

A HISTORY OF THE WATERLIT COLLECTION (1974-1999): A HARD COPY RESEARCH COLLECTION ON WATER STUDIES AND ITS DIGITAL CATALOGUE

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Abstract

In the second half of the twentieth century, South Africa built up a reputation as one of the foremost countries of the world in terms of water infrastructure development. Dam projects such as the Orange River Scheme and the purification of sewage water to drinking water standards in the Namibian capital of Windhoek, were some of the many achievements that South Africa boasted.

How was it possible then for a country that was politically isolated to accumulate significant knowledge on the water sector and literally be on top of their game? A partial answer to this riddle is the Waterlit Collection (WLC), a collection of articles, reports and academic theses and dissertations collected and managed at the Council for Scientific and Industrial Research (CSIR) in Pretoria in the years from 1974 until the mid-1990s.

This article provides a historical overview of how the WLC of the CSIR, funded by the Water Research Commission (WRC), was turned into a corpus of more than 300 000 documents. Local research output at the time, as well as some of the latest research findings in other parts of the world, became accessible to water researchers in South Africa. There is indeed reason to believe that the collection contributed to water research in South Africa during the years of isolation. The collection also facilitated some of the country's breakthrough technologies in the water sector.

The study also explores how the rapid development of information technologies in library science, computer science and the evolution of widespread Internet use influenced the collection, which currently forms part of the South African Water History Archival Repository (SAWHAR) at the North-West University's Vaal Campus in Vanderbijlpark, Gauteng.

Keywords: Waterlit Collection (WLC); South African Water History Archival Repository (SAWHAR); Water Research Commission; Council for Scientific and Industrial Research (CSIR); water research; South Africa.

Sluutelwoorde: Waterlit-versameling (WLC); Suid-Afrikaanse Watergeskiedenis Argivale-versameling (SAWHAR); Waternavorsingskommissie; Wetenskaplike en Nywerheidsnavorsingsraad (WNNR); waternavorsing; Suid-Afrika.

1. INTRODUCTION

On 17 June 1999 the final meeting of the steering committee responsible for the Waterlit Database was held at the offices of South Africa's Water Research

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Commission in Rietfontein, Pretoria. It was a motley group of officials and representatives of water research entities in the country. For each of the six committee members present at the meeting, there was another member who had formally made an apology for absence. According to the minutes, the chairperson (Ms M Pretorius) remarked that “the meeting [was] a final meeting of the current format due to the changes that [were due to] [...] be made to the Waterlit database building process [...]”²

The same committee, now in the process of being dissolved, had been privy for more than a quarter of a century to a strategy devised by water research managers at South Africa’s Council for Scientific and Industrial Research (CSIR) to secure the latest scientific information relating to all fields of water studies from many parts of the world. The fact that by 1999 the collection stood at more than 300 000 items,³ making it one of the largest databases of its kind, said a great deal about the dedication and investment in water knowledge of a special kind and for a special purpose. However, on the eve of the new millennium and at a time when the new post-apartheid South Africa was in the process of facing the challenges and the future on a distinctly different trajectory, the value of a collection of hard-copy documents on water from around the world seemed almost nondescript.

After 1999 the Waterlit Collection (WLC) was transferred to the Rhodes University in Grahamstown, but it was returned to the Water Research Commission a few years later before being transferred to the Vaal Campus of the North-West University (NWU) in Vanderbijlpark, where it currently forms part of the South African Water History Archival Repository (SAWHAR).

2. OUTLINE

In the discussion to follow, the objective is to provide an impression of the historical significance of the WLC. There is a need to find answers on issues such as: How did the collection come into existence? What role did it play in laying the foundations for a considerable corpus of water-related knowledge in South Africa’s research sector?

Attention is given to the workings of the system, the people who were behind operations and how the WLC was marketed. A significant part of the discourse deals with the way technology changes at the CSIR affected not only the WLC, but also the people working in the South African Water Information Centre (SAWIC).

2 Water Research Commission Archives (Hereafter referred to as WRC) K6/1/0/1. Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, p. 1.

3 *Ibid.*, document 4/99. CSIR progress report to the steering committee Waterlit Database: production and development, p. 1.

Considerable time and effort were put into marketing the collection in South Africa, especially amongst researchers, managers and officials working in the country's water sector. In fact, by the 1980s the WLC was also available to users overseas. Much marketing went into the collection, to the extent that a steering committee member on occasion observed that he found it remarkable that a service, which brought in so little money had to be marketed so comprehensively.

Even in its original format the WLC was a vast collection of hard copy documents. Over a period of two decades the introduction of advanced information science technologies, specifically mainframe computers and later personal computers, as well as the Internet, enhanced the potential power of the WLC to generate knowledge. From the outset the system was designed to integrate with the most up-to-date electronic technologies for information specialists.

One area of notable change was the way the content of the WLC was duplicated and made widely available to users. What began as a process of sending photocopies to users who requested specific information, later became scanned documents sent by e-mail. Moreover, what appeared to be a massive electronic database catalogue that could only be maintained on a mainframe computer and even perhaps housed in a separate building designated for this purpose, could now be stored and distributed on a single CD-rom.

In the 1970s the WLC featured a catalogue that was linked to a physical set of documents in a CSIR library. This library provided researchers with some of the latest and most vital information in the field of water studies. Water studies came to the fore as an important interdisciplinary field of research in the aftermath of severe drought conditions in South Africa in the 1960s.⁴ There was a dire need for the government to secure sufficient supplies of good quality water in a rapidly developing but water-scarce country. Behind the physical catalogue of the WLC and its database there were many librarians and information scientists working at retrieving very specific pieces of information from a vast array of potential sourcing areas, and doing a meticulous job of cataloguing the material and then sending the information to individual users.

As a result of the information technology revolution of the 1980s and 1990s the operations of the WLC were radically transformed. The collection was also relocated from its original base at the CSIR to the Water Research Commission, its funding agency in Pretoria. In 2013 the WLC, in hard copy, became part of the South African Water History Archival Repository (SAWHAR) at the North-West University's Vaal Triangle Campus in Vanderbijlpark where it forms part of a collection aimed at being of service to researchers in the field of water studies.

4 For a more comprehensive perspective on the government's strategic planning in the aftermath of the drought, see Republic of South Africa (RSA), 1970. R.P. 34/1970. Report of the commission of enquiry into water matters (Cape Town: Government Printers, 1970).

3. POST-WORLD WAR II WATER RESEARCH IN SOUTH AFRICA

South Africa's post-World War II economic development was notable for its rapid growth and unsurpassed progress, much the same as most economies in the West.⁵ In an effort for the country to keep abreast, the government made a substantial investment in the founding of the Council for Scientific and Industrial Research (CSIR) in Pretoria in 1948 to provide essential scientific and technological support for the country's burgeoning growth path. One of the areas on which the country's leading scientists started focusing on, was water. At the CSIR a division for water research was started at the National Research Laboratory in 1948. Ten years later it led to the formation of the National Institute for Water Research (NIWR), which by 1966 had regional laboratories in Durban, Bellville, Bloemfontein and Windhoek. The interdisciplinary nature of the NIWR was evident from the outset. Water research could not be confined to a single discipline. Therefore the institute tended to include disciplines of sanitary engineering, chemical engineering, chemistry (organic, inorganic, physical and biochemistry), microbiology, zoology, and botany. In 1966 there were six research groups and four regional laboratories in which the institute operated.⁶

The Water Research Commission (WRC), the flagship of water research in South Africa, was founded in the aftermath of severe drought. The most dramatic manifestation of this natural crisis was when the water level of the Vaal Dam dropped to 26% of its capacity.⁷ The dam was a major source of water to the populous and economically active Pretoria, Witwatersrand (Johannesburg) and Vaal Triangle region. In 1966 the government appointed a commission of enquiry under the leadership of Prof. SP du Toit Viljoen. It was tasked to investigate the situation and make recommendations on the efficient water management across all sectors.⁸

The commission's report was published in 1970.⁹ When it reached parliament, the responsible minister, SJP (Fanie) Botha, stressed the importance of generating knowledge on water-related matters. There was also a call for a statutory organisation to take responsibility for this task. Subsequently the *Water Research Act, Act 34 of 1971*, was approved by parliament on 1 September 1971. The first

5 For a critical evaluation in environmental historical terms of the development trend, see C Pfister, "The '1950s syndrome' and the transition from a slow-going to a rapid loss of global sustainability". In F Uekoetter (ed.) *The turning points of environmental history* (Pittsburgh: University of Pittsburgh Press, Pa, 2010), Chapter 5.

6 GJ Stander, "Water pollution research: A key to wastewater management", *Journal Water Pollution Control Federation* 38(5), May 1966, p. 775.

7 Anon., "Water Research Commission – celebrating 40 years of research excellence", *Water Wheel* 10(Special Anniversary Issue), 2011, p. 6.

