes, of which about 70% were white grapes (ANON, 2001).

Virtually from the onset of South African viticulture, the names of reputed vineyards were abused because of a lack of control over origin and quality, Constantia also being negatively affected. By request of the wine industry, legislation was eventually introduced in 1972, resulting in a Wine of Origin control system, administered by the government appointed Wine & Spirits Board (KOK, 1976; KOK, 1994).

STRUCTURE OF CONTROL

Under the 'Wine, Other Fermented Beverages and Spirits' Act 25 of 1957, an official 'Wine of Origin Scheme' was formulated in 1972 and instituted in 1973, protecting wines of origin and wines made from specific cultivars and/or vintages (THERON, 1998). Act 25 became too cumbersome and was replaced by the 'Liquor Products' Act 60 of 1989, which allowed the privatisation of the Scheme (ANON, 1997). The Scheme complies with EU regulations and *inter alia*, addresses principles such as business honesty, factual terms, titles, marketing truths and free participation. In accordance with the Liquor Products Act, the Wine and Spirit Board is responsible for the upkeep, administration and running of the Wine of Origin Scheme (it is also in a similar way responsible for the estate Brandy Scheme and the Scheme for the Integrated Production of Wine (IPW)). The Wines of Origin Scheme involves more than 30% of wines produced for direct consumption (DEIST, 2002). The Wine and Spirits Board has an independent chairperson, appointed by the Minister of Agriculture, and consists additionally of 12 members. Eight are nominated by primary producer and wholesaler organisations, two are officials representing the Department of Agriculture and two are researchers nominated by the Agricultural Research Council. The operation of the Board is schematically presented in Fig. 1.

Originally the Board did all work in connection with the administration of the Scheme, but presently makes policy decisions and decides on matters of principle, normal activities being delegated to committees. Except for the wine evaluation committees, all committees work on a basis of consensus (DEIST, 2002) and consist of experts in the respective fields, nominated by the industry and serving without remuneration.

The Management Committee answers for the Board and can handle protests by members of the Wine of Origin Scheme. Only non-consensus aspects and cases of principle matter are referred to the Board. (THERON, 1998).

Work Groups are experts in specific fields, appointed by the Board to make recommendations on adaptations or amendments to regulations. The Legal Committee drafts legislation emanating from Board and Management Committee decisions. Finances are monitored by the Financial Committee, which reports to the Board *via* the Management Committee, and the Personnel Committee handles personnel affairs. The Secretariat is responsible for all finances, as well as the administrative duties of the Board, the Management-, Personnel- and Legal Committees, and the Work Groups (THERON, 1998).

The Label Committee meets on a weekly basis and scrutinises all labels for wines and estate brandies to ensure that they conform to the requirements of the Act. The Wine Evaluation Committee has 38 members at present, all wine judging experts, certified by the Cape Wine and Spirit Education Trust (ANON, 2002), and is responsible for the sensory evaluation of wines for preliminary certification and for export. This is done virtually every day of the week on a rotation basis. Wines that are rejected are automatically re-evaluated by the Technical Committee. The latter has 17 members, meets on a weekly basis, and is responsible for the judging of the sensory and analytical aspects of wines for final certification. It also handles

requests and reports regarding anomalies of a technical nature. Decentralised Evaluation Committees were established to cope with the large number of wines to be evaluated. They are responsible for the sensory evaluation of wines from designated areas (at present Stellenbosch, Paarl, Worcester and Robertson), for preliminary and final certification. Any demarcated area can apply to have such a committee and if it conforms to Board requirements, such a committee can be appointed (THERON, 1998; Deist, 2002).

The Demarcation Committee consists of six members and investigates applications from producers for the zoning of areas of origin (regions, district, wards and estates), reacts to requests by the Board regarding re-evaluation of or amendments to existing areas of origin, and makes recommendations in this regard to the Management Committee.

The South African Wine Industry Information & Systems (SAWIS) institution had been contracted by the Board to do the physical work of running and administering the Scheme. This involves inspectors and other personnel for on site inspections, drawing of samples and submission of wine to be certified to tasting panels, investigation and reporting of irregularities, processing of applications, notices and statistics, and issuing of certification seals (DEIST, 2002).

For a wine to be certified, indication of origin is compulsory. Indications of vintage and/or cultivar can be additional. For export, all wines, including uncertified wines, as well as wines evaluated more than eight months ago, must be evaluated according to the same standards as for certification. If 'Wine of Origin' (WO) from a demarcated and certified area are indicated, 100% of the grapes from which that wine was made must come from the specified area. In the case of vintage and cultivar indications, the requirements for 'purity' are 85% for wines to be exported.

