

how & who?

how

A study carried out by SAICE (2004) revealed that there is a shortage of qualified civil engineering professionals in municipalities. The study further found that there are many student technicians who are unable to obtain experiential training or employment after graduating because there is insufficient capacity to manage and train young professionals.

The **ENERGYS** programme was conceived to start addressing these challenges. The acronym stems from the aim of the programme, **Engineers Now to Ensure Roll-out by Growing Young Skills**. SAICE and SABTACO have teamed up to deploy senior engineers paired with students and graduates in local government to assist with unblocking the bottlenecks and to offer a

comprehensive training environment for students and graduates alike. This teamwork resulted in an impressive total of 100 seniors, students and graduates being placed within the first 3 months of the project. The total now stands at 151.

who

The South African Institution of Civil Engineering (SAICE) and the South African Black Technical and Allied Careers Organisation (SABTACO) have teamed up to manage this programme.

SAICE is a 6 500-member strong volunteer association of civil engineering professionals. Through its specialist divisions the Institution provides technical leadership in support and

enhancement of poverty alleviation, sustainable development, and the development and maintenance of infrastructure. Specialist divisions cover the following sub-disciplines within the civil engineering profession - water engineering, transportation engineering, railway and harbour engineering, geotechnical engineering, structural engineering, urban and rural development, environmental engineering, construction, and information technology.

SABTACO is a national organisation representing members in science and engineering disciplines. Their mission is to facilitate the creation of an environment conducive to the development and promotion of science and engineering skills in the black community. In addition SABTACO has developed student programmes at many tertiary institutions around the country and acts as an enabling agent for practising and student members to acquire relevant employment opportunities. They also provide technical advice to local authorities, NGOs and CBOs in their pursuit of economic development.



As the project addresses the concerns of many stakeholders we are fortunate to have the National Department of Local Government (dplg), Department of Water Affairs and Forestry (DWAF) and Gauteng (GDLG) and North West (NWDLG) departments of Local Government as the funders of the project. Some of the criteria used in terms of funding were:

- a low capacity municipality or
- a receiving municipality or
- a Project Consolidate municipality or
- a hot-spot for Project Consolidate or
- a cross-boundary municipality

Another key contributor is the Local Government Sector Education and Training Authority (LGSETA). Through the provision of stipends for experiential training, many students will eventually graduate with their National Diplomas, a dream that has eluded them due to the lack of experiential opportunities.



the dplg

Department
Provincial and Local Government
REPUBLIC OF SOUTH AFRICA

LGSETA

Local Government
Sector Education Training Authority



NEW PARTNERS



Knowledge Base Donates AllyCAD to build CAD Competence

Knowledge Base, the developers and suppliers of interactive design software packages AllyCAD and Civil Designer, have kindly donated student copies of AllyCAD for students and graduates to become proficient in computer aided drawing. Many municipalities have no technical software and limited records, which makes planning, design and decisions on operations and maintenance particularly difficult.

Armed with AllyCAD, students and graduates will be drawing their designs and gathering existing drawings from Consulting Engineers with a view to adding service details such as house connections, as well as drawing assets where drawings have been lost such as treatment works, road networks etc. This will allow students and graduates to become CAD proficient while at the same time helping municipalities to improve their records. Knowledge Base's donation forms part of a broader initiative to try and address skills shortages in the Civil Engineering sector.

goals

Project targets



objectives

These vary from municipality to municipality but the main aims are to:

1. **improve service delivery through**
 - Accelerating the delivery of MIG projects
 - Planning, initiation or delivery of capital projects
 - Rehabilitation of services which have suffered operations and maintenance neglect over time
 - Effecting sustainable savings by curbing losses
 - Revenue enhancement by installing meters, addressing illegal connections and checking tariffs on all major accounts

2. **grow technical capacity through training, mentoring and coaching of in-house staff, students and graduates**
 - More than 100 in-house staff are being trained in Project Management, Expanded Public Works Programmes, CAD and design to name but a few
 - Universities of Technology and the Engineering Council of South Africa (ECSA) require that students and graduates are successfully exposed to a range of disciplines such as:
 - Administration
 - Planning
 - Design
 - Survey
 - Drawing contracts
 - Construction
 - Material testing
 - Operations and maintenance

These disciplines are all found in local government, which ultimately gives students and graduates a unique and holistic experience in the workplace.

