EXTERRA

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EXTERRA Around the World • SPECIAL EDITION •

CHINA AND THE WORLD BANK ON EXTERRA

One of the largest termite management projects ever awarded was recently granted to the EXTERRA Termite Interception and Baiting System. The Government of Hunan Province in association with the World Bank, selected EXTERRA to realise environmentally responsible termite protection for the nation's buildings. EXTERRA will install more than 180,000 In-ground Stations and protect more than 900 kilometres of buildings!

China was the first nation to take action under a World Bank project that helps nations investigate and utilise alternatives to termiticides and other pesticides deemed damaging to the environment. The World Bank with the financial support of the Global Environmental Facility (GEF) has been working with the Chinese Government to develop solutions for their serious termite problems, where previously only termiticides which are persistent organic pollutants (chlordane and mirex) were available. China has already banned the use of fipronil for agricultural uses.

Damage by termites involves almost every sector of the Chinese economy; homes, buildings, dykes, forest and orchards. Examples of disasters caused by termites in China include the collapse of the Dongkaomiao dam which washed away villages and fields and claimed the lives of over 180 people; and a cinema in Qu County which collapsed due to termite damage resulting in 2 deaths with another 42 people badly injured.

The current project, *Baiting System for Termite Prevention and Control with Global Environment Facilities Grant,* will help China phase out the annual use of more than 15 tonnes of chlordane and mirex, as well as enabling use of EXTERRA's state-of-the-art termite management systems. This project follows an earlier, highly successful trial program, *Demonstration of Alternatives to Chlordane and Mirex in Termite Control in Hunan, China.*

"Subterranean termites are such a significant problem in China that termite control treatments are required on all new buildings," relates Steve Broadbent, Technical Director for Ensystex. "To provide for more effective and safer termite protection of buildings, the World Bank and the Chinese Authorities began a search in 2003 for environmentally responsible alternatives. In China there are 56 species of termites in 18 genera of 4 families. The major termite pest species causing economic damage to

CHINA AND THE WORLD BANK ON EXTERRA CONTINUED...

Odontotermes spp termite mound

buildings and structures are *Coptotermes communis, C. formosanus, Reticulitermes chinensis, R. flavipes, R. affinis, Odontotermes formosanus, and Macrotermes barneyi.* And of course EXTERRA is effective against all these important species."

The search for alternatives was conducted in accordance with the Stockholm Convention, a global treaty aimed at protecting human health and the environment. One of the goals of the Stockholm Convention is to reduce or eliminate the release of persistent organic pollutants (POPs) such as chlordane. Under the program, Ensystex personnel from the USA and Australia were involved in demonstrating Integrated Pest Management (IPM) techniques with respect to termite management through baiting with the EXTERRA system. In 2007, the State Environmental Protection Administration of China and the World Bank started the demonstration project.

In the same year, the State Environmental Protection Administration of China and three different provinces, Jiangsu, Hunan and Anhui, initiated pilot termite baiting trials using the EXTERRA system and a competitive product. In these pilot trials, 10,000 EXTERRA In-ground Stations were installed.

Following the success of these trials, ENSYSTEX was invited to bid for the current project, and was informed in July 2009 that the EXTERRA system had been selected. Reasons included the efficacy of the EXTERRA system, with its simple installation and maintenance, as well as the training provided by Ensystex. Ensystex has been conducting extensive technical and classroom training to ensure the highest standards of implementation for this project.

"We often heard from those testing the different baiting systems that the EXTERRA system intercepted the termites faster and gained control of the colonies much quicker due to EXTERRA's more palatable Requiem Termite Bait," says Dr Jiasi Wang, Asia Pacific Region Technical Representative for Ensystex. "The Requiem Termite Bait in the EXTERRA system also meets the environmental requirements of this World Bank supported project since it is of very low toxicity to mammals, birds, fish, reptiles and plants; as well as the added benefit of it being locked away in the EXTERRA Stations so it does not get into the environment or waterways."

"Ensystex is honoured and privileged to be a partner in this historical operation," says David Nimocks, Chairman and founder of Ensystex, "China is showing a real concern for their environment and we are seeing many wonderful initiatives progress. The environmental safety and effectiveness of the EXTERRA system are perfectly suited for fostering a more responsible approach and ensuring the safety of China's infrastructure projects. EXTERRA uses just a teaspoon of our termite bait, less toxic to people than table salt, compared to the thousands of litres of toxic liquid soil poisons that are traditionally used."