ZONING OF AREAS OF ORIGIN

The demarcation or zoning of areas of origin started in 1972 (KOK, 1976) and was greatly influenced by European and especially French experience, Dr. Pierre HUGLIN, former Director of INRA, Colmar, being specially invited to South Africa to advise on this issue. In the zoning of areas of origin, the potential effects of natural factors such as topography, climate, soil patterns and geology on wine character, were considered as of primary importance, with less emphasis on biological factors such as tradition (cultivars, vitivincultural practices). The effects of location (climate) and soil on wine character, have subsequently been scientifically demonstrated in South Africa (SAAYMAN, 1977; CONRADIE *et al.*, 2002).

In 1993, the Scheme was amended to make provision for geographical units, the Western Cape and Northern Cape being such defined entities (THERON, 1998). The Western Cape comprises the south-western extremity of Southern Africa and has a Mediterranean climate where the most prominent viticultural villages are located (Fig. 2). This unit encompasses all present wine of origin areas, except for four production areas situated in the Northern Cape. Four categories of wine of origin units were and are still basically used, viz. regions, districts, wards and estates. At present five regions, thirteen districts, 47 wards and 97 estates have been demarcated and registered.

Although administrative boundaries were predominantly used to demarcate the larger encompassing regions, these boundaries still conform to an important degree to macro geographical features such as mountain ranges and river courses, as is evident from Fig. 3, and represent broad climatic zones (SAAYMAN, 1998). For the second category, districts, administrative and also farm boundaries were used, but in such a way as to represent more

defined macro climatic zones. Evidently, large variation in soil patterns had to be allowed here.

The third category is wards, which are the most homogeneous in terms of natural factors and the most strictly zoned. Aspects that are considered in the zonation of these units, are mainly geographical, climatic and soil factors. Although existing cultural practices that may effect wine character and existing experience that proves uniqueness are also considered, these aspects are usually less prominent in a young wine country like South Africa. Wards must also have a traditional name by which it has become known and that identifies the area properly.

The fourth category is estates. Here, the basic requirements are that the land must be owned or farmed as a unit by the same producer(s). Only grapes from the property may be marketed under the name of the estate, there must be approved wine making facilities, and the wine must be made on the estate.

In the modern concept of terroir, climate, topography and soil are considered the natural factors that play a dominant role. The interaction between these factors has the potential to generate an unique agricultural product (in this case wine), of which the uniqueness can be further enhanced by biological factors such as grape variety and human inputs. During the long period of viticultural development in Old World countries, terroirs and associated traditions evolved to a large extent empirically, the role of tradition and proof of uniqueness being very important. South Africa lacks this long history and well developed traditions, consequently strong emphasis is placed on proven and potential effects of natural factors in defining units of origin.

In the zoning of units, climate and soil/geological patterns are of primary concern. Initially, demarcation was essentially based on so-called land types (MACVICAR *et al.*, 1974). Land type is a concept unique to South Africa and is defined as a class of land over which the macro climate, terrain form and soil pattern each displays a marked degree of uniformity and differs from other land types in terms of one or more of these factors. This land type information was published in a series of Memoirs on the Agricultural Resources of South Africa, together with 1:250 000 land type maps, covering the whole of South Africa. This information is presently also available as GIS data from the Department of Agriculture at Elsenburg.

In recent studies on the characterisation of natural terroir units in the Stellenbosch area, landscape characteristics (aspect, altitude and terrain morphological unit) were identified as the most significant components affecting the spatial variation of meso-climate and soil distribution (Carey, 2001). It is also evident that the complex topography of the Western Cape and the proximity of the sea are of mayor importance in determining macro- and meso-climatic conditions. The cooling effects of sea breezes during the growing season have been demonstrated (BONNARDOT *et al.*, 2001; BONNARDOT *et al.*, 2002), using a Regional Atmospheric Modeling System (RAMS) (PIELKE *et. al.*, 1992) in collaboration with the Laboratoire de Météorologie Physique of the University of Clermont-Ferrand, France. Models are also being developed to generate meso-climatic maps according to landscape features, mean February temperatures (MFT) appearing to be a useful index to differentiate between zones.