8 *Ibid.*, pp. 6-7.

9 RSA, R.P. 34/1970. Report of the commission of enquiry into water matters.

secretary of the WRC was appointed in the person of JP Kriel. The *ex officio* chairperson was GJ Stander, who became the CEO.¹⁰

The Water Research Commission's initial activities were confined to the CSIR and a few other government departments and had a direct bearing on water and the environment.¹¹ The terms of reference for the Water Research Commission also stipulated that the commission had to, "support the application and dissemination of research findings".¹² The research feeding ground of the newly formed WRC was the CSIR and more specifically the National Institute for Water Research (NIWR),¹³ where Dr GJ Stander (1911–1997) was in charge. He was a chemist who had graduated with a PhD from the University of the Witwatersrand. His research dealt with anaerobic digestion for purifying the troublesome effluents of certain industries.¹⁴ He became the first chief executive officer of the Water Research Commission, remaining at the helm of the institution until his retirement in 1979.¹⁵

4. THE START OF THE WATERLIT COLLECTION

What was eventually to become the Waterlit Collection had its origins at the CSIR library. By the 1960s the CSIR had the largest science and technology library in South Africa. In 1966 the National Institute of Water Research (NIWR) requested the CSIR's Information and Research Services (IRS) to develop a broad-based information service on current developments in and awareness of water-related issues. This was to be made available to researchers working in the field of water.¹⁶ The information service had to be current and up to date; have a comprehensive coverage base; and be accessible for information retrieval.¹⁷

One response to the demand for information was the Waterlit Collection. The concept had its origins with Stander. Once he had moved from the CSIR to the Water Research Commission the idea was mooted for the establishment of

10 Anon., "Water Research Commission – celebrating 40 years of research excellence", *Water Wheel* 10(Special Anniversary Issue), 2011, p. 7.

11 *Ibid.*

12 WRC K6/1/0/1. Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 1.

13 Stander, p. 774.

14 Anon., "GJ Stander: A water research pioneer", *Water Wheel* 10(Special Anniversary Issue), 2011, p. 9.

15 *Ibid.*

16 PJ Aucamp, "The development of a South African computerised bibliographic data base on water", *Water SA* 3(1), January 1977, p. 5.

17 *Ibid.*

the South African Water Information Centre (SAWIC).¹⁸ The centre was now responsible for the current awareness distribution system, a service for which there was a significant need in South Africa's water sector.¹⁹

In the early 1970s there was little water-related information dealing specifically with South Africa. International online databases took scant note of local water sector developments. It was also difficult to provide local scientists with suitable information from existing commercial databases.²⁰ Subscribing to many of the journals was cumbersome and expensive. The new database largely overcame this problem by making available material free of charge to users.²¹ At the time it was standard practice for CSIR researchers in the water sector to spend Friday afternoons working in the library. The rest of the week they would be working in their offices, in the labs, or out in the field. Friday afternoons they worked in the library to become familiar with current publications in their respective fields of water studies. For many, the basic preliminary work in the library on a Friday afternoon became the reading material at home over the weekend.²² Dr Stander's personal library was transferred to the SAWIC and it was from these sources that the water researchers were able to gain insight into the fields in which they were working.²³

From the outset, what was to become known as the WLC was seen as a database for researchers working in a broad interdisciplinary field that could comfortably pass as water studies.²⁴ At the helm of the project was Dr Pieter Aucamp, a chemist in the agricultural sector, with considerable experience as CSIR research staffer.²⁵

18 WRC K6/1/0/1. Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 1; TOA 20130709, PJ Aucamp, Pretoria (Audionote file).

19 GC Cillie, P Coombs and PE Odendaal, "Water pollution in South Africa", *Journal Water Pollution Control Federation* 51(3), part 1, March 1979, p. 464.

20 WRC K6/1/0/1. Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 2.

21 Tempelhoff Oral Archiva (Hereafter referred to as TOA) 20130709. Interview: PJ Aucamp, Pretoria, 9 July 2013 (Audionote file).

22 *Ibid.*

23 *Ibid.*

24 Aucamp, p. 5.

25 TOA 20130709, PJ Aucamp, Pretoria (Audionote file).

5. THE WLC AND COMPUTER-BASED LIBRARY INFORMATION SYSTEMS IN SOUTH AFRICA

In the 1960s the CSIR had the most comprehensive science and technology library in South Africa.²⁶ It was also well connected in the field of library information sciences. Computers were first used in the early 1960s in the library environment in the United States of America. Information scientists in South African libraries soon followed their example.²⁷ The South African National Bibliography (SANB), a project introduced by the State Library in Pretoria, was started as part of a collaborative initiative between the University of the Free State and the Zentralstelle für Maschinelle Dokumentation in Frankfurt, Germany. It was one of the first national bibliographies to be turned into an electronic database.²⁸ In 1983 the South African Bibliographic Information Network (Sabinet) was established to provide library users in all parts of the country with computerised bibliographic data.²⁹

Information specialists involved in the planning of the WLC in the early 1970s worked towards a computer-based system. The concept they decided upon was that of the Keyword-in-Context (KWIC).³⁰ They also brought in an existing database, the Literature on Water (CLOW) that carried most information required for information on water studies available in print. Consequently, CLOW, which had been operational in other CSIR divisions, with data dating back to 1971, served a useful purpose.³¹ They also soon incorporated WAAF, a dedicated database used at the Department of Water Affairs and Forestry (DWAFF).³²

The formal production of the Waterlit database began in 1975. Within a year 5 670 items had been indexed.³³ Compiling a database was cumbersome work. The Waterlit database was maintained along with a number of smaller in-house CSIR databases on an IBM370/158 mainframe computer. Indexing was done by hand in pencil on specially designed coding forms. Typists would then key in the information on a temporary database through text-editing video editing terminals in a central location. Every week, information scientists processed material in batches. Finally, every three months the information that had been compiled in

26 Stander, p. 775.

27 M Botha, "In Africa semper aliquid novi?", *Proceedings of the IATUL Conferences*, paper 18, IATUL Proceedings 1991(Purdue University: Purdue ePubs), p. 93.

28 *Ibid.*

29 *Ibid.*

30 Aucamp, p. 5.

31 *Ibid.*, p. 7.

32 WRC K6/1/0/1 Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 2.

33 *Ibid.*

this painstaking manner was downloaded onto magnetic tape for the SDI service system. As the workload increased the periodic downloads were made once a month.³⁴

The amount of manual work was enormous. The existing information system on researchers in the country was hand-typed and literally tippexed if any details required correction. People did not have personal computers,³⁵ so it was accepted that copies of material for researchers would go out as hard copies by “snail” mail. Of vital importance was the bibliographical database on the hard-copy datacards.³⁶ In the 1980s the indexing went from datacards to dumb terminals. If one wanted a field broadened it was a great effort. There was, however, a high-quality control system. Three people conducted regular checks as a form of quality control.³⁷

The system changed in due time to one that depended on a team of women working from home in many parts of South Africa and even overseas. They meticulously indexed data for what was to become one of the most comprehensive water biographies of the twentieth century.

By 1995 the WLC database was running on a UNIX operating system. The transfer to the new system implied that SAWIC staffers had to spend a great deal of time on the transfer of the data. The major advantage of the new system was that it enabled the staff to routinely access the data on the WLC and update records and make corrections directly on the system. In former times this type of work was most time-consuming.³⁸ By 1998 the WLC was running on a UNIX-based SPARC 20 computer system, with a Cuadra and Star/Web retrieval system. The system was relocated in the course of 1997 and accommodated in an area where access was limited.³⁹ The data was backed-up daily using marked tapes, with some of the tapes stored off-site. The backup process was run overnight so as to cause as little disturbance as possible to web users. In the daily process of running the backup it was necessary for a one-hour shut down.⁴⁰

6. FACTORS THAT INFLUENCED THE FORMATION OF THE WLC

In the early 1970s there was a substantial need for information on international, but also South African water research literature. It appears from the available

34 *Ibid.*, p. 3.

35 TOA 20130703, T James, Menlo Park, Pretoria.

36 *Ibid.*

37 *Ibid.*

38 WRC K6/1/0/1, vol. 1, document 4/95. Progress report: South African Water Information Centre (SAWIC), 1 April 1994-31 March 1995, p. 7.

39 *Ibid.*, vol. 2, document 3/98. CSIR progress report to the steering committee Waterlit database production and development, July 1997-June 1998, p. 6.

40 *Ibid.*

evidence that there was a global need for data on water-related research. At the CSIR researchers basically had access to two databases. These were CLOW (compiled by the Institute for Water Research at the CSIR) and WAAF (compiled by the Department of Water Affairs).⁴¹ Although these were relatively small collections, when they were consolidated, the amount of accessible material tended to increase substantially.

