



Civils Masakheni

engineering a better life for all

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Civils Masakheni
Tel: +27 11 476 4100
Fax: +27 11 678 7518

E-Mail :
dbotha@saice.org.za

VAT Registration Number:
40 50 22 55 74

What is Civils Masakheni?

Civils Masakheni is a Section 21 company established and wholly owned by SAICE (The South African Institution of Civil Engineering).

SAICE is a professional learned society, established in 1903 to share state of the art technology with members to improve the practice of civil engineering and influence infrastructure development by offering strategic input to decision-makers. As part of its centenary celebrations it was decided to expand SAICE's influence by forming the associated organisation.

Civils Masakheni, meaning "Civils, Let's Build", focuses on building civil engineering capacity and civil society awareness through education, training and orientation projects relating to service delivery. Civils Masakheni, established in 2004 is the formal mechanism for delivering the corporate social investment activities of SAICE.

Civils Masakheni develops and implements projects identified by SAICE to address its skills development goals and targets, with specific emphasis on growing indigenous, scientific and technological skills. Civils Masakheni implements wide-ranging capacity development programmes, in South Africa, and throughout the continent through the Africa Engineers Forum established by SAICE in 1995.

Through SAICE, Civils Masakheni has access to:

- Databases of civil engineering students, graduates and professionals which can be utilised to identify mentors, coaches, lecturers, specialists and those in need of capacity building and training
- A pool of expertise that can be mobilised to carry out research, to monitor and evaluate, to advise, consult and provide training for critical skills
- General administration capacity for project management
- A vast communication network including all stakeholders in the private and public sector
- The network of African Engineers through the Africa Engineers Forum



What is the role of Civils Masakheni?

Our Goal

Our goal is to develop civil engineering capacity to deliver sustainable infrastructure for all South Africans.

Our Values

Civils Masakheni projects are service orientated and based on the following values, guided by Batho Pele (People First) principles:

- Integrity
- Transparency
- Ubuntu
- Inclusivity
- Commitment

Our Roles

Civils Masakheni focuses on:

- Developing and facilitating appropriate education & training
- Canvassing potential engineering students
- Ensuring that the supply of civil engineering graduates entering the field matches demand
- Improving the retention of engineering professionals
- Working towards reflecting national demographics in the profession
- Facilitating sound and timeous decision-making at all levels
- Enhancing the understanding of civil engineering in society
- Conveying the importance of infrastructure to broader society