Odontermes spp Queen termite

IT'S OUR HERITAGE TO PROTECT

THE TEMPLES OF ANGKOR WAT, CAMBODIA

The World Heritage List is a program developed by the United Nations Education, Scientific and Cultural Organisation (UNESCO) to protect sites of outstanding universal value which meet the UNESCO selection criteria.

Angkor in Cambodia is one of the most important archaeological sites in south-east Asia. Stretching over some 400 square kilometres, including forested areas, Angkor Archaeological Park contains the magnificent remains of the different capitals of the Khmer Empire, from the 9th to the 15th century. It includes the world renowned Temple of Angkor Wat and, at Angkor Thom, the Bayon Temple with its countless sculptural decorations.

UNESCO has set up a wide-ranging program to safeguard this symbolic site and its surroundings. It was therefore understandable that great concern was expressed when it was realised that termites were not only destroying the supporting timbers that were holding up aspects of these great monuments; they were also destroying the intricate carvings and engravings on the sandstone walls of the temples themselves. Termite mounds have also blocked access to the Temples in areas, whilst termite tunnelling activities have caused the Temples to sink, and for some structures to crack and collapse.

To the nation of Cambodia, the Angkorian heritage offers incomparable potential for economic prosperity through tourism, which can in turn provide a favourable climate and the means necessary for true protection of the Khmer heritage for the generations to come. The Internationally funded, the Authority for the Protection and Management of Angkor (APSARA), selected a consultative committee of termite experts from south-east Asia and Australia to advise on the best ways to protect the precious monuments from the ravages of termites, whilst minimising any disturbance to the fragile tropical environment.

Naturally the EXTERRA Termite Interception and Baiting System was proven to meet all the project requirements. Ensystex Technical Director, Steve Broadbent advised, "The main termite species attacking the temples throughout the Angkor region are *Macrotermes gilvus* and *M carbonarius*. They belong to the higher termite sub-family, Termitinae. This is important, since these termites live in very large colonies and are unique in that they are fungus-growing species. Fungus-growing termites cultivate fungi of the genus *Termitomyces* in gardens inside their nests.

The fungus digests the wood to a stage where it can be utilised by the termites. This has traditionally created problems with termite baiting techniques due to the difficulties of feeding sufficient toxicant through the fungal garden to the termites. Indeed other baiting systems have failed to control termites of this genera. A series of trials and scientific papers[i] have shown that the Requiem Termite Bait used in the EXTERRA system is unique in controlling these species; which meant that only EXTERRA could meet all the criteria for success in this important project."

Mohamad Saman, Business Development Manager – SE Asia for Ensystex confirms, "This has been a lengthy and detailed selection process, given the importance of the Angkor region to both the history of the Khmer people and for the future of Cambodia. It is pleasing to see EXTERRA recognised as the most effective and environmentally responsible choice for this vital project. The first Stations under this contract will be installed during November 2009, and will be used to protect more than 4 kilometres of temple walls. Further projects will follow as funds become available until all the temples in the region are safe."

A DAM GOOD THING

The EXTERRA Termite Interception and Baiting System was recently installed as part of one of the largest and most complex termite management programs ever undertaken in southern Africa. The project was managed by Ensystex's International Technical Director, Steve Broadbent, together with a local team of termite professionals and the Botswana government. The project involved the protection of more than 25 kilometres of dam walls at five major sites.

Termites have been implicated in a number of dam wall collapses in China. It was with these statistics in mind that the authorities in Botswana were determined to ensure the safety of the country's major dams. Southern Africa has one of the most diverse and heavy termite populations of any region. The dominant termite species in southern Africa belong to the genera *Odontotermes*, and these have been associated with the damage to dam walls in China.

Management of termites around dam walls is seen as a difficult issue since it is essential that the purity of the water for human consumption is maintained. This means that toxic soil termiticides cannot be used. Even the use of herbicides is prohibited, which in turn leads to vegetation growth that can only be dealt with manually. It was notable that the termite fauna was greatest on dam walls where the presence of vegetation was greatest.

