Traditionally Gundle API, which is part of the Gundle Plastics Group, has concentrated on extruding wide width plastic sheeting for the damp and waterproofing of buildings and agricultural applications. Over the last thirty years the company has managed to gain a dominant share in plastic sheeting supplied to both the construction and agricultural markets. Its brand names are synonymous with quality and service.

During 2000 Gundle acquired a HDPE/LDPE extrusion plant for the manufacture of geomembranes and wide width greenhouse film up to 11.5m wide. The extruder is geared to extrude sheeting 2mm in thickness in widths up to 6.8m. To date, Gundle API has not made a strong effort to penetrate the geomembrane market for several reasons. These being:

- The high level of technical expertise required to market to the geomembrane industry.
- Severe price competition from imported materials.
- Lack of support from South African contractors, who import material from overseas.
- The high international quality standards that are applied to the South African market.

Gundle API has decided to apply a long-term strategy in its approach to the geomembrane market. Over the past two to three years it has upgraded its manufacturing plant to meet international quality standards. During last year it was awarded ISO 9001 certification as well as the SABS mark (SABS 1526-Polyolefin sheeting for use as a geomembrane)**

The company has installed a sophisticated laboratory and testing facility. Working through ITAC (International Trade Administration Commission) Gundle API have been able to negotiate an exemption of rebate payable on imported HDPE used in the manufacture of geomembranes. Lastly, suitably qualified people are being employed to promote geomembranes to the selected target markets.

The API plant is the only blown-film plant in the sub-Sahara region that can manufacture lining material up to 2mm thick in widths suitable for the geomembrane market. Gundle API is the only manufacturer of blown-film geomembranes in South Africa and believes that it needs to strengthen its presence in the local market.

Several major projects have been supplied with the Gundle API membrane, which is supplied under the brand name ENVIROLINER. At the current time API only supply the geo-membrane and do not get involved in the actual application of the product. However this may become a necessary area of involvement in the future should growth targets not be achieved.

For more information, contact Deon Enslin at deone@gundle.co.za

** Editor’s Note: SABS 1526-1991 is being replaced by SANS 1526 / SABS 1526:2003. Copies may be obtained from the SANS
President’s Comment

I have just returned from Germany, having been privileged to attend the GSE one-day conference on geomembranes presented by Bob Koerner in Hamburg. Aquatan kindly invited a group of South Africans to attend the conference, whilst a live video satellite link—up with the Indaba Hotel enabled others in South Africa to participate in the conference (see later in this newsletter for more on this event).

At last the long awaited revision of the DWAF Minimum Requirements series has kicked off, with three stakeholder workshops being held in Pretoria on the 4th, 5th and 6th of February. From GIGSA’s side, the most significant aspects of the Landfill document requiring revision are the landfill lining and capping designs. Together with Kelvin Legge as representing DWAF, I have been tasked with the responsibility for drafting the necessary revisions to the liner and capping designs. I will therefore keep you appraised of developments as we progress with the revisions, and elicit specialist input in certain geosynthetic matters.

Congratulations to Anton Bain of Jones & Wagener who received the South African IGS Student Award. As part of this award, Anton was sponsored jointly by the IGS and GIGSA to attend “EuroGeo 3” International Geosynthetics conference in Munich at the beginning of March. We look forward to Anton’s report back on the conference, which was also attended by Liza du Preez and Falk Hedrich as joint authors of a paper at the conference.

Your committee is progressing well with the drafting of a “Standardised” GCL specification for use in South Africa, however it is proving to be a much larger task than originally envisaged. We have also discovered that what we are attempting to do, is virtually a “world first”, hence one of the reasons for the slow progress. It is tough being a “pioneer”!

With the increased importance being placed on Quality Assurance requirements for lining contracts, we have identified the need for “capacity building” within the geosynthetics industry in the field of Quality Assurance and Quality Control. We therefore intend holding a CQA afternoon training seminar on Tuesday 22 June 2004. Further details will be sent out closer to the time.

In closing, may I remind you of my vision stated in first president’s message in December 2004, that I aim to:

- Strive for greater professionalism in our industry and adherence to the GIGSA Code of Ethics.

In line with the above, I want to encourage our members to work out their differences in a mature manner, and not revert to malicious attacks on the competition. We have enough of this “negative marketing” in the political realm, and there is enough work for us all. The best form of marketing is a good track record.

Best wishes, Peter Legg
peter@jbawaste.co.za

Sharing in a World “First”

On the 16th of March 2004, a unique conference on geomembranes led by internationally acclaimed Professor Bob Koerner of the USA, was held in Hamburg, Germany.