Civil engineering - a service to the community

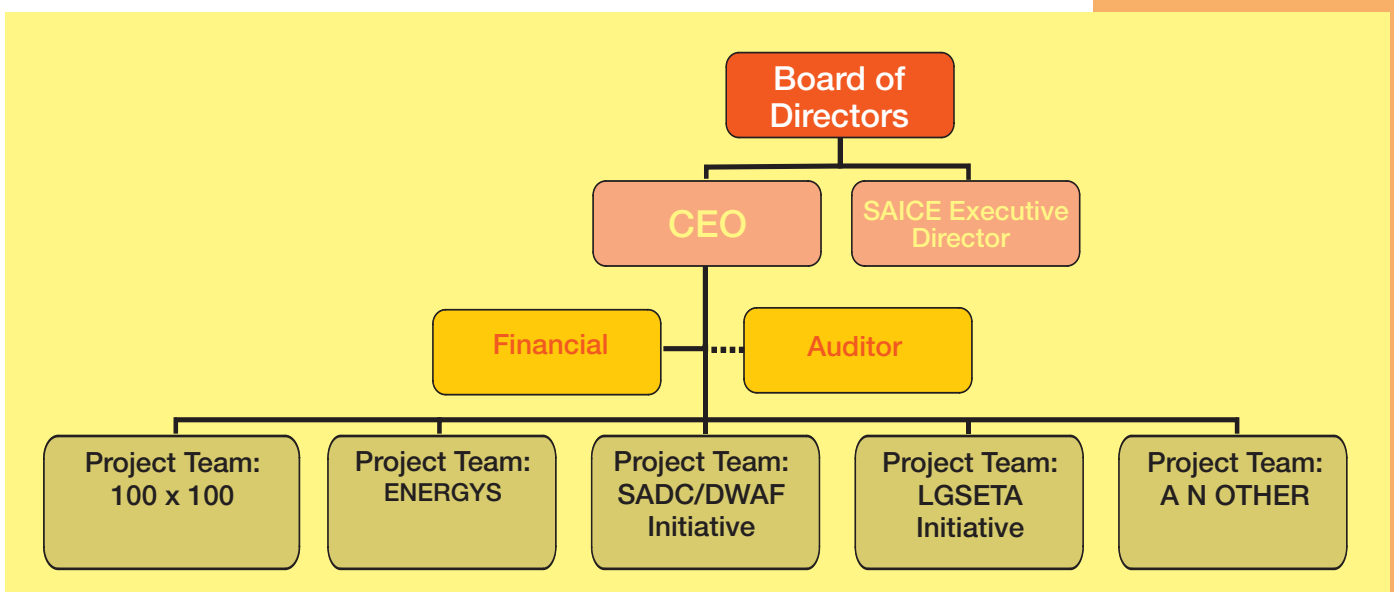
The Board & Governance

The company board consisting of SAICE members and stakeholders governs Civils Masakheni. The Board offers direction and carefully selects projects that comply with our vision. Each project is managed by a Project Steering Committee which is composed of members nominated by sponsors and partners as well as experts in their particular field. The appointment of professionals is based on their expertise, comprehensive business plans and detailed assessments.

Each project has a dedicated project leader who is responsible for managing the project on sound business principles as well as raising funds where necessary. Service providers are bound by a strict code of conduct to ensure that they honour our governance and excellence standards.