South Africa's international political isolation began to accelerate in 1960 with the Sharpeville uprising. Over an extended period of time there were notable ramifications in the field of South African science and technology research. What began with mere gestures of apathy in the field of research communication became more intense in the 1960s and 1970s.⁴² However, in South Africa's water sector there were researchers who continued to enjoy meaningful collaboration with overseas contacts and were not entirely excluded from the international scene.⁴³ In an effort to bridge some of the lapses in information flow, it was up to information science experts, with input from water researchers, to make significant and relevant additions to the WLC.

The development of the WLC was a costly initiative. But in her final report on the collection, Ms Martha Pretorius indicated that its real value was inestimable. She explained that over a period of 25 years, at a time, "when South African researchers were suffering under an international boycott which also included the availability of scientific information, Waterlit assisted local researchers to keep up to date with international research results".⁴⁴

The fact the collection was located in South Africa also saved researchers money and time. They no longer needed to order materials from overseas. She went on to explain that, "for the WRC the return on their investment lies in the excellent products and high quality research results achieved by the local water research community through the assistance of a database of international standing and quality".⁴⁵

The strength of the WLC lay in the fact that a substantial amount of research was focused on South African conditions. Furthermore, the collection's wealth of information on specific themes – for example ocean sewage outfall

41 *Ibid.* Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 2.

42 TOA 20130709, PJ Aucamp, Pretoria (Audionote file).

43 *Ibid.*

44 WRC K6/1/0/1. Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 7.

45 *Ibid.*, p. 8.

pipelines – made it particularly useful for local researchers.⁴⁶ Another advantage of the collection was that it was geared to local conditions. The classification of information, such as the inclusion of estuaries as freshwater supplies rather than part of the marine environment,⁴⁷ made the collection particularly suited to South Africa, one of the more arid regions of the world where fresh water resources were of vital importance to the country and its people.

7. THE MANAGEMENT OF THE WLC

The WLC was a product of the South African Water Information Centre (SAWIC). In essence, SAWIC's responsibility was to create awareness and make information on water and water-related research available to interested stakeholders in South Africa and overseas. To a large extent, being situated in the CSIR complex, the SAWIC had a strong science and technology focus. The Water Research Commission was responsible for funding the development of the WLC. This arrangement was based on an agreement with the CSIR's SAWIC for the compilation of the database. The agreement was periodically renewable. Because most of the funding for the collection came from the WRC, a steering committee met once a year at the offices of the Water Research Commission where the current manager of the WLC project reported on the activities of the past year. From these reports, many of them justifying the need for more staff to organise and systematise the WLC, it became clear that what at first began as a typical library-type project, soon increasingly became a high-technology operation featuring a database that could be searched with the help of a comprehensive thesaurus on material available in the collection.

The documentation of meetings held by the steering committee of the South African Water Information Centres is incomplete. There is no trace of the minutes for the very early meetings. The documents received from the offices of the Water Research Commission in September 2013 are also incomplete; those on the meetings held between 1983 and 1984 are missing. However, for the rest, the WRC K6/1/0/1 collection of documents that is to be organised as the SAWHAR Archives on the WLC in 2014, is comprehensive and provides an interesting historical picture of the work done in the compilation of the WLC.

At the WRC, Mr Thys Pieterse was responsible for the WLC. He had been involved in the project from its birth.⁴⁸ At the CSIR, Morkel Steyn was in charge. Ms Tina James later took over from Steyn in 1986 and then left the WLC at the end

46 *Ibid.*, p. 2.

47 *Ibid.*

48 TOA 20130703, T James, Menlo Park, Pretoria.

of November 1990 to transfer to the CSIR's environmental services division. Her place at the helm of the collection was taken over by Angela Rethman.⁴⁹

In 1994 there was an extended discussion on the role of the WRC in respect of SAWIC and the WLC. Mr AG Reynders, the chairman of the meeting, explained that SAWIC could not continue to function simply as an exclusive WRC project. Instead it had to be contemplated from the perspective of a centre that merely rendered a broad service to all WRC research projects. For the WRC it was important to determine how cost effective SAWIC was and if it would be possible to consolidate some of its services with other water databases.⁵⁰ In essence, the discussion revolved around the issue of having to pay for services. The WLC manager, Ms Rethman, tried to rescue the situation by pointing out that while it was true that there had been resistance to payment for services, consideration had to be given to the differentiated tariff approach.⁵¹

There was also another factor. The transition to the new South Africa implied that significant managerial shifts were on the cards. By 1994, when all the water-related projects of the WRC were made known, the WRC as leading stakeholder in SAWIC started driving the point home that its researchers and project managers had to be allowed access to the WLC database. It clearly was assumed that access to the WRC should be free of charge.⁵² By 1995 information on no less than 464 water research projects were listed in the database.⁵³ At the same time SAWIC was responsive to the demand of the WRC that its researchers be given the right to access the WLC database. In 1995, 42 requests were submitted for CD-ROMs of the WLC database.⁵⁴ The WRC, as the major sponsor of the WLC, had managed to secure for itself the right to extract information for its researchers, who had for many years relied on the WLC database for information.

The WLC project made a courageous move towards embracing South Africa's new political dispensation in 1994. Ms Tina James, who had shortly before been promoted to project manager at the CSIR, told the SAWIC steering committee for the WLC database that the institute had a significant role to play in the government's Reconstruction and Development Programme (RDP), a comprehensive development programme aimed at providing substantial support to previously disadvantaged communities of colour. Considerable work had been

49 WRC K6/1/0/1, vol. 1. Minutes of the twenty-first meeting of the steering committee for the South African Water Information Centre, Watko Building, Pretoria, 18 July 1991, p. 1; *Ibid.*, vol. 1, 4/91. Progress report: SAWIC, 1 April 1990-31 March 1991, p. 1.

50 *Ibid.* Minutes of the twenty-fourth meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 19 July 1994, p. 5.

51 *Ibid.*

52 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 14.

53 *Ibid.*, p. 7.

54 *Ibid.*

put into developing SAWIC and the quality of research could be useful to the government.⁵⁵ In the meeting, some of the members of the committee pointed to the value that SAWIC could add in terms of community water supply services.⁵⁶ Ms Rethman, until she moved on to another position in the CSIR, kept in touch with the Department of Water Affairs and Forestry (DWAF) to negotiate on matters of how the WLC database could be of use to the directorate in terms of dealing with community water supply and sanitation.⁵⁷ James, who had also kept an eye on the WLC database as a senior manager at the CSIR, was in a good position to advise the staff on matters related to development and the environment.⁵⁸ She proved to be a valuable adviser. By 1995 significant headway had been made in the construction of the WLC database so that it could give greater attention to matters of relevance for the government's RDP initiative. Links were also established with other developing countries to locate new sources of information.⁵⁹

Meanwhile, SAWIC had also established contact with the Standing Committee on Water and Sanitation (SCOWSAS) in an effort to provide support for the RDP initiative.⁶⁰ SCOWSAS was an important committee that had been working since the early 1990s on formulating the future government's water policies. A notable feature of the work done by SCOWSAS was to ensure that more people, especially those South Africans who were previously disadvantaged, would have access to proper drinking water and sanitation services. SAWIC therefore placed itself at the service of SCOWSAS in an effort to position itself and its staff for post-apartheid South Africa.

In 1995, Ms Martha Pretorius took over from Angela Rethman as manager of the WLC. Meanwhile Rethman had been promoted to another division in the CSIR.⁶¹ James, by now a senior CSIR information manager, fought hard to keep the WLC together. Then, in 1997, she convinced the WRC to take the collection back.⁶²

The transfer of the WLC from the CSIR to the WRC created a conundrum. For example, in early 1997 a number of SAWIC staff were transferred from the CSIR to the WRC and in the process, two experienced data indexers had to be moved to the physical collection to: help with co-ordination; exercising quality control; and taking responsibility for backing-up the system. Initially these indexers

55 *Ibid.* Minutes of the twenty-fourth meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 19 July 1994, p. 4.

56 *Ibid.*, p. 5.

57 *Ibid.*, p. 3.

58 WRC K6/1/0/1, vol. 1, document 4/95. Progress report: SAWIC, 1 April 1994-31 March 1995, p. 1.

59 *Ibid.*, p. 4.

60 *Ibid.*

61 *Ibid.* Minutes of the twenty-fifth meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 7 August 1995, p. 1.

62 TOA 20130703, T James, Menlo Park, Pretoria.

did these tasks in addition to the data capturing they had been responsible for all along. However, by 1998 they were given additional tasks, such as training people and also implementing the WLC's new thesaurus.⁶³ The transfer of the WLC to the WRC began to have a negative effect on the number of items added to the database. See Table 1.