It was quite appropriate to have the live link between Germany and South Africa as GSE’s roots are through Gundle and Aquatan Lining Systems in South Africa as well as through Schlegel of Hamburg.

The conference dealt with specifications of geomembranes and focussed on the GRI GM 13 and GM 17 specifications for HDPE and LLDPE, which are the two most popular membranes, used in waste management due to respectively their chemical resistance and flexibility.

Technical issues such as the life expectancy of geomembranes were covered, with a detailed presentation on Oxidation Inductance Time (OIT) testing and its relevance to life expectancy - in
particular with respect to dry tomb and wet landfill applications. Plenty of opportunity was provided for questions and discussions on both the subject matter presented and on related topics, which the South Africans in particular made good use of.

Bob Koerner leads the conference

Some invited South African guests were lucky enough to be able to join the Hamburg delegation while many others enjoyed participation in the South African link. In addition, the Hamburg delegation was taken on a very informative tour of the GSE manufacturing facility at Rechlin in the former East Germany. Our thanks and congratulations are extended to GSE and Aquatan!

Ed: - This news item was prepared by Peter Legg (President) and Kelvin Legge (GIGSA Immediate Past President) who attended in Hamburg and Johannesburg respectively.

“Standing in the middle of the road is very dangerous; you get knocked down by traffic from both sides”
- - - Margaret Thatcher

**What’s in a Name?**

For strategic and operational reasons, Naue Fasertechnik, the international licence owners and manufacturers of Bentofix® Geosynthetic Clay Liners (GCLs), have exercised their right to use the name Bentofix in Africa.

This superior, needle punched, thermal lock GCL that Kaytech established in Southern Africa in 1995 will now be supplied by Kaytech as Enviromat™.

The good news is that the supply of Enviromat will continue from the licensed producer in Australia, Kaytech’s sister company Soil Filters (Pty) Ltd.

The specifications of this product will remain unchanged as Kaytech will continue to supply the well known “X” Grades (X 800, X 1000, X 2000 and X 3000) under the brand name of Enviromat™.

Enviromat GCLs have been supplied into South East Asia from Australia for several years, where amongst other significant projects they have been used in the composite liners for several major landfills in Hong Kong. These landfills class amongst the largest, most extensively engineered landfills in the world.

Kaytech is proud of its achievements with regard to the establishment of GCLs in water and waste containment liners in southern Africa and intends to continue to provide clients with quality GCL products and services.

For more information, contact Garth James On ktechgmj@kaymac.co.za

“Kites rise highest against the wind – not with it.”
- - - Sir Winston Churchill

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Reactions to criticism may take some time . . .
**Major Lining Project at Kynoch Potchefstroom**

Engineered Linings was awarded the contract for the lining of the new tailings dam, return water dam and solution trench at Kynoch’s fertiliser factory in Potchefstroom. Recent pressure from DWAF is making it more difficult for companies to ignore the environmental impact of their operations and Kynoch has shown its commitment to environmental protection in the design and implementation of this new facility.

**Tailings Dam (Compartment 1):** The new tailings dam is situated on top of the existing gypsum tailings dam, which contains approximately 63 million m³ of gypsum and has an average height of 25m above the surrounding natural ground level. The new dam is divided into three compartments and compartment 1, the largest of the three, was lined under this contract. It has a total lined area of approximately 63 000m². This liner system is made of two different lining components and a drainage layer.

The three layers of material installed are a 1mm thick HDPE secondary liner (63 000m²), a geonet leak detection layer (63 000m²) and a 1.5mm thick HDPE primary liner (63 000m²). All HDPE liner materials were manufactured in accordance with the internationally accepted GRI-GM13 standards (SANS 1526).

Compartment 1 is divided in half by a gypsum berm along the watershed of the floor. These halves are further divided into 16 smaller areas by the drainage system. Each smaller area had to be lined as an individual section to allow access over unlined areas for the construction of the blanket drains, toe drains, secondary drains and leakage detection drains. 32 pipes service the leak detection layer and the drainage system; each pipe penetrates the embankment of compartment 1.

This was not a simple matter of installing the three layers sequentially over the entire compartment, but rather a process repeated 16 times for each smaller, individual section/area. Special attention was also paid to the drainage trenches, which were lined with 1mm thick HDPE. This was then covered with geotextile, as protection, prior to being backfilled with crushed stone.

Throughout the construction of the dam, the liner installation program was frequently adapted to accommodate the earthworks contractor. Gypsum cover layers were placed on top of the lining and access for all earthmoving equipment had to be taken into consideration. Where it was not possible to prevent machine access over the liners, temporary routes were created by laying Geo-cells, filled with gypsum, over installed liners. These Geo-cells were later removed by hand.