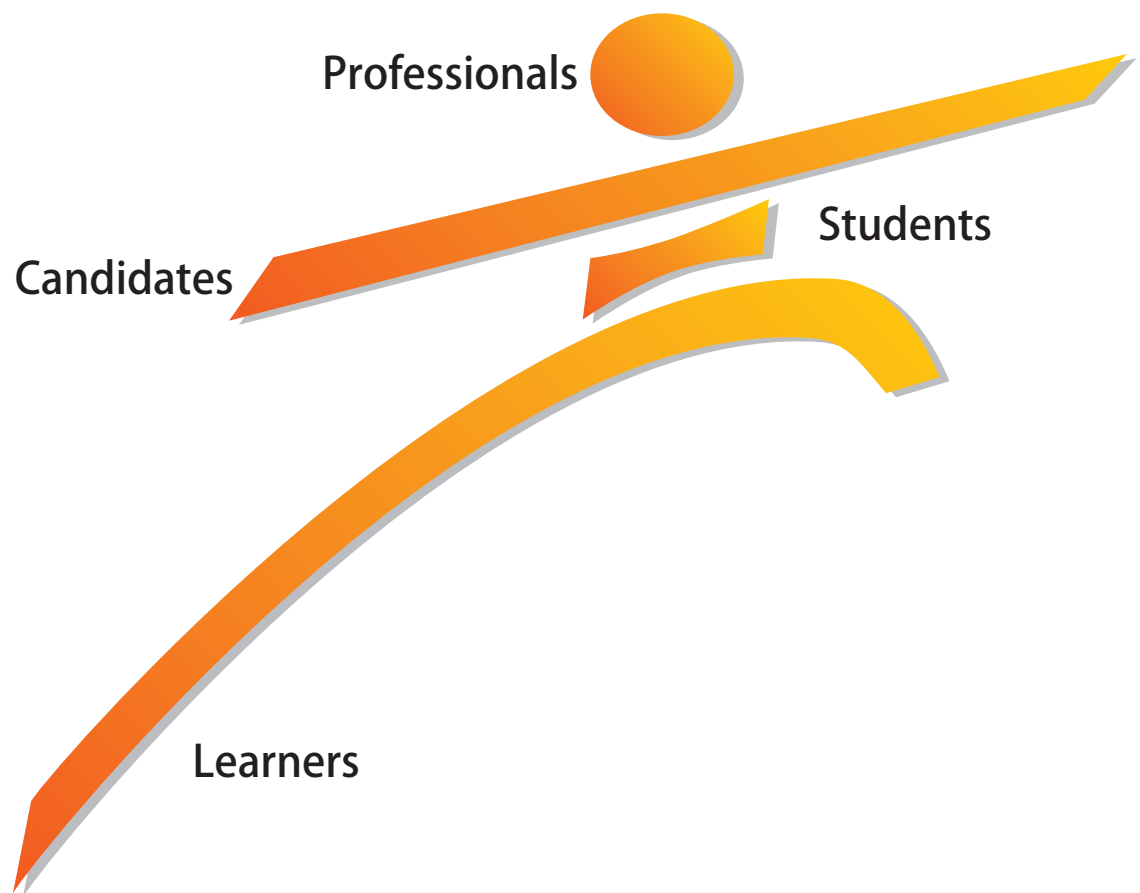
The Organisational Structure



Our Projects

To develop engineering capacity to address service delivery, Civils Masakheni has implemented a range of projects to support the four stages of the engineering skills pipeline, namely the development of learners, students, candidates and professionals. The company logo is stylised from the SAICE logo. The SAICE logo is a bridge which represents bridging the service delivery gap.

The Civils Masakheni logo represents the development stages of the professional whose stance depicts the passion of those in the industry, ready to take on any challenge and leap over the gap. The stability of the arched legs represents the foundation of learners firmly grounded in scientific concepts; the students are the torso committed to growth and feeding the profession; fledgling graduates spread their wings aspirationally towards the professionals at the head, representing knowledge, experience and wisdom



Learners

1. Numeracy Campaign – NumberWise

NumberWise enhances learning and encourages learners to engage in 10 minutes of sums every day. Assisting learners to develop a feel for numbers and numeracy by internalising basic tables, the NumberWise programme is of great assistance in preparing learners for professions that require a high level of competency in mathematics.

2. Career guidance

A national campaign is underway to promote the engineering profession to high school learners. Endorsed by the Department of Education, the project includes the production of a career video, visits to schools and motivational and informative presentations by young professionals at career shows, open days and science centres.

3. Career scouting

There are many towns and districts from which there are no students studying civil engineering. The 100x100 project was launched in the SAICE Centenary Year (2003) to identify 100 rural learners with exceptional maths skills to read for civil engineering degrees. By the end of 2007 73 learners had entered the programme, one of whom gained 100% for matric maths. Scouting and selection is carried out by Dudu Mkhize who holds a masters degree in maths teaching and has formed a close working relationship with Gauteng Universities. Funding to support these learners presents an annual challenge and we lobby industry and the public sector for support.



Prize giving - 100 x 100 project



Students

4. Bursaries

Awarding of bursaries is critical to support potential students through tertiary education. Civils Masakheni manages funds contributed by members through the SAICE Patrons Engineering Bursary Scheme (SPEBS). Since inception of the scheme, 263 bursaries have been awarded allowing the recipients to complete their studies as a result of this support. Full bursaries from first year are important to support students from disadvantaged backgrounds. Industry and the public sector are encouraged to contribute to this fund.

The LGSETA Local Government B Tech Bursary Scheme is also administered by this unit. A guideline on the management of bursary schemes is an outcome of this project and is available from saice@ally.co.za

5. Academic support

The various bursary schemes administered by Civils Masakheni offer not only financial support but academic support. Mentors are assigned to students and tutors harnessed where students struggle with particular subjects or concepts. Experience has shown that without considerable investment in such support, throughput is significantly lower.

6. Placement services

It is intended to facilitate access to webbased databases for various purposes including finding mentors, employers, employees and students and linking learners with all the bursary opportunities in the industry.



Students and graduates hard at work in Orange Farm

7. Experiential training support

The ENERGYS (Engineers Now to Ensure Rollout by Growing Young Skills) programme was developed as a unique capacity building initiative. Students and graduates are paired with retired engineering professionals in local government to carry out projects and accelerate service delivery. A pilot project was carried out in 2006 which resulted in 99 students and 47 graduates teaming up with 56 senior engineers. These teams handled a total of some R4 billion worth of infrastructure delivery. By participating in ENERGYS, 70 students completed their workplace learning (P1 and P2) as part of their National Diploma in Civil Engineering. The students in this programme were sourced from various organisations including tertiary institutions, SABTACO, SAICE, the Umsobombvu Youth Fund and by word of mouth.