Table 1: Drop in the performance of data capturing in the process of the WLC's transfer from the CSIR to the WRC⁶⁴

Year	Number of titles added per annum	Average monthly additions
1993	16 633	1 386
1994	16 759	1 396
1995	14 656	1 221
1996	16 019	1 335
1997	18 262	1 522
1998	6 381	1 276

In 1997 Ms Martha Pretorius made a submission to the SAWIC steering committee, suggesting that the WRC should take the lead in the process of establishing a network for libraries and information centres dealing with water and marine information.⁶⁵ In July 1998 the first meeting of the steering committee for the development of the Waterlit database, now at the WRC, was held in Pretoria. In effect, this committee was, for members of the new committee, in large part a continuation of the South African Water Information Centre (SAWIC) that had been established earlier by the CSIR, to support researchers with a current awareness programme.⁶⁶

Most of the working time of the WLC team was spent in collaboration with their former CSIR colleagues to set up the WLC database on the Internet.⁶⁷

63 WRC K6/1/0/1, vol. 2, document 3/98. CSIR progress report to the steering committee Waterlit database production and development, July 1997-June 1998, p. 2.

64 *Ibid.*

65 *Ibid.*, vol. 2, document 2/98. Minutes of the twenty-seventh steering committee meeting for the South African Water Information Centre, committee room A, third floor, Watko Building, Rietfontein, 23 July 1997, p. 3.

66 *Ibid.* Minutes of the Inaugural Meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 1.

67 *Ibid.*, vol. 2, document 5/98. Water Research Commission (WRC): Report on Waterlit-related activities 1 July 1997-30 June 1998, p. 1.

In view of all the changes that had taken place, as well as the need to maintain the WLC system, the WRC's WLC team indicated in 1998 to the WLC steering committee that it intended to control and manage all the WLCs database activity. It was at the same time expected of the WRC to grant permission for access to the journals that the indexers had to register on the WLC. The WRC was now also responsible for prescribing the quality standards for the WLC; indexing policy; and the terminology and selection policy the WLC database was going to pursue. A single indexer was appointed to take charge of all the Internet material that could be indexed on the database. The understanding was that trained indexers would still be used for capturing the data; and that indexers would provide their data to the WLC team in an electronic format.⁶⁸

In July 1999 the WRC's Martha Pretorius was responsible for the WLC at the WRC. The WRC did not accept an earlier offer by the CSIR to continue adding to the existing database. That service came to an end in June 1999.⁶⁹

8. MARKETING

In the 1980s Ms James, the WLC manager, attended a wide variety of conferences. She set up a stall at the conference centre and talked to the people. A surprising amount of effort went into a free product she distributed to those who were interested in knowing more about the WLC.⁷⁰ In 1989 she reported to the steering committee that considerable attention had been devoted to marketing. From research conducted it was clear that most of those who used the WLC database were from the academic sector but there was great potential for expanding these services to the industrial sector.⁷¹ In 1989 the management of the WLC at the CSIR's SAWIC began giving attention to active marketing of the WLC. They worked on brochures of the collection, a market survey, and launching marketing interventions at conference events.⁷² Other potential partnerships for marketing the WLC included industrial trade fairs, and personalised liaison with specialised librarians.⁷³

Marketing strategies tended to push up the monthly records of profile users.⁷⁴ A market survey conducted for SAWIC on the WLC in 1990 suggested

68 *Ibid.*, p. 5.

69 *Ibid.* Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 6.

70 TOA 20130703, T James, Menlo Park, Pretoria.

71 WRC K6/1/0/1, vol. 1, document 2/90. Minutes of the nineteenth meeting of the steering committee for the South African Water Information Centre, in the committee room A of the Watko Building, Rietfontein, Pretoria, 12 September 1989, p. 6.

72 *Ibid.*

73 *Ibid.*

74 *Ibid.*, vol. 1, document 4/90. Progress report SAWIC, 1 July 1989-30 June 1990, p. 3.

that marketing should focus on specific individuals in the industrial sector who could make effective use of the information.⁷⁵ It was evident that water-related information was mainly necessary in the environmental management sector.⁷⁶ Clients the WLC-marketing strategies should target were the managers of projects and those involved in development work in the industrial sector. Consultants were also a valuable group of potential customers. Furthermore managers, specifically those in the fields of production orientation and information, had to be made more aware of the potential of the WLC database.⁷⁷ In 1991, Mr AG Reynders of the WRC urged researchers to make wider use of the services offered by the CSIR's SAWIC.⁷⁸ He also agreed to sending out a memorandum and formulating a short questionnaire for research project leaders to determine to what extent they were using the services provided by the SAWIC.⁷⁹

In 1992 the WLC team targeted a highly diversified group of potential users of the database. They made presentations to civil engineering students and postgraduate students working in the field of water at the University of the Witwatersrand; the staff of the scientific services of Rand Water; the consulting firm of Steffen, Robertson & Kirsten; and staff members at the Institute of Soil, Climate and Water.⁸⁰ Over and above these marketing initiatives, they also visited the Natal Parks Board in Pietermaritzburg; Umgeni Water; the consulting firm of Jeffares & Green in Pietermaritzburg; the Albany Museum in Grahamstown; the Rhodes University's Institute for Water Research; the Leather Industries' Research Institute; and the offices of the city engineers at Cape Town and Port Elizabeth.⁸¹

In 1993 the WLC CD-rom was marketed at three international conferences. Moreover: at a South African conference on sanitation for developing urban areas, there was a WLC poster presentation.⁸² The next year the focus was on existing customers. All subscribers to the WLC were contacted at least once in 1994 and they were provided with assistance in recent developments in the process of making selections of items and search activities.⁸³ The WLC team attended all the meetings of the Water Institute of Southern Africa (WISA), as well as the Sixth South African National Hydrological Symposium held in Pietermaritzburg, and a South African Online Conference held in Pretoria. Once again the WLC-database was introduced

75 *Ibid.*, vol. 1, document 4/91. Progress report: SAWIC, 1 April 1990-31 March 1991, p. 8.

76 *Ibid.*

77 *Ibid.*, p. 9.

78 *Ibid.* Minutes of the twenty-first meeting of the steering committee for the South African Water Information Centre, Watko Building, Pretoria, 18 July 1991, p. 2.

79 *Ibid.*

80 *Ibid.*, document 4/92. Progress report: SAWIC, 1 April 1991-31 March 1992, p. 10.

81 *Ibid.*

82 *Ibid.*, document 4/93. Progress report: SAWIC, 1 April 1992-31 March 1993, p. 10.

83 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 16.

to third-year civil engineering students at the University of the Witwatersrand and postgraduate students of the University of Pretoria.⁸⁴

In 1995, SAWIC held an open day to which it invited more than 50 visitors from a wide range of organisations to be informed on the services offered by the institution. There were talks on the background of the Water Research Commission; the role of the CSIR in SAWIC; the range of activities of SAWIC; and its links on the Worldnet Gateway. Visitors were also invited to freely try out the WLC on the Worldnet Gateway, as well as to view the water research project database and the new database on water information services.⁸⁵

In 1996, there was significant growth in the use of the WLC under the administration of SAWIC. This was ascribed by Ms M Pretorius as the result of an aggressive marketing campaign that had been undertaken by the SAWIC.⁸⁶

In 1997/1998 there were notable initiatives aimed at marketing the WLC. Brochures on the collection formed part of conference packets in South Africa at the Eighth South African National Hydrology Symposium held in November 1997; a workshop on women's participation and gender consideration in water supply and sanitation services in November 1997; and the 1997 Biennial Conference of the Water Institute of South Africa (WISA).⁸⁷ Also in 1997/8 period, two articles on the WLC were also published in *SA Irrigation* and the *SA Water Bulletin*.⁸⁸

The best driver towards a renewed focus on marketing arose when the question of measuring the value of the WLC service came up for discussion at a 1997 meeting of the steering committee for the WLC. Mr A Gerber asked what the criteria were for measuring the success of the WLC.⁸⁹ A lengthy discussion followed on the matter and there appeared to be consensus that attention had to be given to developing criteria to measure the value of the collection. On completion, it would be possible to determine what budgetary investment should be made for the development of the system in the future.⁹⁰

The meeting then discussed the type of sources of information used in the WLC other than journals. Mrs Pretorius pointed out that a number of free publications were used as a rule. Amongst others, the WLC made use of the Environmental Protection Agency's (EPA's) list of the USA publications. These

84 *Ibid.*, p. 17.

85 *Ibid.*, document 4/95. Progress report: SAWIC, 1 April 1994-31 March 1995, p. 2.

86 *Ibid.*, vol. 2. Minutes of the twenty-sixth steering committee meeting for the South African Water Information Centre (SAWIC), 12 July 1996, WRC, p. 3.

87 *Ibid.*, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997-30 June 1998, p. 4.

88 *Ibid.*

89 *Ibid.*, vol. 2, document 2/98. Minutes of the twenty-seventh steering committee meeting for the South African Water Information Centre, committee room A, third floor, Watko Building, Rietfontein, 23 July 1997, p. 4.