The Demarcation Committee of the Wine and Spirits Board consists of technical experts in the fields of viticulture, enology and soil- and environmental sciences, drawn from research institutions, producer organisations and the wine industry. Demarcation is not forced on producers and only investigated on application by interested producers or groups, and

implemented if found viable. Applicants are requested to supply all available relevant data and maps on natural factors such as land types, soil, topography and climate. This information is then studied and the proposed area physically inspected by the Demarcation Committee. Natural units are then identified and proposed to the interested parties, taking care that commercial interests do not mar the technical credibility of the proposed unit(s). When consensus is obtained, the proposed area(s) are then submitted to the Board for approval. A notice of the proposed zonation is subsequently advertised for 30 days in two prominent newspapers, allowing for possible objection by other producers/parties that may be negatively affected by the zonation or proposed name. The description of the zoned area is finally published in the Government Gazette and the area then becomes an officially certified unit of origin.

Strict control is administered when a producer wants to certify a wine in terms of origin, cultivar or vintage. This is done when application is made to press the grapes, during pressing, blending, bottling and when preliminary and final approval is given. The Board will certify a wine if all requirements have been met and the wine has passed sensory evaluation by a tasting panel of the Board. Samples of the wine are also analysed to ensure that all legal requirements have been met (THERON, 1998).

SUMMARY

The importance of control over and protection of wines of origin, has been recognized in South Africa virtually since the beginning of the industry, but only formalised since 1973 in response to entreaty by the wine industry. Zoning of units of origin was and still is largely based on European models and experience and further substantiated by scientific proof of the definite role of climate and soil (terroir) in determining wine character. Because experience (tradition) is largely lacking, units of origin are essentially zoned according to natural factors (topography, climate, soil) and producers in this unit then allowed to develop the full potential of their terroir(s) by means of cultivar choice and vitivincultural practices. To certify and administer zonation, South Africa has an effective legislative Wine Of Origin Scheme in place, administered by a Wine and Spirits Board, which exercises strict control during every faze of production to ensure the authenticity of claims regarding origin, cultivar and vintage. Amongst the New World countries, South Africa is at present probably the furthest progressed regarding the implementation of zonation, certification and control of wines of origin.

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SUBSCRIPS FOR FIGURES:

Fig. 1: Schematic representation of the operation of the South African Wine and Spirits Board (Adapted from Theron, 1998)

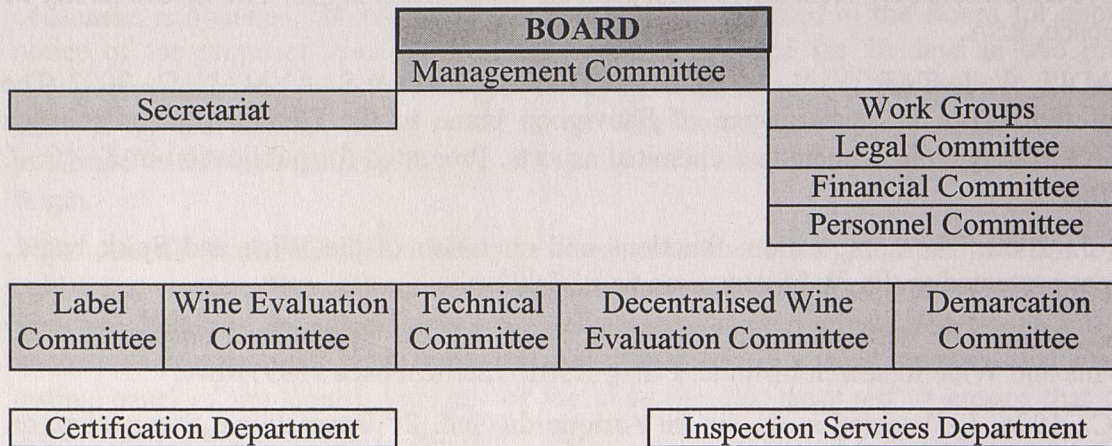


Fig. 2: The Western Cape Geographical Unit, with indications of majao climatic regions