The project, funded by the LGSETA continues. Municipalities are encouraged to contact Civils Masakheni to handle the placement and management of interns. A guideline document on the training of interns in all civil engineering disciplines is being prepared and will be available from saice@ally.co.za from mid 2008.



Proud graduates from the ENERGYS project



The ENERGYS team at the IMESA Conference in Soweto, October 2006



Candidates

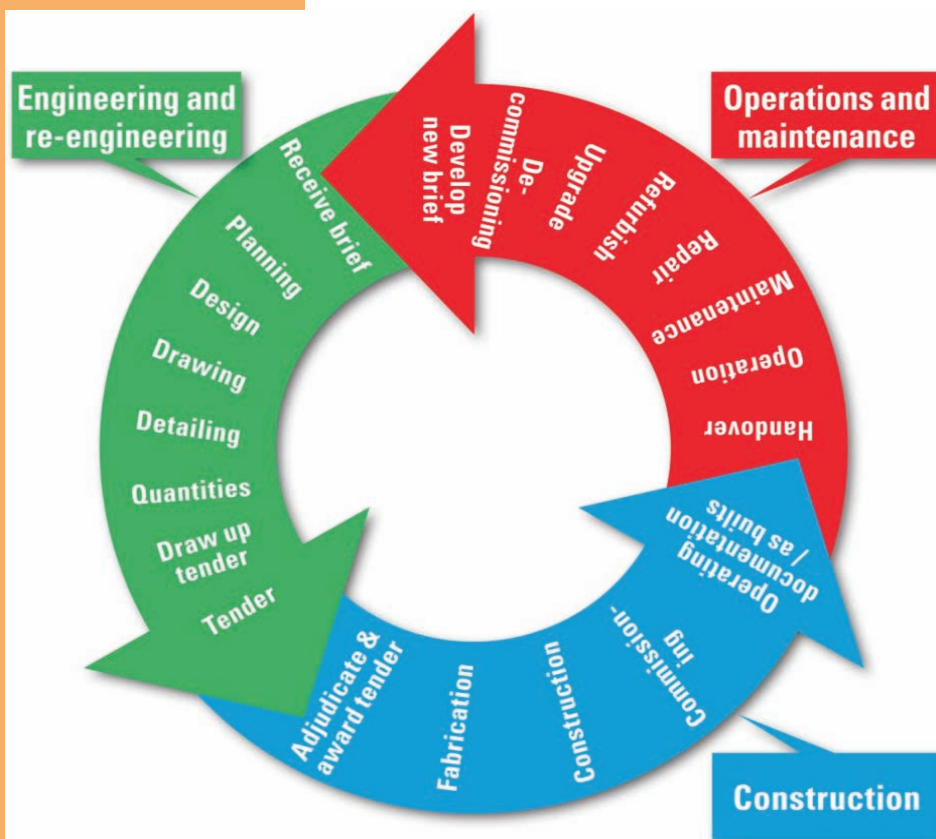
8. Professional development in the Workplace

The ENERGYS programme has also given graduates the opportunity to gain workplace experience in local government. The team of experienced engineers responsible for mentoring was able to assess gaps in tertiary education and life skills and has developed a workplace training framework to support graduates to achieve professional registration with the Engineering Council of South Africa (ECSA).

Structured workplace learning, including adequate rotation through the project cycle, will assist candidates to register in the minimum period of time. Orientation courses for HR personnel, mentors, supervisors and graduates have been prepared and will be offered from mid 2008. Visit www.civils.org.za for details.

A career path and workplace training programme is also being prepared for Water and Sanitation graduates in conjunction with the Learning Academy at the Department of Water Affairs and Forestry (DWAF).

In 2008, the DBSA appointed Civils Masakheni, in conjunction with SABTACO, to manage its Young Professional (YP) programme, which addresses the workplace training towards professional registration of 75 engineering graduates and 15 town planners over a three year period.