90 *Ibid.*

were distributed freely.⁹¹ The CSIR did not have a budget for subscribing to publications for Waterlit.⁹² Between July 1989 and June 1990 the WLC database was actively marketed at 14 conferences and symposiums, with a team member participating as a presenter and also distributing pamphlets on the WLC.⁹³ The next year the WLC database was publicised at eight conferences.⁹⁴

By 1999 the marketing of the WLC had diminished considerably. At the WRC there was no policy or budget for marketing services. This placed severe restraints on the dissemination of information of the WLC.⁹⁵

Despite the apparent decline in the marketing drive there were opportunities for the WLC to be brought to the attention of relevant groups of potential users. In September 1999 Waterlit brochures were distributed at a biotechnology workshop held at the University of Pretoria. Another opportunity presented itself at a workshop on the implications of the new Water Law in November 1998. At the beginning of the 1999 academic year WRC staffers who were familiar with the WLC visited the University of Pretoria's Department of Water Utilisation, as well as the Chemistry Department of Technikon Northern Gauteng (currently Tshwane University of Technology) to inform students about the collection.⁹⁶

Internationally the WLC also enjoyed some exposure. At the annual conference of the International Association of Aquatic and Marine Science Libraries and Information Centres, held in Iceland in September 1998, there was a paper entitled "Water research, electronic publications and databases: the South African way". The presentation shed light on the activities and publications of the WRC.⁹⁷ The following year (1999) the Foundation for Water (FWR) in the United Kingdom invited South Africa to share an exhibition stand at the Third Ministerial Conference on Health and Environment. The WRC submitted a number of posters and some of its reports, as well as copies of the WLC CD-rom. Subsequently, the collection was also transferred to Australia where the WLC was exposed to a number of potential Australian users.⁹⁸

91 *Ibid.*

92 *Ibid.*

93 *Ibid.*, document 4/90. Progress report: Appendix 2, p. 16.

94 *Ibid.*, document 4/91. Progress report: SAWIC, 1 April 1990-31 March 1991, Appendix 3. Marketing at conferences, p. 1.

95 *Ibid.* Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 5.

96 *Ibid.*

97 *Ibid.*, p. 6.

98 *Ibid.*

8.1 Marketing the WLC to combat South Africa's isolation

The history of marketing the WLC also has an interesting side related to attempts by the former government to market some of its research in an effort to try and combat the increasing international isolation the country experienced in the 1980s. If one were to read the marketing and commercial transactions to “sell the WLC” against the grain, it becomes apparent that they all formed part of an attempt to secure for South Africa some opportunities in a world that was critical of the racially-inspired laws of the day.

Until 1982, South Africa's WLC administrators had an agreement with the System Development Corporation (SDC) for the international distribution of WLC information.⁹⁹ Meanwhile, local librarians and information specialists increasingly came to the conclusion that there were more relevant services available, such as the “Dialog” service provided by Lockheed, that appeared to be more appropriate than the “Orbit” system used by the SDC.¹⁰⁰ There had been prior talks with the SDC because when the service started the WLC income from royalties amounted to about \$170 to \$190 per month. However, by 1982 the WLC only earned a monthly income of between \$67 and \$100. The SDC had earlier given the promise that they would ensure higher usage of the information, but nothing had come of these assurances.¹⁰¹

Representatives from Dialog had indicated to the South Africans that they would be prepared to distribute more information from the WLC.¹⁰² However, exiting from its contract with the SDC placed impediments on the WLC managers to make use of other service providers. In the United Kingdom a smaller but efficient database distributor, Pergamon Infoline, indicated that it was interested in distributing information from the WLC database.

In a meeting of the WLC pilot committee of 1982 there were members who were of the opinion that it was important to make the information available to Europe as well. According to participants in the discussion, a number of European interests were eager to break the apparent monopoly of the existing Dialog and Orbit systems.¹⁰³ However, by 1983 the major stumbling block to collaboration with other service providers was the fact that there was an existing agreement with

99 *Ibid.*, SAIW 3/83. Notule twaalfde vergadering van die loodskomitee van die SAIW, 21 Oktober 1982, WNK, Pretoria, p. 4.

100 *Ibid.*

101 *Ibid.*, SAIW 4/83 Kontrak vir die verspreiding van Waterlit in die buiteland (1983), p. 1.

102 *Ibid.*, SAIW 3/83. Notule, twaalfde vergadering van die loodskomitee van die SAIW, 21 Oktober 1982, WNK, Pretoria, p. 4.

103 WRC K6/1/0/1, vol. 1, SAIW 3/83. Notule, twaalfde vergadering van die loodskomitee van die SAIW, 21 Oktober 1982, WNK, Pretoria, p. 5.

the SDC that first needed to be nullified before the WLC could be distributed on other networks.¹⁰⁴

In 1983/1984 Dr MJ Pieterse of the WRC visited the United States, Britain, Italy and Germany where he held talks with representatives of the SDC in Santa Monica; of Dialog in San Francisco; Pergamon Infoline in London; the European Space Agency in Frescati; and INKA in Germany. He came to the conclusion that it no longer made sense to keep up the relationship with the SDC for the marketing of the WLC. The European Space Agency and also Pergamon Infoline were eager to place the WLC on their systems.¹⁰⁵ There was clearly also an eagerness on the part of the South Africans to withdraw their collaboration with the SDC completely. They were prepared to provide the SDC with some marginal extracts from the items, but members of the committee had their reservations about the idea of disseminating information.¹⁰⁶

By 1988 the contract with Pergamon Infoline had been terminated at the request of Pergamon.¹⁰⁷ As an alternative, consideration was given to linking up with Quaystel in France. The United States was no longer considered to be a potential option for collaboration and the minutes tellingly reported: "A Taiwanese delegation will soon be visiting the Centre for Information Services and could be an ideal testing ground for future cooperative ventures."¹⁰⁸

In 1988 the committee took note of a statement that had been issued by Mr PE Odendaal, the executive director of the Water Research Commission in which the policy of the WRC was outlined in respect of collaboration with neighbouring states in the field of water. The committee was informed that a "low profile will be maintained in marketing to the neighbouring states".¹⁰⁹

9 DUPLICATION OF SERVICES

The operation of information development and communication in the WLC implied that a great deal of material had to be copied. Printing also had to be done before material could be sent to the researchers.

104 *Ibid.* Kontrak vir die verspreiding van Waterlit in die buiteland (1983), p. 1.

105 *Ibid.* Notule van die veertiende vergadering van die loodskomitee van die Suid-Afrikaanse inligtingsentrum vir water, 6 September 1984, WRC, Pretoria, p. 4.

106 *Ibid.*

107 *Ibid.*, document 2/89. Minutes of the meeting of steering committee of the South African Water Information Centre, 20 September 1988, CSIR, Pretoria, p. 2.

108 *Ibid.*

109 *Ibid.* (Pages not numbered).

9.1 Photocopies

In the 1980s photocopying services were in high demand. Between June 1981 and July 1982 about 24 000 WLC photocopies were printed for the information services. This represented a 10,5 per cent growth in the use of the service and earned R3 193 for the administration. At the time articles were printed at a minimum price of R1 per article.¹¹⁰ Until the early 1990s some of the WLC users still chose to have their information in a printout format. In 1991 the WLC manager, Angela Rethman warned that users would in the near future have to pay for this service.¹¹¹ A market survey conducted for SAWIC in 1990 suggested that users of the service would in the near future have to be prepared to receive the information they required electronically, rather than in the form of photocopies.¹¹²

9.2 Scanning

In 1989/1990 the first trial runs took place on scanning information for clients. It was thought that by scanning material it would be possible to add value to the service rendered to clients. The scanning service was also an attempt to determine if the scanning project could be run effectively. Scanning, at that early point in time, appeared to be a potential extension of the services rendered by the WLC team.¹¹³

However, in 1991 the scanning facilities used by the WLC were still limited and the team had to limit the number of clients they could serve on a continuous basis.¹¹⁴ In the years to come scanning increasingly replaced photocopies because information was sent to users electronically by means of e-mail.

9.3 CD-rom technology

The complete WLC database became available to the public in the early 1990s. This meant that it was no longer only exclusively the domain of the WLC librarians and information specialists to locate sources of information for users. This was a task that the users could now perform at their local libraries, and somewhat later, even from their personal computers. The development of CD-rom technology made this possible.

In 1991 SAWIC entered into a two-year contract with the Cambridge Information Group to market Waterlit internationally. The objective was to put the WLC database on a CD-rom. However, at the time the high cost of the CD-rom was

110 *Ibid.*, SAIW 5/82. Vorderingsverslag Julie 1981-Junie 1982, p. 2.

111 *Ibid.* Minutes of the twenty-first meeting of the steering committee for the South African Water Information Centre, Watko Building, Pretoria, 18 July 1991, p. 6.

112 *Ibid.*, document 4/91. Progress report: SAWIC, 1 April 1990-31 March 1991, p. 8.