The EXTERRA termite management program in Botswana commenced in January 2009 with a detailed mapping and transect survey of the five dams. During this program several hundred mounds, mostly of *Odontotermes* spp, were mapped within 100m of the dam walls. Whilst many of these mounds stand up to 3m high and are easy to locate, the majority are significantly smaller, and often there is no above ground chimney. When this is coupled with the dense

FOR SOUTHERN AFRICA

jungle scrub that usually commences about 50m from the dam wall, it makes inspection and mapping a real challenge. All colony locations were mapped using GPRS technology, and recorded in a computer-based data program designed especially for the project. Once located, the colonies were safely eliminated. With the GPRS locations recorded, Ensystex could continue to monitor these colonies and determine where new colonies appear.

A precise sampling technology was used to place the EXTERRA In-ground Stations with Focus Termite Attractant strategically within 10 – 15m of the dam walls. These Stations were routinely monitored for termite activity. The position of all EXTERRA Stations was also recorded using the GPRS technology.

The initial mapping of termite colonies involved walking the length of each dam along two metre transects. All colonies identified were then eliminated, and elimination was confirmed by destructive sampling. So it was quite interesting to see how many colonies were located within just four weeks of the placement of the EXTERRA In-ground Stations. For example, 468 out of 1,489 In-ground Stations placed at Shashe Dam required rebaiting with Requiem within three months of placement.

After six months all five dams have been declared free of termites and the management at the Botswana Water Utilities Commission are pleased with the progress of the project. Typical indications of colony elimination were reported at all sites including initial feeding at Stations, reduced consumption/ numbers of termites over time, caste ratio changes and physiological and behavioural changes to the termites.

PROTECTING THE FUTURE WORLDWIDE

ECO-RESORTS AROUND THE WORLD

The Kudat Riviera - Malaysia

When it comes to the world's finest resorts, where luxury and ecological sustainability blend together to protect the future, EXTERRA is the natural choice for protecting against termites. And the World's leading resort managers have employed EXTERRA in some of the most stunning locations on earth.

The Kudat Riviera – Malaysia features luxury villa estates with each villa occupying its own private grounds of up to 8 acres. Situated on over 70 acres of stunning coastline in the north of Borneo, each villa is constructed of natural materials throughout, including forest managed timbers, rich coconut tree columns, alang-alang grass thatch roofing, luxurious water hyacinth river-grass woven and timber furniture and natural stone walls and water features. It was only natural that EXTERRA be chosen to complement this prestigious setting.

Kamalaya Resort - Koh Samui is Thailand's award-winning Wellness Sanctuary and Holistic Spa resort, offering a holistic health retreat experience in a sublimely beautiful natural environment. Offering inspired healthy cuisine, holistic fitness practices, group retreats and individual wellness programs, it was essential that the termite management program blended in naturally with their ideals. This made EXTERRA the only choice.

Le Méridien Khao Lak Beach & Spa Resort as one of Thailand's premier resorts, Le Méridien is a hidden paradise set at the edge of a far blue sea and close to untouched forests, fringed by seven miles of pristine beach and adorned with exotic fragrant foliages. Offering guests an indulgent experience, it is also in one of the highest pressure regions for termite activity. Freshly restored after the tsunami, EXTERRA was the innate solution to discretely protect this resort environment.

The above are just a small sample of the world's greatest resorts that are protected by EXTERRA.

POLITICAL PROTECTION

Seri Teratai was built in the early 1900 by the British.

Formerly it was known as "RUMAH TETAMU" or "GUEST HOUSE". It was used as a Guest House for visiting British dignitaries whenever they visited Penang.

It is now the official Residence of the Chief Minister of Penang. EXTERRA currently protects the site, now and in the future.

OUR SITES ARE SET ON SECURING THEIR HERITAGE

Station Pier – Australia is Victoria's premier sea passenger terminal, accommodating visiting cruise ships, navy ships and tall ships. The pier is also the mainland terminal for the Spirit of Tasmania, which provides a daily passenger, vehicle and freight service to and from Devonport, Tasmania.

Infested with termites for many years it raised concerns for both safety and the protection of its heritage value. So when you know it absolutely must be secured safe from termites, without risk to the marine environment, EXTERRA was the only solution.