CHALLENGES AND GAPS

At a workshop held by our seniors in May 2006, experiences were shared and this included an intensive discussion on solutions for all to apply in their municipalities. 30 gaps and challenges were highlighted and the following 15 were prioritised. They are:

1. The right person for the job (qualification, experience etc)
2. Define correct structures/functions
3. Improve O & M
4. Emphasise faster and firmer decision making at council level
5. Reduce interference
6. Confirm acting posts and restore morale
7. More energetic revenue generation & collection
8. Simplify/improve IDP and other processes
9. Spend audit to ensure funds are being correctly utilized
10. Outsource much more
11. Supply chain management review
12. Empower councilors in terms of infrastructure
13. Make better use of time
14. MIG – one size does not fit all
15. More money from Treasury!

A workshop will be held by the ENERGYS team in July 2006, where they will be pooling ideas in terms of Standard Operating Procedures which will be distributed to all participating municipalities. The recommendations on the abovementioned challenges and gaps will be forwarded to National Department of Local Government for improved sustainable service delivery.

Driver's Licenses

Please help - you can play a crucial role in the career development of students and graduates. There is a dire need for them to acquire their driver's licenses and we appeal to all municipalities who are part of the project to assist us on this matter.

RETIRED SENIOR ENGINEERS

RETIRED SENIOR ENGINEERS- we need to place seniors in Kuruman and Hartswater (Northern Cape), Vryburg in the North West, Burgersfort and Leboakgomo (Limpopo). Please forward your CV to energys@ally.co.za if interested.

STUDENTS AND GRADUATES

Civil Engineering students and graduates required in Central (North West), Fetakgomo (Limpopo), Westonaria, Metsweding, Midvaal, Sedibeng (Gauteng) as part of a capacity building project. Students requiring experiential training should have a minimum of S3, and graduates a minimum of a national diploma.

This programme provides a once in a lifetime opportunity to obtain workplace training in the Municipal Engineering Sector, under the guidance and mentorship of senior engineers with extensive engineering experience. Please e-mail us your CV to energys@ally.co.za. Only short-listed candidates will be contacted.

SPOTLIGHT ON PARTICIPATING MUNICIPALITIES

DISTRICT:

Eastern Cape

Cacadu
Amathole
Alfred Nzo
Ukhuhamba

Free State

Xhariep

KZN

Ugu
Zululand

Limpopo

Sekhukhune

Northern Cape

Kgalagadi
Frances Baard
Pixley ka Sema

North West

Central
Bophirima
Bojanala
Southern

Western Cape

Eden
Central Karoo

LOCAL:

Gauteng

Sedibeng

Ermfuleni
Midvaal

West Rand

Mogale
Merafong
Randfontein

Metsweding

Kungwini

Limpopo

Sekhukhune

Greater Marble Hall
Greater Groblersdal
Greater Tubatse
Fetakgomo

Mpumalanga

Bohlabela

Bushbuckridge

Northern Cape

Kgalagadi

Ga-segonyana

Frances Baard

Phokwane

What's happening in

Sixty-six municipalities at both a district and local level are receiving some form of support from this project.

UGU DM

Ugu DM has 19 sewerage and water treatment plants throughout its 100km coastal extent. Many were in need of operators and many are in need of refurbishment but details of the plants have been lost in time. The students (8 of them) placed at UGU have been deployed on site to not only operate but to survey, sketch and develop operating procedures for each of the plants. In addition they will be able to train new operators as they are appointed as part of the District's HR development programme.

The students will be rotated to the PMU to assist with the development of many MIG projects. They will also work closely with the community to supervise the VIP project when fully underway. The Water Department will also train our students as there is a need for more staff over the holiday season with the influx of holiday makers every year. The Municipal Manager has asked that 4 more students be placed on the programme. This is in addition to the 8 students we have already placed.