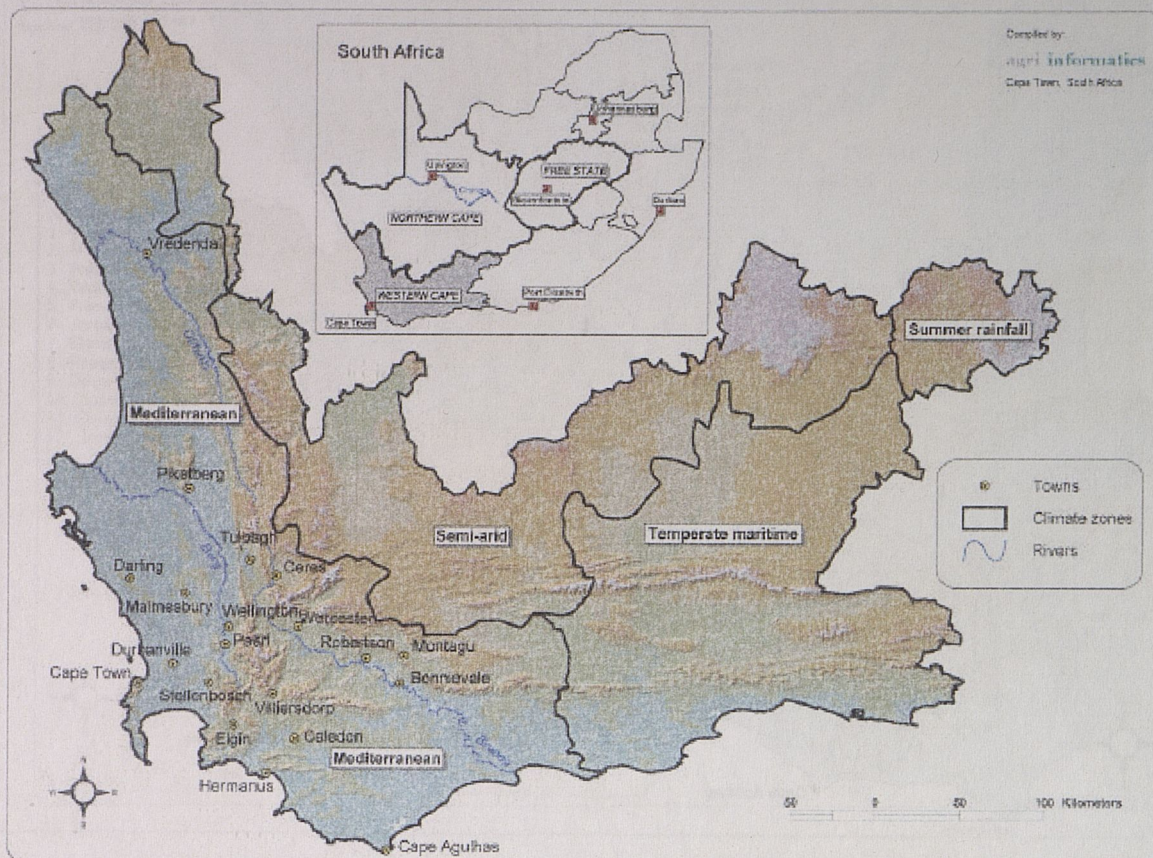


Fig. 3: Wine Regions of the Western Cape

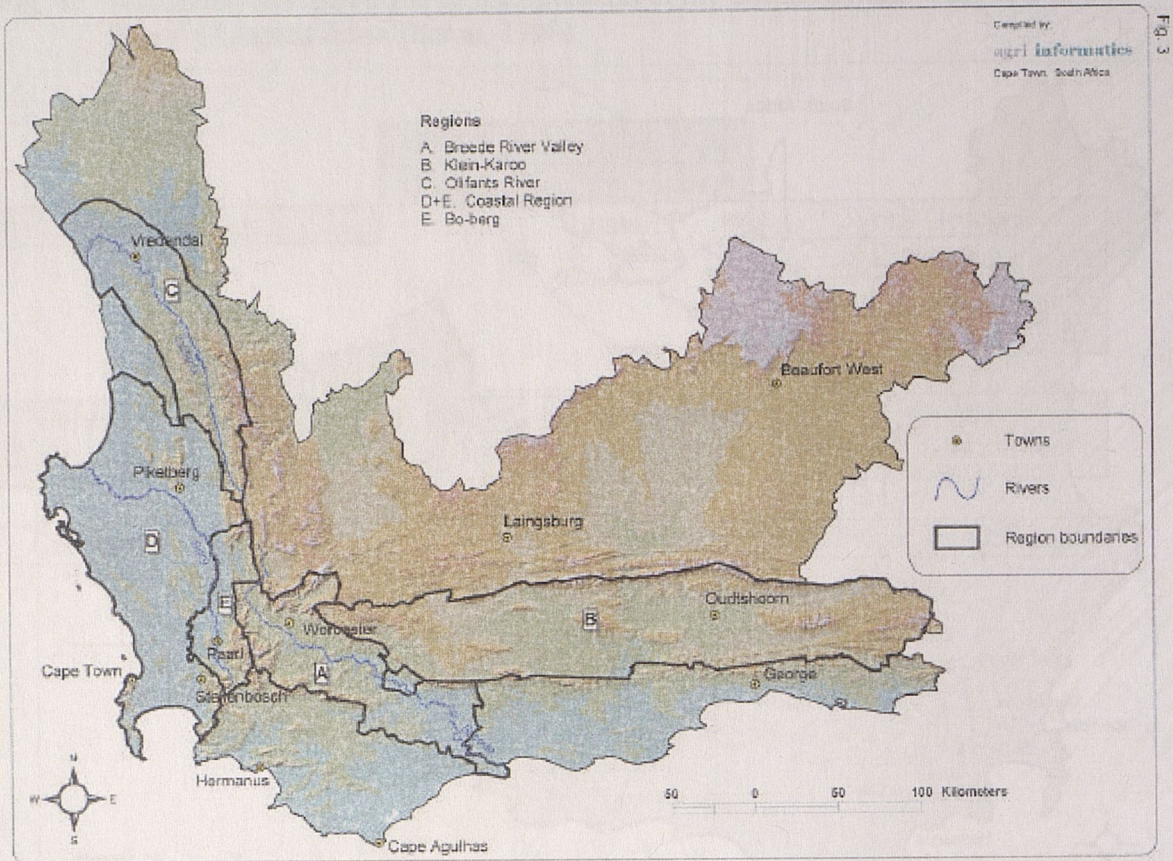