The civil engineering project cycle

Professionals

9. Continuous Professional Development

Continuous Professional Development (CPD) is aimed at enhancing and developing engineering capacity in a rapidly changing environment. CPD is considered essential for each engineering professional to stay abreast of current development and progress in the industry. Civils Masakheni arranges and promotes the following activities to support CPD:

- Courses, seminars, congresses and technical meetings
- Conferences
- Technical or professional committees and working groups
- Technical literature (e.g. journals, magazines)
- Technical papers
- Lectures at organised events

10. Africa Engineers Forum

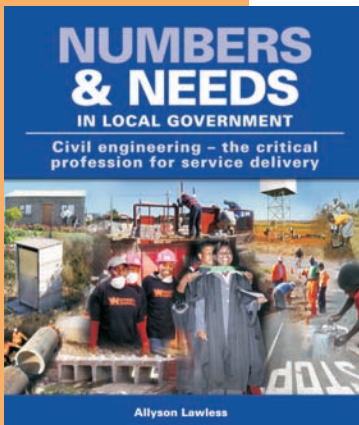
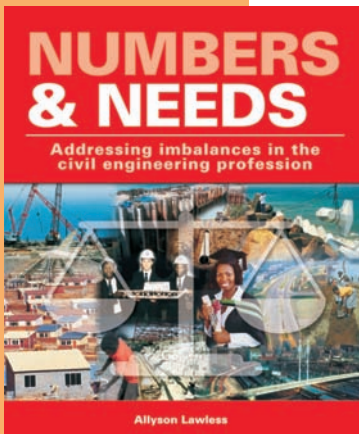
CPD initiatives aimed at developing and enhancing engineering capacity in Africa have also been established. Under this initiative several capacity building workshops and courses relating to water and sanitation for professionals have been held in SADC through the Africa Engineers Forum since 2005.

11. Leadership Management Programme

A leadership management programme has been specifically designed for the built environment to develop future leaders using the expertise and experience of today's leaders. Presented in six, three day workshops over a six month period, it will prepare 25 young professionals to take up leadership roles in their companies.



An AEF gathering at SAICE House



Our contributions to improved

12. Research initiatives and related publications

A major part of the company activities is dedicated to researching engineering skills requirements in the different economic sectors in order to publish findings and propose interventions. A number of reports have been produced for specific clients and the following skills publications have been produced to date:

- Lawless, A 2005 Numbers & needs: addressing imbalances in the civil engineering profession. Midrand: SAICE.
- Lawless, A 2007 Numbers & needs in local government: addressing civil engineering - the critical profession for service delivery. Midrand: SAICE.

The research emanating from Civils Masakheni contributed to the decision by government to invest in tertiary institutions to increase the number of engineering graduates by 1000.

13. The Infrastructure Report Card

In 2006, SAICE released the first ever "report card" on the state of engineering infrastructure in South Africa. This drew together observations made by professionals responsible for the planning, construction, operation and maintenance of our nation's life-support system. The report graded infrastructure (water, sanitation, solid waste, roads, airports, ports, rail, electricity, hospitals and clinics) on a scale from A+ through E-. South Africa's infrastructure received an overall grading of a D+.

The intent was to draw the attention of the public and decision-makers to the condition, and impact that infrastructure has on our lives, and to influence care for, and spending on infrastructure to ensure long-term sustainability. It is envisaged that reports will be published at regular intervals, extending their scope and detail.