113 *Ibid.*, document 4/90. Progress report: SAWIC, 1 July 1989-30 June 1990, p. 13.

114 *Ibid.*, document 5/91. South African Water Information Centre: work programme for 1991/1992, p. 1.

considered a constraint on potential South African buyers.¹¹⁵ In November 1991 it was announced that Waterlit had been identified by Cambridge Scientific Abstracts as one of the best water databases in the world. There was also the concomitant announcement that the database would be distributed and marketed internationally on a CD-rom.¹¹⁶ The WLC formed part of a whole suite of CDs that covered a variety of fields with databases on aquatic sciences, fisheries abstracts, Aqualine and selected water resources abstracts.¹¹⁷

One problem experienced was that the market for the CD-rom was still limited in South Africa because the equipment for reading the material was not yet readily available in the country.¹¹⁸ At the CSIR the WLC team's computers were only fitted with CD drives in 1994.¹¹⁹ By 1993, at the time of the introduction of Internet services in South Africa there were some users of the WLC who still preferred the CD-rom. It was now updated quarterly and libraries using the system only needed to make provision for a fixed annual payment for the update, whereas if they had to use the Internet, the price would constantly be subject to payment.¹²⁰ In 1993 the CD-rom subscription was R3 200. This equalled about 32 literature searches by the WLC team.¹²¹ In effect this meant that frequent users of the WLC probably benefited from securing the CD-rom and then compiling their own bibliographies. If they did not have the material at their local library, it could be ordered from the SAWIC.

By 1993 the government and semi-state institutions (at 41,5%) were the largest users of the literature search services of the WLC database. The private sector (27,7%) came in second and the CSIR (22,4%) was third.¹²² By 1994 it was evident that there had been a shift to the Internet access of the WLC over the CD-rom. The latter simply proved too expensive.¹²³ It could not compare with the immediacy of the Internet.

115 *Ibid.* Minutes of the twenty-first meeting of the steering committee for the South African Water Information Centre, Watko Building, Pretoria, 18 July 1991, p. 4.

116 Anon., "Waterlit goes international", *SA Water Bulletin* 17(5), 2 November 1991, <<http://ehis.ebscohost.com.nwulib.nwu.ac.za/ehost/detail?sid=6c71fcdfe7f847e2b33483ae5f7c8ae3%40sessi onmgr113&vid=1&hid=107&bdata=#db=awn&AN=21755>>, accessed 6 July 2013.

117 WRC K6/1/0/1, vol. 1, document 4/92. Progress report: SAWIC, 1 April 1991-31 March 1992, p. 2.

118 *Ibid.*, p. 23.

119 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 2.

120 *Ibid.*, document 4/93. Progress report: SAWIC, 1 April 1992-31 March 1993, p. 1.

121 *Ibid.*, p. 7.

122 *Ibid.*, p. 9.

123 *Ibid.* Minutes of the twenty-fourth meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 19 July 1994, p. 3.

For Angela Rethman who had just returned from a three-month visit overseas it was evident that the major drawback of the CD-rom system was that it was always behind the times, whereas the online database could constantly be updated.¹²⁴

In 1994 the WLC database was available on CD-rom from two suppliers in the USA, National Information Services Corporation and Baltimore and SilverPlatter Information Inc., of Norwood. The subscription differed. The NISC subscription was R2 775 per annum and that of SilverPlatter R4 300. The updates were six monthly in the case of NISC and three monthly in the case of SilverPlatter. In terms of content the NISC version seemed to be the better option to make use of because whereas the SilverPlatter version only carried the WLC database, the NISC CD-rom carried, in addition to Waterlit, also Delft Hydro (1977–1987) as well as Canada's Aquaref from 1970 to the present (1994).¹²⁵

By 1994, 39 subscriptions to the WLC database had been sold by SilverPlatter, eight of which were subscriptions in South Africa and 16 in other countries.¹²⁶ In 1995 it was announced that NISC had registered a company in South Africa. The marketing and distribution of the WLC database would forthwith be treated as a South African product.¹²⁷ Shortly afterwards, SilverPlatter notified the WLC team that it intended to discontinue sales of the WLC. It had become company policy to halt the sales of all items that did not earn at least a minimum annual income.¹²⁸

In 1997 it appeared that the sale of WLC CD-ROMs had increased.¹²⁹ However, this increase proved to only be a temporary one.

124 *Ibid.*, document 6/93. Report on overseas visit: AM Rethman, January-April 1993, p. 3.

125 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 4.

126 *Ibid.*

127 *Ibid.*, Minutes of the twenty-fifth meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 7 August 1995, p. 4.

128 *Ibid.*, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997-30 June 1998, p. 3.

129 *Ibid.*, document 2/98. Minutes of the twenty seventh steering committee meeting for the South African Water Information Centre, committee room A, third floor, Watko Building, Rietfontein, 23 July 1997, p. 3.

Table 2: CD-ROMs sold 1994–1998¹³⁰

Period	SilverPlatter	NISC	Total
1994-5	23	28	51
1995-6	27	35	62
1996-7	43	27	70
1997-8	22 (9 months)	28	50

CD-ROM technology also created new opportunities for the WLC. In 1998 data from the WLC was used in the compilation by the NISC of the African Health Anthology, a database focusing on information related to health matters in Africa.¹³¹ The African Health Anthology later formed part of the South African contribution of materials on display at the Zimbabwe International Book Fair in August and the Frankfurt Book Fair in Germany in October 1998.¹³² One disadvantage of the release of CD-ROM technology was that it made it more difficult for SAWIC to draw up a profile of the WLC users.¹³³

9.4 Access to the WLC on PCs

In 1991 when the WLC database was transferred to the mainframe retrieval system of the CSIR, the first step was taken towards opening up the use of the collection for users to access on their personal computers.¹³⁴

10. THE WLC, PCS AND THE INTERNET

The advent of the personal computer in the 1980s brought a significant change in the way information scientists and researchers would in future conduct their work. It also had distinct implications for staffing of libraries and information centres such as the WLC, SAWIC and similar institutions at the CSIR. By 1989 there were clearly a number of changes taking place. The structure of the CSIR was in the process of changing and many of the divisions of the CSIR were subject to alternative arrangements, absorption and even closure. What had happened in what was described as “the second restructuring” at the CSIR was that the division

130 Based on *ibid.*, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997–30 June 1998, p. 3.

131 WRC K6/1/0/1. Minutes of the Inaugural Meeting of the steering committee for the development of the Waterlit database, held at the Water Research Commission, Pretoria, 22 July 1998, p. 6.

132 *Ibid.*, vol. 2, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997–30 June 1998, p. 4.

133 *Ibid.* Minutes of the twenty- sixth steering committee meeting for the South African Water Information Centre, 12 July 1996, WRC, p. 2.

134 *Ibid.*, document 4/91. Progress report: SAWIC, 1 April 1990–31 March 1991, p. 1.

of information services in the structure of SAWIC was transferred to the natural sciences programme. It formed a major component of the water information project.¹³⁵ The process of change and rationalisation gained even more momentum with the advent of the Internet in the final decade of the twentieth century. According to Tina James,

“We were aware that the systems would become accessible. I was part of a task team in the early 1990s. That was why the whole division was eventually closed down. We knew we had to change. We ran all kinds of other intelligence information. There were about 400 people working in the division. We started creating information managers in knowledge management. The division was changing rapidly. Commercial Internet changed everything. We thought a lot about that.”¹³⁶

In a 1991 report to the steering committee of the WLC members were told that the new system was being implemented. Records would in future be printed from a database. The appearance of the material would be much better. SAWIC staff could also access the information directly to make modifications where needed. In future it would be possible for users to access the system from their PCs. It essentially only required of them to be registered users.¹³⁷

Despite South Africa’s relative international isolation in the 1980s as a result of the country’s racial policies and the imposition of economic, scientific and cultural sanctions, by the mid-1990s the country was rated among the top countries in its class in terms of the Internet and related technologies.¹³⁸

10.1 Commercial impact of the Internet

In 1990 the *Post Office Act of 1958* governed all telecommunications in South Africa. The state-owned Telkom was in control of telephonic services and had an infrastructure monopoly.¹³⁹ By 2002 some remarkable developments had taken place. In the course of 2003 the e-mail system, which began as a fringe activity used by a handful of enthusiasts had become, thanks to the Internet, an operation with more than 3 million users serviced by some 200 competing Internet Service Providers (ISPs).¹⁴⁰ The commercialisation of the Internet was characterised by a diversified foment by a large loose society of individual enthusiasts who were prepared to negotiate and participate in a number of areas. They were willing to share data.¹⁴¹

135 *Ibid.*, document 7/89. Progress report, 1 July 1988-30 June 1989, p. 1.