**Aerial view of the Kynoch project**

The duration of the project spanned the local windy season. This caused a few problems, which were aggravated by the altitude of the site and the added elevation of the tailings dam. Special precautions were taken to protect deployed and installed liner from any uplift or damage from these high winds.

The severe winter months also presented their problems. The coldest temperature recorded was minus 6 degrees Celsius and the maximums were into the mid thirties. It was not uncommon to contend with temperatures from below freezing point in the early mornings to the upper twenties in a single day. On cold mornings a layer of ice was often found on installed linings, making the surface extremely slippery and the material impossible to handle. The soft powdery nature of the gypsum surface also made handling the materials very difficult.

**Return Water Dam:** The return water dam has a total lined area of approximately 16 000 m². This was also made up of two different lining components and a drainage layer. These layers consisted of a 1mm thick LLDPE secondary liner (16 000m²), a geonet leak detection layer (16 000m²) and a 1.5mm thick HDPE primary liner (16 000m²). The inlet and outlet pipes run over the top of the liner and here 2mm thick HDPE protection pads protect the liner. The leak detection system gravitates to a sump from where liquid can be removed by a submersible pump, which is inserted into the sump via an HDPE pipe installed down the
embankment, between the secondary and primary layers.

One concrete emergency spillway was constructed and the liner was terminated onto 200mm wide HDPE Anchor Knob Sheet (AKS) strips, which were cast into the upper surface of the concrete spillway.

**Solution Trench:** The 700 m long solution trench is lined with a 1,5mm thick HDPE liner. Due to confined work space between the toe of the tailings dam and the site boundary, this task became quite labour intensive as most of the material had to be carried by hand to the point of installation.

An HDPE pipe culvert with two concrete headwalls was also placed in the solution trench to allow an access road over the trench. The vertical faces of the concrete headwalls had 200 mm wide AKS strips cast into them and the liner was welded onto these strips and also onto the HDPE pipe.

The lining installation portion of the project was executed between May 2003 and September 2003 and credit must be given to the consultants, client, civil contractors and lining installers for successfully completing a technically challenging project.

**Client:** Kynoch Fertilisers (Pty) Ltd. Potchefstroom, RSA

**Consulting Engineer:** Jones & Wagener (Pty) Ltd. Johannesburg, RSA

**Civil Contractor:** Fraser Alexander Construction (Pty) Ltd. Johannesburg, RSA

**Geosynthetic Material Installer:** Engineered Linings (Pty) Ltd. Johannesburg, RSA

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**A Visit to the Antipodes**

During February this year, Kelvin Legge was again given a wonderful opportunity to visit NZ and Australia for interactions on geosynthetics, travelling by direct flight to Sydney Australia for a two day break before going on to Auckland NZ to attend the 9th Australia / NZ Geomechanics Conference.

The conference was well attended and had the theme “To the Ends of the Earth”. A paper was presented and much discussion entered into on the use of geotextiles in critical applications in embankment dams. This was of particular interest in this earthquake prone and volcanic region of the world. Competent filters for this type of loading are indeed appreciated, as is the recommendation to augment the internal filter system with the use of a continuous filament, non woven needle punched geotextile acting as an adjunct due to its beneficial tensile characteristics.

Thereafter Kelvin participated as a keynote speaker, addressing the development and use of geosynthetic materials in waste management. The subject area included geotextiles, geomembranes, GCLs, geodrains and their inter-relationships in both base lining and capping applications. Another keynote speaker, Dr Ed Kavizanjian from Huntington Beach, California, augmented this session.

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What’s wrong with this picture? (Answer within the newsletter)
Dr Kavizanjian addressed earthquake loadings on landfills, and waste strength parameters and characteristics. Valuable discussions on various ideas took place during the five seminars that were held in Wellington and Christchurch in NZ and thereafter Townsville, Adelaide and Perth in Australia.

A particularly good relationship has developed between South Africa and the Environmental Protection Agencies of Queensland and South Australia. A particular memory, which will stay, was formed during Kelvin's assistance rendered to the Western Australia Metropolitan Council during a visit to the Redhill hazardous waste site. This is the only hazardous waste site in Western Australia – and the site was surrounded by kangaroos!

Many thanks to Maccaferri NZ and Geofabrics Australasia who sponsored the trip and the geosynthetics interest groups of Australia and NZ for their sharing of ideas and interest.

Best wishes are also extended to the group, which is becoming a formal chapter of the IGS!