Zotha Cele a student in Ugu tells us "I think it is a great opportunity in terms of in-service training, which does not come by easily and learning the ins and outs of becoming a future civil engineer"



ZULULAND DM

This DM has 12 in-house younger civil engineering technicians who have had minimal experience or mentoring in the workplace. They requested that the senior deployed, Brad Rutherford, develop a training programme that covers all the aspects of municipal engineering. Brad threw all his energies into developing a refresher course, which covers the following 12 topics relating to municipal engineering. These are:

1. General Management
2. Surveying
3. Hydraulics
4. Hydrology
5. Pipelines
6. Water Distribution
7. Water Losses
8. Roads
9. Structures
10. Project Management
11. Fleet Management
12. Materials



These classes began in May. Thus far our students have learnt to use CAD, have attended lectures on surveys, hydrology and hydraulics. They are currently busy designing and drawing small water supply systems in Nongoma and Sindhlagentsha and are extensively involved in water demand management.

Mr. Christo Nel the Planning and Community Development Manager, Zululand DM has this to say about the initiative....."The project has assisted us a great deal by looking at the real needs required by the staff at the municipality.

The results thus far are evident as the training has a practical and theory component. Capacity has increased and the people on the course are committed to the project. I believe this project should run for a period of at least 3 years and must definitely be continued."

our municipalities:

PIXLEY KA SEMA DM

The Karoo District is the largest of the areas that one of our seniors serve (102592 km²!) It is a sparsely populated farming area, which is difficult to develop or maintain due to the vast distances between settlements. Unemployment in rural communities is high. Christian Schumann, a graduate and a student are involved in road and stormwater maintenance and rehabilitation where necessary. SMME development is key to much of this work, and Christian is finding this component of his work very rewarding. Here is the story of Hans from Petrusville, who has benefited from the SMME development programme.

"...Hans, in his late thirties, lives with his wife Dina and kids in a corrugated iron shack in 'Die Plakkerskamp'. Dina complains about how bitterly cold it is in the tin house, but she keeps the house scrupulously clean and the yard swept every morning. Hans can not read or write, but can "draw" his name H A N S. He has a bakkie, a cell-phone and a bank account. His partner Trinity can read and interpret a contract, and can write well enough. A local farmer Jacques, who grew up with Hans, introduced him to me for the job of clearing the reserve of a two kilometer section of road between



Petrusville and Colesberg. The thick thorn trees were a contributing factor to storm damage to the road during the heavy rains early in 2006. Jacques, a qualified agricultural economist, spent a lot of time with Hans preparing a quote, and Hans and his team of seven men and one woman (to operate the spray pump for treating tree stumps) was awarded the two month contract. Hans and his team really got stuck in and completed the job in three weeks to an eminently acceptable standard. He was paid according to his quote and, after settling with his workers Hans now has money in the bank and bread on the table to feed his family. Hans told me he had never before entered into a contract, and was very pleased with the outcome of this one. We are working on two projects at Van der Kloof near Petrusville, one for cleaning side drains and the other for stone pitching. Both of these contracts could be within Hans's reach when we ask for quotes later this year..."

EMFULENI LM

With the arrival of the latest students Emfuleni now has the largest component of graduates and students employed on the project being 7 students and 3 graduates, deployed in the PMU, water, sanitation and electricity.

This group coupled with the senior team is helping Emfuleni achieve its targets, the most impressive being the spending of the MIG budget by the 30 June! When we first visited Emfuleni the PMU unit was basically manned only by Jan Terblanche, who was grappling with all the challenges. Early in the year he was able to appoint two senior and two junior project officers

who together with the students and guidance from the seniors helped Jan accelerate his spending and complete all the projects. The seniors have also helped with the development of systems to streamline the PMU operation which will stand it in good stead for future spending cycles.

Water quality, sewerage, GIS, PMS and revenue collection systems are also being reviewed by the seniors with a view to creating more sustainable processes and systems in the future.

ALFRED NZO DM

We have two S3 students and two graduates at Alfred Nzo. Their first project involved the design and construction of a small water irrigation scheme in Edutyini. The water irrigation scheme is for a vegetable garden project as part of Local Economic Development in the area. Their first responsibility was to determine the feasibility of the project and then design the scheme. The scheme consisted of a water pump extraction point to an elevated JoJo Tank reservoir and from there a gravity irrigation scheme consisting of 2 to 4 rotating sprinkler points. Design included the selection of a pump, elevated tank platform/structure and the delivery pipes. In addition they had to determine the cost estimate and prepare a small bill and contract document for execution purposes. Other responsibilities included construction supervision.