136 TOA 20130703, T James, Menlo Park, Pretoria.

137 WRC K6/1/0/1, vol. 1, document 4/91. Progress report: SAWIC, 1 April 1990-31 March 1991, p. 2.

138 C Lewis, “Negotiating the net: the Internet in South Africa (1990-2003)”, *Information Technologies and International Development* 2(3), Spring 2005, p. 2.

139 *Ibid.*, p. 6.

140 *Ibid.*, pp. 6-7.

141 *Ibid.*, p. 7.

By 1992 commercialisation became a major issue with the driving force being Digitech that had been started in June 1990 by Anthony Gerada as a service board for distributing information to customers who bought computers from his small store.¹⁴² In June 1992 the CSIR launched CompuServe Africa, a system similar to that being used by some of the small operators. It featured a bulletin board for the exchange of information, similar to what small dealers were doing. However, the CSIR service tended to be expensive. It was symptomatic of a tendency in the industry that the technology had to be commercialised, especially in areas where there was money to be made.¹⁴³

In 1993, a small group of private Internet operators, working commercially and outside the formal legal control of the Telkom system, tried to start communicating with Telkom on starting up an Internet system. However the parastatal was of the opinion that the system proposed by the computer experts was “too undisciplined”.¹⁴⁴ Shortly afterwards the small operators began communicating with the CSIR’s CompuServe Africa, but it transpired that the ICT experts who had become business people in their own right, tended to be too deterministic and prescriptive in their demands for partnership with the CSIR. Consequently this initiative was stymied for a second time.¹⁴⁵

By November 1993 the entrepreneurs were behind the establishment of TICSAs, the country’s first fully commercialised Internet providing service. They were based in Cape Town and the system was representative of what the original developers of the Internet had in mind – a non-profit initiative aimed at creating a community of communications with a number of computer companies and service providers collaborating on the project.¹⁴⁶ Subsequently, in-fighting in the private sector saw TICSAs collapse and a number of small operators claimed a bigger role for themselves. At the same time, Telkom started preparing itself for becoming an ISP provider in its own right. To some extent this development enabled the telecommunications operator to reclaim for itself a part of the business that had been generated by a number of companies based on its available communications links.¹⁴⁷

10.2 SAWIC and the Internet

In 1993, reporting on a three-month visit to various countries, Ms A Rethman noted that the most significant trend she had noted while overseas was that information

142 *Ibid.*

143 *Ibid.*, p. 8.

144 *Ibid.*

145 *Ibid.*

146 *Ibid.*

147 *Ibid.*, pp. 9-10.

transmission through an intermediary was no longer relevant. In future the emphasis would be on direct access to all information.¹⁴⁸ The catch phrase at one of the conferences she attended was “Information at any time at any place”.¹⁴⁹ The trend was that users were, as a rule, becoming more computer literate and would prefer to access all the information they needed on their own computers.¹⁵⁰ The latest trends she witnessed overseas were that:

- The Internet would become the most important vehicle of information;
- there were significant developments in the field of methods for sharing information resources;
- there were major moves in the direction of developing powerful and very user-friendly interfaces and gateways;
- fibre-optic technology was on the rise;
- there was a lot of information on patents; and
- simplified public access to information was in the offing with card systems being introduced to pay and secure access to information.¹⁵¹

In 1994 the staff at SAWIC, along with the CSIR’s information services, were constantly working on the Internet to determine how and where the databases of the institution would be best placed. At the time there were more than 4 000 groups available on the Internet and there was a comprehensive spread of databases related to the environment and water.¹⁵² By this time SAWIC also had its first Internet home page.¹⁵³ By 1995 all the SAWIC staff was familiar with the Internet and it had become an integral part of their daily activities.¹⁵⁴ The Internet had opened up a new world for them. They were now able to communicate with groups that they only knew from extensive correspondence. Communication with institutions such as the Environmental Protection Agency (EPA) in the United States; USAID; and the Great Lakes Network; now became institutions with which they had frequent communication. It was also much easier gaining access to reports and researchers and learning about their activities, not only overseas, but also in South Africa.¹⁵⁵ A major problem that presented itself was the speed of the Internet. Many of the

148 WRC K6/1/0/1, vol. 1, document 6/93. Report on overseas visit: AM Rethman, January-April 1993, p. 1.

149 *Ibid.*, p. 3.

150 *Ibid.*

151 *Ibid.*

152 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 14.

153 *Ibid.*

154 *Ibid.*, document 4/95. Progress report: SAWIC, 1 April 1994-31 March 1995, p. 1.

155 *Ibid.*

SAWIC staffers spent the early part of the day working on the Internet before the system slowed down later in the day as a result of the high usage rate.¹⁵⁶

10.3 The WLC and the Internet

By 1993 the WLC could be accessed on the Internet through the CSIR's InfoAccess that offered direct access to the catalogue. The user had to have a computer and a modem. This appears to have been the first web-based system of the WLC.¹⁵⁷ Both novice and expert users could make use of the service. Comprehensive manuals were available to users and the payment for the service was on a monthly basis.¹⁵⁸ The second Internet link to the WLC was to be found on the Worldnet Gateway where there was an automatic link to the WLC.¹⁵⁹ The service went online in May 1993.¹⁶⁰ A vast number of databases could be located on this website.¹⁶¹ At the time there were only 13 online users of the WLC. Dr Mark Dent of the University of Natal, at the time, deplored the fact that the number was so low.¹⁶² There were 22 institutions making use of the WLC.¹⁶³ Among the reasons why the open system was not yet used extensively were:

- many users were still uncertain about the way they had to execute searches on the system;
- resistance to the pricing policy;
- difficulties in budgeting for usage;
- problems with modems and lines of communication;
- increasing use of the Waterlit CD-rom.¹⁶⁴

For users not frequently using the WLC database, it seemed in 1994 to be more cost effective than making use of the Worldnet Gateway.¹⁶⁵ Worldwide Gateway was started at the CSIR. It was the precursor of the Internet in South Africa. In

156 *Ibid.*

157 *Ibid.*, document 4/93. Progress report: SAWIC, 1 April 1992-31 March 1993, p. 1.

158 *Ibid.*, pp. 1-10.

159 *Ibid.* Minutes of the twenty-third meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 24 June 1993, p. 1.

160 *Ibid.*, document 4/93. Progress report: SAWIC, 1 April 1992-31 March 1993, p. 1.

161 *Ibid.*

162 *Ibid.* Minutes of the twenty-third meeting of the steering committee of the South African Water Information Centre, Watko Building, WRC, Pretoria, 24 June 1993, p. 4.

163 *Ibid.*, 19 July 1994, p. 2.

164 *Ibid.*, document 4/94. Progress report: SAWIC, 1 April 1993-31 March 1994, p. 3.

165 *Ibid.*

about 1996 the Worldnet Gateway was sold off for very little to what would later become Mweb.¹⁶⁶

In 1995 SAWIC staffers were making extensive use of e-mail correspondence with subscribers to inform them of the latest alerts for their respective fields of interest. The system seemed to be operating well in that it could also operate automatically, especially after the WLC had been placed on the UNIX system.¹⁶⁷ By the end of 1996 there were a number of changes in the operation of the WLC. The functions of SAWIC were divided between the CSIR and the WRC. The production of the WLC database remained the responsibility of the CSIR, while the other functions of the collection moved over to the WRC. Staff of the former SAWIC who were not at the WRC were absorbed to develop the WRC website.¹⁶⁸

By 1997 the WLC Collection had become an ideal laboratory for working on the problem of how to integrate a library database with the latest developments on the Internet. In November/December 1997 researchers at the CSIR carried out tests on the feasibility of accessing Kluwer electronic journals on the Internet. At the time the experiment still appeared to be fairly expensive and time consuming. The CSIR in collaboration with the IT specialists of the WLC had created a “state-of-the-art web interface” by 1998 which made it possible for the WLC’s data to be viewed in all parts of the world.¹⁶⁹ The interface had been developed using Cuadra Star/Web software.¹⁷⁰ The problems the researchers experienced were:

- most electronic journals were not freely accessible;
- it was time-consuming to search and monitor the Internet;
- it took many hours to access Internet sites;
- not all the data accessed could be downloaded (the ideal was for each indexer to have access to two computers);
- the information had to be accessed by people who were familiar with the workings of the Internet;

166 TOA 20130703, T James, Menlo Park, Pretoria.

167 WRC K6/1/0/1, vol. 1, document 4/95. Progress report: SAWIC, 1 April 1994-31 March 1995, p. 5.

168 *Ibid.* Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., “Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product”, p. 4.

169 WRC K6/1/0/1, vol. 2, document 3/98. CSIR progress report to the steering committee Waterlit database production and development, July 1997-June 1998, p. 6.