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**“The Lord had the wonderful advantage of being able to work alone.”**

--- Kofi Annan, UN Secretary General, answering why he had not implemented organizational reforms after five months when ‘God created the universe in seven days’, 1997

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**“Town Hill” Outside Pietermaritzburg Finally Fixed**

The N3 is a key national route between the port of Durban and Johannesburg. This road continuously carries fully laden trucks at maximum axle loads.

The Flo-drain was found to be an efficient drainage system for this application. Because it is pre-manufactured the contractor found the Flo-drain system quick and easy to install. bidim A4 was used in the conventional subsoil drain sections where space restraints were not an issue.

**Project:** N3: Athlone to Hilton  
**Client:** SANRAL  
**Consultant:** Ingerop Africa, Letsunyane & Ass, Preben Naidoo (joint venture)  
**Contractor:** Basil Read / Milling Techniks Consortium

For more information contact Garth James ktechgmj@kaymac.co.za

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Under these sustained heavy loads the road started to show signs of distress. Major rehabilitation and reconstruction of the climbing lanes was required, and a reinforced concrete pavement was designed. Widening and complete rehabilitation of the balance of the lanes also had to be done.

A retaining wall had to be constructed through a cutting immediately adjacent to the layer works and the drainage had to be effective. A one metre high Flo-drain, wrapped with bidim A4, was selected for this section of the project due to the width restraints. It was not practical to construct a conventional, one metre deep, stone drain due to the limited space between the retaining wall and the road box cut slope. Apart from the restricted excavation area, there was also a concern that a conventional drain placed at this critical point could not be compacted properly and may lead to settlement or sliding of the retaining wall.

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**Answer to the question:** The passenger is not wearing a helmet!  
(Thanks to Brian Harrison for sending the pic!)

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Reactions to criticism may take some time . . .
The 4th International Conference on Filters and Drainage in Geotechnical And Environmental Engineering

Venue: Spier Estate in the winelands near Cape Town. 19-21 October 2004

Geofilters 2004 (the fourth in a quadrennial series) follows Geofilters `92 held in Karlsruhe, Geofilters `96 held in Montreal, and Geofilters 2000, held in Warsaw. It will be held under the auspices of the International Geosynthetics Society and GIGSA, and the Environmental Engineering Division of the South African Institution of Civil Engineering. As a forum for the exchange of filter technology, it is a must for any professional involved in the design of filters in the field of civil engineering.

Objectives Of The Conference

• To establish the state of the art in developments relating to all aspects of filtration and drainage
• To present cases of successful implementation of filtration and drainage systems and discuss criteria of success
• To continue the vigorous debate of the equivalency between natural and synthetic filters
• To bring together practitioners, researchers, manufacturers and all other users of natural and synthetic filters and drainage systems

Conference Topics

- New developments and products
- Case histories: proven performance
- Instances of failure
- Durability and long-term behaviour
- Erosion control
- Laboratory testing

Papers in all areas of filtration and drainage are solicited. These should address the conference theme and one of the conference topics outlined above. Particularly welcome are papers addressing issues of proven performance or indeed proven non-performance.

Abstracts should be submitted in English, and should be double spaced and approximately 500 words in length. Illustrations that aid reviewers in evaluating the relevance of the abstract are welcome.

Conference Deadlines

Submission of abstracts: .............. 15 January 2004
Acceptance of abstracts: ............ 28 February 2004
Full paper: ......................................... 31 May 2004
Notification of acceptance: ............ 30 June 2004

Address For Correspondence

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Email: andyf@civil.wits.ac.za
Conference URL: www.wits.ac.za/geofilters2004

A Few More Upcoming Events

Cracking in Pavements CP 2004 5th RILEM International Conference - Limoges, France. 5-8 May 2004
The last international RILEM Conferences on "Reflective Cracking in Pavements" were held in 1989 and 1993 in Liège (Belgium), in 1996 in Maastricht (The Netherlands) and in 2000 in Ottawa (Canada). The previous four conferences were well attended with true International participation. The Fifth Conference is entitled "Cracking in Pavements" to address all aspects of pavements cracking. Visit the conference web site at: http://www.cp2004.unilim.fr/


A Note From The Editor

Having edited and produced this newsletter since GIGSA’s founding in 1994, it is with some sadness (and not a little relief) that I announce that due to international business commitments I will soon be standing down from the GIGSA Committee and will no longer be editing this newsletter.

My very best wishes to all of our readers. I am sure that the next GIGSA Newsletter editor will do a splendid job of keeping you informed and entertained!

Ave Atque Vale!

Peter Davies
nphuntpld@kaymac.co.za

PS: Hope you like the new GIGSA Logo on the first page. It will shortly be appearing on the new GIGSA web site – watch this space!