They have also been trained in the use of an Omnistar GPS system with the intention of mapping 150 rural water schemes. The intention is to log the 150 water schemes and at the same time do an assessment on the infrastructure and operation capability of the water schemes. This will be used to determine the Operations and Maintenance and any refurbishments that are required.

Njabulo Kheswa a graduate in Alfred Nzo DM informs us that he is "gaining experience on project management, working with the community and receiving a great learning experience."

| ITEM NO. | DESCRIPTION | UNIT | QTY |
|----------|--|------|-----|
| 1 | Clear and grade along pipeline route | m | |
| 1.1 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.2 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.3 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.4 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.5 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.6 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.7 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.8 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.9 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.10 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |
| 1.11 | Install 150mm dia pipe (HDPE) with 100mm dia manhole | m | |

May 2006

Itumeleng Rametse writes

I am a student based at Moretele Local Municipality at present for my experiential training. It has been a month now since I started working in the municipality. The first thing I realised was the amount of responsibility on the technical team. I have observed problems that the community have to deal with e.g. projects that were left unfinished for months and others that are completed are not up to standard. My task here is to solve those problems technically.

When I first came here I had no idea of the situations and needs of the area. It is a rural area that still requires improvement in terms of basic infrastructure (water, sanitation and electricity) for the community, the things I took for granted coming from the city. Coming here has really opened my eyes and mind in realising the importance of having a technical team in municipalities. I have also familiarised myself on how to deal with complaints and politics that are brought by the community. There was one incident where the community did not want specified water meter boxes claiming that they are weak, basing their conclusions on prior water projects. The boxes were replaced with a different model.

I hope to learn and achieve more as the year progresses, and also hope to make a remarkable difference during the period that I am here by managing projects professionally. Working in the municipality so far has been a challenge and interesting.

WRITTEN BY MOTLATSI ERNEST RUSSELL IN RANDFONTEIN LM

Mr. Gerrit Venter (Senior Engineer), ushers out a very well planned schedule of tasks for me to perform. This entails the norms that he always emphasizes e.g. responsibility, trust, accountability, positive attitude, discipline, honesty, productivity and also communication to make me a firm and strong Technologist/technician to be.

Some of the tasks I have completed towards this goal are:

- Survey and preparation of drawings (CAD) for R28/R659 intersection for the application of a wayleave from Gauteng Department of Transport
- Involved in the supervision of a stormwater pipeline installation
- Testing of bricks at Mogale City LM laboratory to build manholes at the stormwater pipeline installation

This is a very phenomenal programme to students and graduates because it exposes them to various situations within the municipalities and also the feel of being in a workplace practicing in the career path of the study field that one had taken. Because in some cases you find graduates who recently left tertiary institutions diverting into something else which is far from their study fields, only because of job scarcity/ and or training programmes. Mentoring is of vital importance in this programme as acquiring the appropriate skills in the profession is fundamental.

This collaborative programme seems to be fairly effective within Randfontein LM, hoping to improve with time.



students & graduates reporting

The challenges and progress faced at Bushbuckridge (BBR) as told by Frans Laubscher

Staff: There are only four permanent members of staff employed in the Technical Department in a municipality serving almost one million people.

Facilities: Offices are crammed as there is only one office (25m²) available to accommodate staff, receive visitors, contractors and consultants. There is no privacy and most of the time the Manager discusses confidential matters under the trees. To crown it all contract documentation, plans etc are also stored in this office. There are no official vehicle/s allocated to the Technical Department and they need to draw vehicles from a vehicle pool which makes securing a car very difficult. As a result site meetings; inspections etc are not attended most of the time as staff is not remunerated for using their personal vehicles. On a positive note a refurbished office has been allocated to our ENERGYS team. Amazingly the computers and lighting are powered by a generator.

Waste-site: The new waste site in Mhkuhlu, which was practically completed during March 2006, has a few minor snags. The existing waste site needs to be rehabilitated, as prescribed by DWAF. This is quite a challenge and the consultants of the new waste site have been requested to submit quotations for both the environmental and engineering aspects. Since the existing site is posing serious environmental problems, the project needs urgent attention.