170 *Ibid.*

- specific items selected for entering into the WLC database had to be indexed by experts in the field.¹⁷¹

At the time of the first experiments being conducted there were a number of additional problems that had to be addressed:

- Websites identified for monitoring were not always accessible.
- It was difficult to determine the status of the material on the Internet. Researchers were uncertain of whether information consulted on one day would again be available the following day.
- There was uncertainty about how long free websites with journals would remain freely accessible.¹⁷²

The death knell for the hard copy material of the WLC was a research report completed in 1997 at the University of Pretoria. In an MA dissertation F Myburgh sounded a dismal future for Waterlit. As a result of electronic journals, newsletters and manuscript archives the future of collections like Waterlit seemed dark. From an information science perspective the projection was that although a database such as Waterlit could still hold out, there would be an increased tendency towards electronic information¹⁷³

It appeared that the WLC team at the WRC was ready for the imminent change because the WLC website was officially launched in January 1998 and upgraded in April 1998. Soon, a list of journals was also added to the website. The feedback from users was favourable with some comments coming from as far away as Sweden.¹⁷⁴ As of 1 April 1998 all web users of the WLC had to register with foreign users obliged to pay a subscription fee. The web developers also made provision for users to have the opportunity to work on a trial basis on preliminary WLC data before they made a decision on whether to subscribe.¹⁷⁵ One major advantage of the Internet for WLC operations was the rapidity of updating although there were still difficulties in the process of indexing data from the Internet. In some cases the costs were high and there were indications that referencing Internet data could pose significant obstacles.¹⁷⁶ As Internet technology increasingly became available, the CSIR's information technologists started applying new methods of

171 *Ibid.*, p. 8.

172 *Ibid.*

173 F Myburgh, *An overview of trends in bibliographic database production with specific referenced to the Waterlit database* (MA, University of Pretoria, 1997).9

174 WRC K6/1/0/1, vol. 2, document 3/98. CSIR progress report to the steering committee Waterlit database production and development, July 1997-June 1998, p. 6.

175 *Ibid.*

176 *Ibid.* Minutes of the Inaugural meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 4.

quick processing. By 1998, records were placed on the Internet twice a month.¹⁷⁷ The WLC team were also forward-looking. Plans were already put in place in 1998 to ensure that no problems arose with the timing devices of the computer systems in the transition to the new millennium in 2000.¹⁷⁸

In an effort to determine what the potential needs of water researchers might be for the WLC, Ms Pretorius in 1998 started an Internet discussion group that gave participants the opportunity to discuss matters of how to make the WLC more accessible and express their views on specific needs they might have.¹⁷⁹ The idea of a discussion group arose because of the many queries the WLC team received from users about securing access to the database.¹⁸⁰ In 1998 there were 250 South African subscribers to the service while there were no overseas users.¹⁸¹

The WLC website officially went online for the first time on 1 April 1998.¹⁸² The Internet also opened up the WLC to the outside world. In 1998 it was possible to access the WLC on the WRC's website. Access to the WLC was free of charge for the first three months.¹⁸³ A year later 755 South Africans were registered on the WLC's free service while overseas users were required to subscribe to the database.¹⁸⁴ South Africans could use the service free of charge. Overseas subscribers had to pay US\$500.¹⁸⁵

It was evident that linking the WLC to the Internet had started bearing fruit. Mr S Abbott of the CSIR told the steering committee of the WLC that there had been a marked increase in the use of the collection, largely as a result of its availability on the Internet.¹⁸⁶ The alerting service provided by the WLC underwent a notable decline once the database became available on the Internet. Because they had to pay for the alerting service, in the early 1990s some institutions chose to either cancel their subscriptions or decided to combine different branch libraries

177 *Ibid.*, vol. 2, document 3/98. CSIR progress report to the steering committee Waterlit database production and development, July 1997-June 1998, p. 1.

178 *Ibid.*, document 4/98. CSIR work programme submitted to the steering committee for Waterlit database: production and development, July 1998-June 1999, p. 2.

179 *Ibid.* Minutes of the Inaugural meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 2.

180 *Ibid.*, vol. 2, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997-30 June 1998, p. 2.

181 *Ibid.* Minutes of the Inaugural meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 4.

182 *Ibid.*

183 *Ibid.*, vol. 2, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997-30 June 1998, p. 1.

184 *Ibid.* Final meeting of the steering committee for the project: Waterlit database development, WRC offices, Watko Building, Rietfontein, 17 June 1999, document 5/99. Anon., "Water Research Commission: Waterlit – past, present and future. Overview of a unique South African product", p. 4.

185 *Ibid.* Minutes of the Inaugural meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 4.

186 *Ibid.*

to one subscription.¹⁸⁷ In effect this meant specifically that requests from WLC database users for searches declined. In the longer term this became a notable feature. Once the WLC database was available on the Internet in 1998 the number of searches declined in a marked manner¹⁸⁸

Table 3: Declining of searches 1991-1998

Year	Number of searches
1991	401
1992	240
1993	191
1994	116
1995	78
1996	140
1997	88
1998 (first six months)	40

Subscriptions to the monthly alerting service dropped significantly during the period 1993-1998.

Table 4: The decline in subscribers 1993-1998

Year	Number of subscribers
1993	179
1994	143
1995	108
1996	88
1997	86
1998	79

The WLC team reported to the steering committee in 1998 that they intended doing away with the alerting service and replacing it with an Internet-based system.¹⁸⁹ By 1998 the Department of Water Affairs was shifting increasingly in the direction of hiring consulting engineers to do contract work for them. Consequently the use of the WLC in the department began to decline.¹⁹⁰

187 *Ibid.*, vol. 1. Minutes of the twenty-first meeting of the steering committee for the South African Water Information Centre, Watko Building, Pretoria, 18 July 1991, p. 6.

188 *Ibid.*, vol. 2, document 5/98. WRC: Report on Waterlit-related activities, 1 July 1997-30 June 1998, p. 2.

189 *Ibid.*

190 *Ibid.* Minutes of the Inaugural meeting of the steering committee for the development of the Waterlit database, Water Research Commission, Pretoria, 22 July 1998, p. 4.

11. CONCLUSION

Evaluating the WLC in hard copy and comparing it with the electronic database in the new millennium is much the same as making an appraisal of an exclusive vintage car. Aesthetically the vintage car appeals to one's finer feelings and below the veneer of appearance there is still a sense of power that captures the imagination of someone who takes time out to appreciate a useful piece of technology dating back to an earlier, less frenetic time. The WLC catalogue lives on electronically in the EBSCO database. Most of the items in the WLC catalogues, deep into the 1990s, can be found on the Internet, accurately recorded and saved for posterity in cyberspace. At the same time there is the hard copy collection that now fills in excess of 200 metres of shelf space in a special archival repository of the North-West University's new Research and Information Commons on the Vanderbijlpark Campus. For historians, but also for those intrigued by research in science and humanities, the physical collection may well be of substantial value. By physically using the WLC's comprehensive thesaurus as a compass, the individual researcher of the 21st century is bound to discover some vitally important research material.

The WLC in hard copy is by no means a perfect collection. There are a number of gaps in its chronology. Also, it is not always very user friendly. The fact that it was based on keywords assumes that those who search for data know the relevant keywords. The thesaurus, in the view of many, is a crucial part of the collection and the prospective researcher working in the collection knows precisely how to go about initiating an inquiry and finding relevant material.¹⁹¹ As a vintage item the hardcopy WLC material can metaphorically be termed the "analogue" collection. There are certain difficult-to-define qualities inherent in the dusty documents on the shelves that will never be part of the "digital" WLC catalogue. They serve different purposes but are also intricately and permanently linked. Observed as a birds-eye view over the long term, it is evident the Waterlit Collection made available valuable information to researchers at a crucial strategic time in the development of South Africa's water sector. It therefore has substantial historical value.

The collection also made it possible to provide information to users over a broad spectrum of disciplines from the natural to the human sciences.¹⁹² For researchers, being able to secure access to the Waterlit Collection database meant that it saved them many hours of hard slogging in libraries, working through manual catalogues and literally having to page through journals for articles.¹⁹³

An informal scrutiny of the material in the current archival collection suggests that there is a vast wealth of information – some of it very eccentric

191 TOA 20130709, PJ Aucamp, Pretoria (Audionote file).

192 *Ibid.*

193 *Ibid.*

and innovative. Articles taken from popular magazines stand side-by-side on the shelves with articles from some of the most prestigious science journals. There are comprehensive reports – unpublished and published – and conference papers, annual reports, and much of the material is international in content. However, ultimately it is the South African material that will in future potentially gain in value. These items tell the story of South Africa's scientific venture into the complex field of water studies at a time when in response to the requirements of government and the country's economic developmental needs, water became a fundamental focus; it made a contribution towards optimising the social, ecological, economic and cultural performance of the country and its people in the context of the hydrosphere.

In 2015 there are still many gaps in the collection; these have become apparent because the collection represents a view from a different era, when the spirit and ambitions of a multiracial democratic society on the rapidly developing African continent was taking stock of its past, present and future in respect of the vitally important hydrosphere of Southern Africa.