| | | |
|--|---|---|
| Water | D+ for DWAF infrastructure C+ for major urban areas D- for all other areas | Well maintained but ageing bulk infrastructure reaching end of useful life, and requires refurbishment or replacement. 47% of bulk lines leak with leaks and require urgent refurbishing. Serious concerns about funding. South Africa is one of few nations where in most urban areas water can be drunk directly from the tap. Major, and ongoing, strides in provision of water and sanitation since 1994. However, erratic compliance with water quality requirements in most municipalities. Water wastage (leakage) is much too high. Shortage of skilled personnel. |
| Sanitation (including wastewater) | C for major urban areas E for all other areas | Service problems with management of many wastewater (sewage) treatment works. Wastewater leakage and spillage reach the high, and frequent problems with on-site sanitation. Inadequate operation and maintenance capacity and shortage of skilled personnel. Major urban areas grade is pulled down by Cape Town and Sebokeng. |
| Solid waste management | C- for major urban areas D for all other areas | Landfill sites in major urban centres well managed, but many municipalities, especially rural municipalities, have uncontrolled dumpsites with attendant health risks. More widespread waste avoidance and recycling initiatives required. |
| Roads | C for national roads D- for all other roads | Most in fair to very good condition, with recent strategic acquisitions in poorer shape. Increasing use of user pays (tolls), but funding remains a challenge, especially given that key roads will soon require extensive refurbishing. Generally inadequate funding and management systems leading to neglect of maintenance, combined with over-catchment and maintenance backlogs are growing. Less condition monitoring than in the past. Shortages of skilled personnel. Deterioration has been taken to 1000 maintaining some roads. |
| Airports | B for general freight facilities only C+ for passenger facilities only | World class aviation infrastructure provides strategic stimulus by the need to meet legislated requirements. Delivery and maintenance due to continuous expansion to meet growth exceeding 10% p.a. A profitable company, and no shortage of funding. |
| Ports | C+ for general freight facilities only B for heavy haul freight lines | Proper management practices on ageing infrastructure support underway to address increased demand. Further improvement expected as Transnet profitability improves. |
| Rail | C for general freight lines being retained E for passenger lines D+ for passenger lines | The iron ore and coal lines are world class and well maintained. Profitable. Where demand is approaching capacity, upgrading in progress. Condition declined in recent years due to maintenance backlog and skills reduction. Traffic volumes are increasing, and upgrading urgently required. Improvement expected as Transnet profitability improves. Low volume low priority lines in the process of being disposed of. |
| Electricity distribution | C+ for Eskom's generating & bulk transmission capacity C+ for Eskom's local distribution networks in major urban areas C- for municipal distribution networks in major urban areas D- for municipal distribution networks in other areas | Demand is nearly reaching the limit of generating capacity. Shortfall will get worse, before improving around 2011 when new coal-burned capacity commences. Eskom's profitable, and no shortage of funding, but capital programme area delivering too long. Major, and ongoing, strides in provision of electricity since 1994. Strides in provision of electricity in most urban areas. State of Eskom local distribution infrastructure generally acceptable, but skills shortages. Inadequate operation and maintenance capacity, and shortage of skilled personnel. In many areas, ageing and/or neglected infrastructure, improvements discernible. Grade pulled down by Johannesburg, although improvements also discernible there. Same types of problems as in major urban areas, but significantly worse. |
| Hospitals and clinics | C for hospitals D+ for clinics | Improvement in some provinces, esp KZN and Limpopo, but deterioration in others, mainly due to inadequate management systems. Rehabilitation programme addresses some issues. |
| Overall Grade | D+ | Although South Africa's built environment infrastructure is very good, even world class in parts, the relatively poor overall grade reflects extensive maintenance and refurbishment backlogs. These backlogs are caused primarily by funding and skills shortages. |