Streets: Complaints about the condition of streets in various towns and villages in BBR have been reaching me since I started my mission at the municipality. The above-average rain that fell in this area over the last few months, has certainly contributed to worsen the situation.

During heavy rain storms water flooded into the houses of some of the inhabitants. I observed and spoke to people who were busy constructing berms to keep water out of their houses. Since the Towns and Villages are spread over a large area, the site visits to execute the necessary assessments which includes liaison with 11 Regional Managers is difficult. The task ahead is formidable.

The photos on the right show the general condition of the streets in this town which are far below accepted standards, some streets have been washed away and have actually become gullies. Inhabitants cannot drive to their homes with their vehicles.

Networks: The water and sewerage networks are in poor condition. Little or no maintenance has taken place over the past 10 to 15 years. As a result pipes are blocked, manholes are broken, the outfall sewer has collapsed and sewerage is flowing in many of the streets. The good news as a result of our perseverance, is that Chinese pipes have been donated for the refurbishing exercise and R8 million has been made available for the associated labour.



A success story

Thys Human is our only Electrical Engineer offering sterling support to the Kungwini and Ermfuleni LMs.

Thys tells us "the sale of electricity is normally any Council's biggest source of income and yields a substantial surplus that is used to subsidise other services that are not self sufficient. At Kungwini two challenges have been identified."

The Sale of Electricity

Electricity is being sold to large clients at a much lower rate than it is being purchased for from ESKOM. Agreements determine that "the Town Council shall charge for electricity at the same tariff that the Town Council obtains the electricity in bulk from ESKOM." Accounts have thus been corrected and the immediate financial benefit for the present financial year is about R2,8 million. It will be higher in each subsequent year.

Large amount of unaccounted for Electricity

The LM is selling 22% less electricity than what is purchased. Losses of between 5% and 10% are normal. The balance can be attributed to large consumers who are not being billed. The first such client has now received a bill for R130 000 for the correction of the amounts for the past 5 months and the ongoing financial benefit will be about R270 000 per year increase in income for Kungwini and there will be many more!! Well done Thys!!



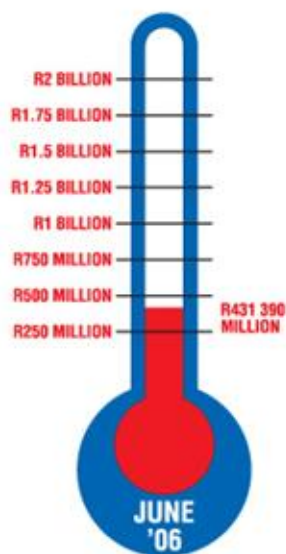
ENERGYS PROJECT BAROMETER



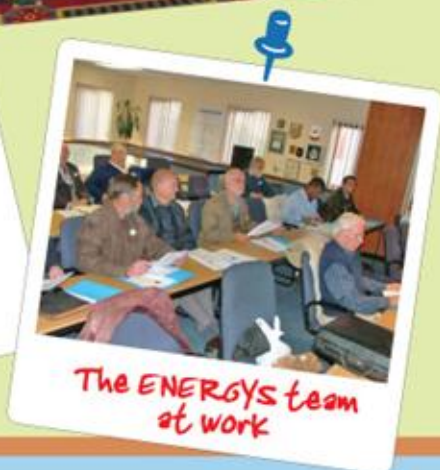
The project barometer shows values of the projects being managed savings and improved income, and indicates what we collectively expect to achieve.

To the end of June 2006 490 projects to the value of R1.604bn had been identified as requiring some sort of attention or management from the team and R431m had been spent in rolling these projects out, many of which had been stuck when the teams arrived. The projects include 120 water, 100 sanitation, 102 roads and 70 planning projects.

We need your monthly project percentages so that we can monitor progress. We have along way to go!!!



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ENERGYS CONTACT DETAILS

A SAICE /SABTACO CAPACITY BUILDING PROJECT IN COLLABORATION WITH dplg, GDLG, NWDLG and LGSETA

P O BOX 73285
FAIRLAND
2030

26 Weltevreden Road,
NORTHCLIFF Ext 9

Phone: +27-11-476-4100
Fax: +27-11-678-7518

e-mail: energys@ally.co.za