Each cruise ship that visits via Station Pier brings, on average, one million dollars to Victoria's economy. So this was both a vital economic project, as well as a complex termite management issue requiring the skills of the best termite managers in the country.

Built in 1854, Station Pier has a long and proud history. In August 1899, the first contingent of Australian troops headed for the Boer War in South Africa from Station Pier. In October 1914, 16 ships left from the Pier carrying troops, horses and supplies as part of Australia's contingent for the Great War (World War I). Station Pier was also the place of return for the military hospital ships. The 1940s saw many troops embark for the Middle East, Britain and Singapore for World War II service.

Station Pier - Australia

The Pier has been infested with termites for at least 50 years and previous treatments mainly consisted of dusting, foaming and the removal of infested timbers. With a length of about one kilometre this was a major project that required the services of a support boat to install Above-ground EXTERRA Stations on the supporting timber piers. More than 140 Above-ground EXTERRA Stations were placed with feeding achieved at more than 100 of the Above-ground Stations within 3 months.

Station Pier has been Termite free for nearly 2 years now thanks to EXTERRA, and significant savings have been realised with no further requirement for termite damage repairs, nor the re-scheduling of shipping.

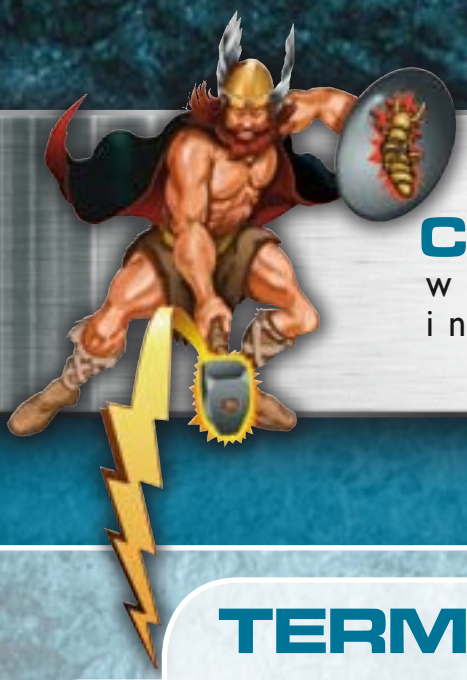
One of the most important heritage homes in Malaysian Borneo is **Newlands, the home of Agnes Keith**. Her first book, later made into a film, Land Below the Wind, has become the unofficial motto of Sabah. After nearly fifty years of gradual deterioration the house was restored by the Sabah Museum with the Federal Department of Museums and Antiquities. The house is a rare survival of post-war colonial wooden architecture, kept safe from the ravages of termites by EXTERRA.

Newlands, the home of Agnes Keith

The Heritage listed **Port Adelaide Wool Stores in Australia** were built in 1880 and are sited over a water table that lies just below the ground floor. With four different construction types incorporated in the ground floor alone, a history of more than 40 years of termite problems and numerous attempts to control the problems, this was not only an immense challenge to protect the heritage features of the building; it was also arguably one of the most complex termite management projects ever undertaken.

With a motto of "No job is too tough for EXTERRA" and EXTERRA's proven track record of success after success in solving the most tenacious termite infestations, EXTERRA was the first choice once more for protecting Australia's heritage.

A more complete listing of EXTERRA's astounding record of termite successes at some of the world's most prestigious sites can be found at www.EXTERRA.com.au.



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TERMITES ARE HISTORY IN FRANCE

EUROPE'S LARGEST TERMITE MANAGEMENT PROJECT

EXTERRA was recently called on to protect 100,000 square meters of land and military barracks near the town of Rivesaltes (close to the Spanish border on the Mediterranean side of France). More than 1,000 EXTERRA In-ground Stations have been installed to protect this heritage Memorial for the Spanish Civil War.

The buildings were previously used for housing the Spanish peoples during their ordeal. It was later 'used' by Nazi Germany during World War II for housing European Jews before their deportation to Germany, and later for accommodating Gypsies during those times of persecution.

This site now forms the major part of a heritage, open-air Museum project. Significant investment in this historical site was at risk due to the actions of subterranean termites. When history is at stake you have to be sure, and only EXTERRA provides guaranteed termite protection.

EXTERRA™

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