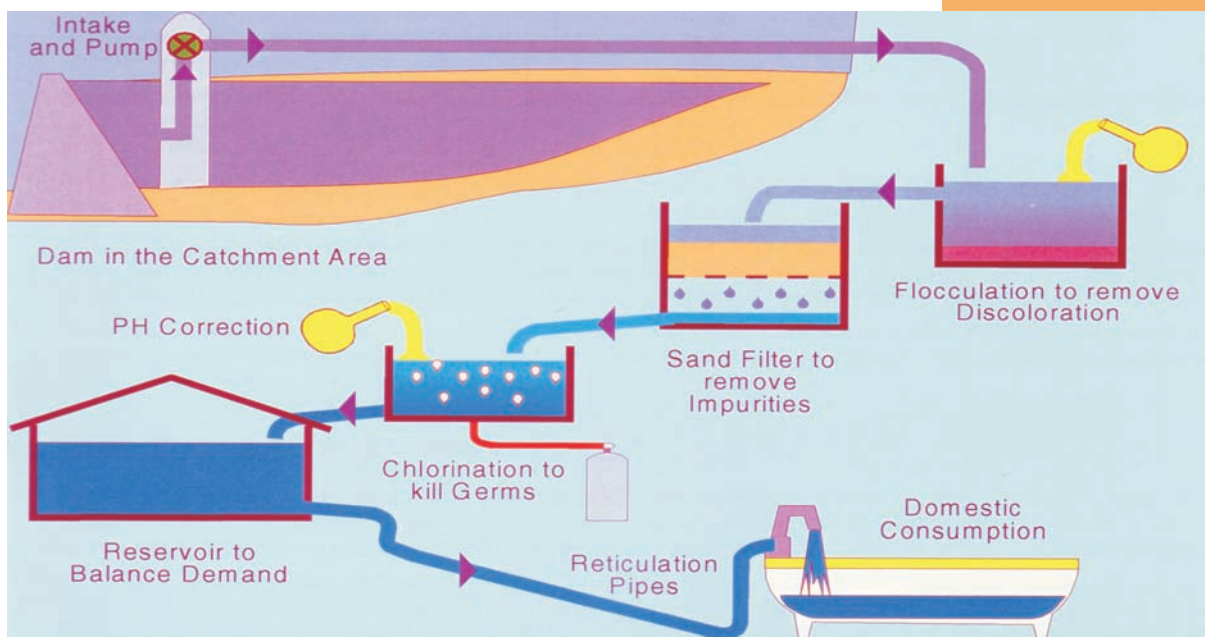
service delivery

14. Local Authority Councillor Orientation

This important infrastructure orientation programme is offered to local government decision-makers. The programme includes sessions covering water supply, sanitation, roads, electricity, refuse management and maintenance. It also addresses the process for infrastructure delivery including feasibility, budgeting, environmental considerations, tendering, supply chain issues, construction, operations and maintenance in general, as well as the professionals involved in these projects.

15. Advisory initiatives

From time to time, experts are identified and mobilised to offer stakeholder input on national initiatives and policy, in support of departments and organisations such as the Joint Initiative for Priority Skills Acquisition (JIPSA), the Engineering Council of South Africa (ECSA), the Local Government Leadership Academy (LOGOLA) and the Department of Education (DoE). The ENERGYS team have also played a significant role in advising the Water Sector Support Coordinating Unit (WSSCU) on skills development in the provincial offices of the Department of Water Affairs.



A diagram of the 'water production process' from the councillors training booklet

Our partners & systems

Sponsors & Partners

Our sponsors and partners include government, the private sector and civil society as follows:

- Department of Water Affairs and Forestry (DWAF)
- Department of Provincial and Local Government (DPLG)
- Department of Education (DoE)
- Gauteng Department of Local Government (GDLG)
- Joint Initiative for Priority Skills Acquisition (JIPSA)
- Local Government Sector Education and Training Authority (LGSETA)
- Construction Education and Training Authority (CETA)
- Development Bank of South Africa (DBSA)
- Jones and Wagner
- The South African Black Technical and Allied Careers Organisation (SABTACO)
- The South African Council of Planners (SACPLAN)
- The branches and divisions of the South African Institution of Civil Engineering (SAICE)

Systems, Procedures & Reporting

Whilst the day to day management of Civils Masakheni is handled by the CEO, an Executive Committee composed of Board Members has been set up to oversee the business affairs on a regular basis.

Recognised accounting systems are used to manage funding. For each project, separate accounts, audits and reports are generated as required. Monthly or quarterly reports offer an overview on expenditure and progress. Reporting can be in the form of executive documents or detailed reports as required. Annual or biannual impact assessments, as appropriate, are issued to the Board, Project Steering Committees, sponsors and partners to provide insight into the achievements and challenges for each project.

Civils Masakheni is committed to making a meaningful contribution to the development of skills and addressing the challenges facing civil engineering in South Africa.

Contact Details

The South African Institution of Civil
Engineering

saice

Saice House
Block 19 Thornhill Office Park
Bekker Street
Vorna Valley Extension 21
Midrand

Private Bag X200
Halfway House
1685

Tel: +27 11 805 5947/48/53
Fax: +27 11 805 5971

E-Mail: dbotha@saice.org.za
www.civils.org.za

SAICE Professional Development and
Projects trading as

Civils Masakheni

Allyson Hall
Cnr 26 Weltevreden Road and
Suzanne Crescent
Northcliff Extension 9

P O Box 73285
Fairland
2030

Tel: +27 11 476 4100
Fax: +27 11 678 7518

E-Mail: allyson@ally.co.za

VAT Registration #: 4050225574
Company registration #: 2004/030890/08





A SAICE Section 21 Initiative