Fig. 4: Examples of Wine Wards in the coastal zone of the Western Cape

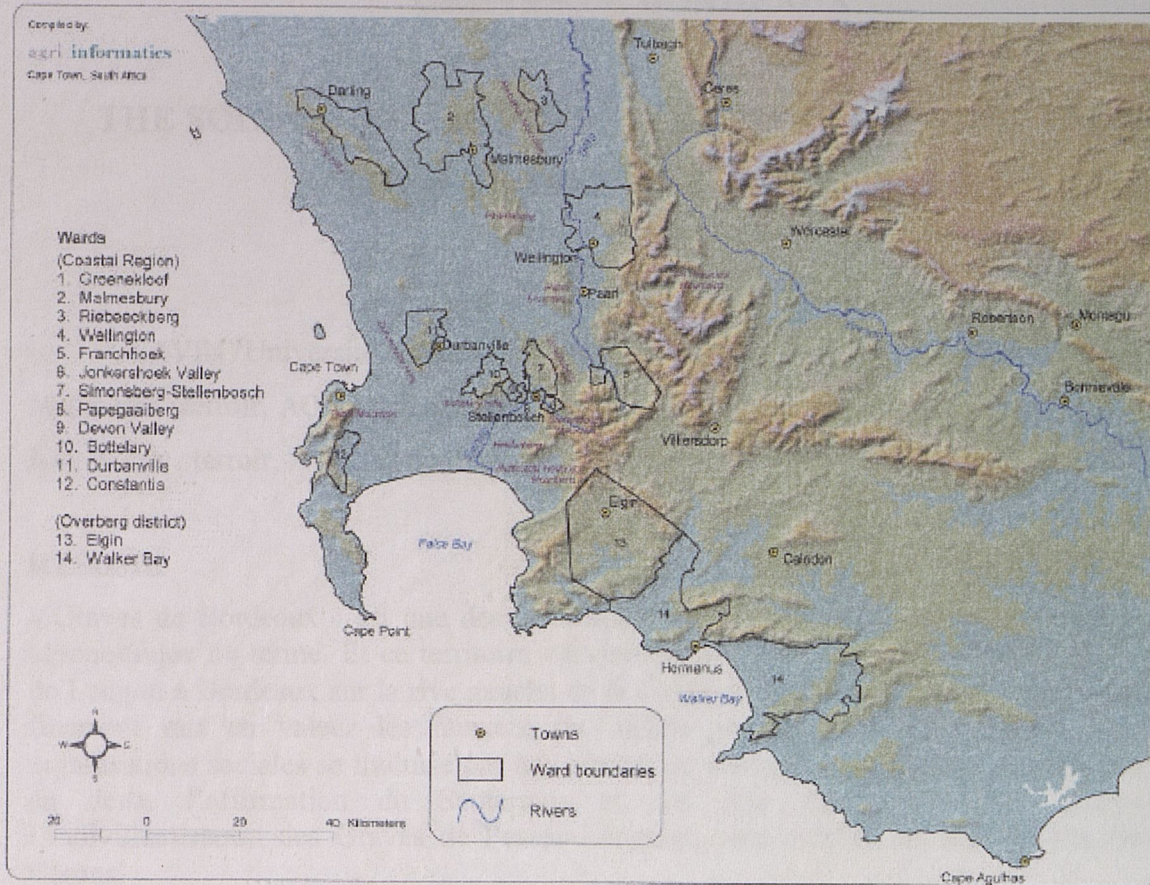


FIG 4