

The SYDNEY

OLYMPICS

New facilities have been built for the first Olympiad of the new millennium, using environmentally-friendly materials. And Mapei products.

by Les Taylor*



It's a little bent and angular, but the Olympic torch (inset above) represents the spirit of ancient Greece; the flickering glow of a story that began 2,700 years ago with the lighting of a sacred flame on the altar of Zeus. For the ancient Greeks that flame stood for fair, honest competition, or the gods would send down blazing thunderbolts and great confusion. The festivals held at Olympia came to an end in 394 A.D. when the gods were distracted and the games were rigged and the spirit of fair play was corrupted. The games were revived by De Coubertin, founder of the modern Games ("It's not the winning that's

important..."), and now all that the Games have to symbolise is represented by the flame of that torch, carried by hand by a human runner. For 2000 the Olympics have been reinterpreted and expressed in a particularly Australian way, and the Olympic torch has an 'L' shape that recalls a boomerang. But it's the spirit that counts, the fact that, on the 15th of September, the Sydney Olympics began.

(Excerpt from I Viaggi di Repubblica – 20th July 2000)



Sydney, Australia: the first Olympics of the new Millennium, the 27th modern Olympiad. And Sydney did full justice to it, adding a solid complex of new structures to a now well-established urban development project. All was done with an emphasis on ecology and alternative sources of energy, using natural light and ventilation, and extremely small amounts of chlorine in the pools – as an alternative, special filters were installed to purify the water. As a finishing touch, no less than 200,000 trees were planted. Such an attitude is typical of Australia, where the environment is thought of as the people's common heritage, and so deserving of protection. The Olympics were held between 15th September and 29th October, (followed by the Paralympics from 15th to 29th October, with 4,000

disabled athletes taking part). They were concentrated around Homebush Bay, an area situated about 15 km from the centre, well placed for trains, roads and a water transport system. The area used covers 660 hectares on the seashore, at one time the most heavily polluted area in the locality, hosting as it did waste dumps, factories and a slaughterhouse - and for this reason it was a desolate, abandoned brownfield site. Now two architectural jewels rise into the skyline. They have already been in use for several years – Stadium Australia, venue for major athletic events, and the Olympic Aquatic Centre for Olympic water sports. And Mapei played a role in all this, a role we will examine in more detail in the following pages.

THE MEETING PLACES, BUILDINGS AND FACILITIES OF HOMEBUSH BAY

① Sydney SuperDome

- Australia's biggest indoor space for sport and entertainment, with a maximum capacity of 20,000 and adjacent parking for 3,500 vehicles.

② Stadium Australia

- seating capacity for the Games - 110,000.
- venue for field athletics, marathons, football and the opening and closing ceremonies of the Paralympics
- after the games, it will hold 80,000 spectators for sports and cultural activities

③ Sydney International Athletic Centre

- Stadium for training during the Games

④ Sydney International Aquatic Centre

- opened October 1994
- more than 5 million visitors since opening
- pools for Olympic competitions, training and leisure in a temperature-controlled building
- green area, nursery/children's play area, gym, restaurant and shops
- number of spectators currently 4,400,

rising to 15,000 during Games

⑤ State Hockey Centre

- opened August 1998
- new surfaces on the two hockey pitches
- capacity during Games - 15,000

⑥ Athletes' Village

- accommodation for 15,300 athletes and other team members
- new solar-energy powered residential area for 6,000 people after the Games





Stadium Australia

The stadium covers an area of around

16 hectares and was designed by Hok+Lob Architects, the world's greatest experts in sports installations, in association with the Australian studio Bligh Voller Nield. This structure follows in the tradition of Sydney's two trademark architectural symbols – the Harbour Bridge and the Opera House – and is an example of what those in the sector define as fourth generation, in that it unites flexibility, functionality, accessibility and digital management of services. Thanks to the adoption of a system of special mobile stands on rails that allow the Stadium to be transformed rapidly according to the kind of sports event to be held there, from athletics to rugby or football. The capacity for the Olympiad is 110,000 seats, but later the athletics track will be removed, and the stadium will host only rugby and hockey matches or other events such as concerts – at this point its capacity will be reduced to 80,000, with the removal of the upper sections of the side stands.

The structure of the Stadium was conceived as a series of separate levels. The hyperbolic parabola of the roof, supported at the rear by the stand and at

the front by an arched steel truss network, emphasises this greatly. It also allows the roof to cover twice the depth a more conventional cantilever structure could, and serves as a wide basin to collect rainwater, which is then used for the toilets. Much use has been made of steel and reinforced concrete in its construction. The roof is covered with transparent polycarbonate panels that encourage the growth of the grass on the playing surface and control excessive contrasts in levels of light. Particular attention has been paid to bioclimatic aspects, ensuring minimal adverse environmental impact. A recycling plant uses rainwater to irrigate the playing surface, while glass sunscreens cut down overheating and reduce the amount of electricity used. Television installations provide the highest quality reception, as the stadium functions like a huge digital T.V. studio. The lighting is powered mainly by solar energy installations.

The Olympic tracks

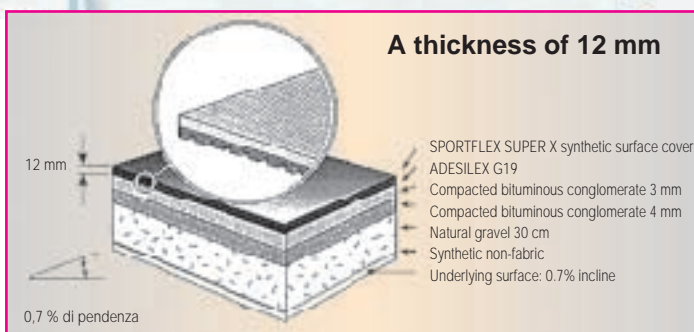
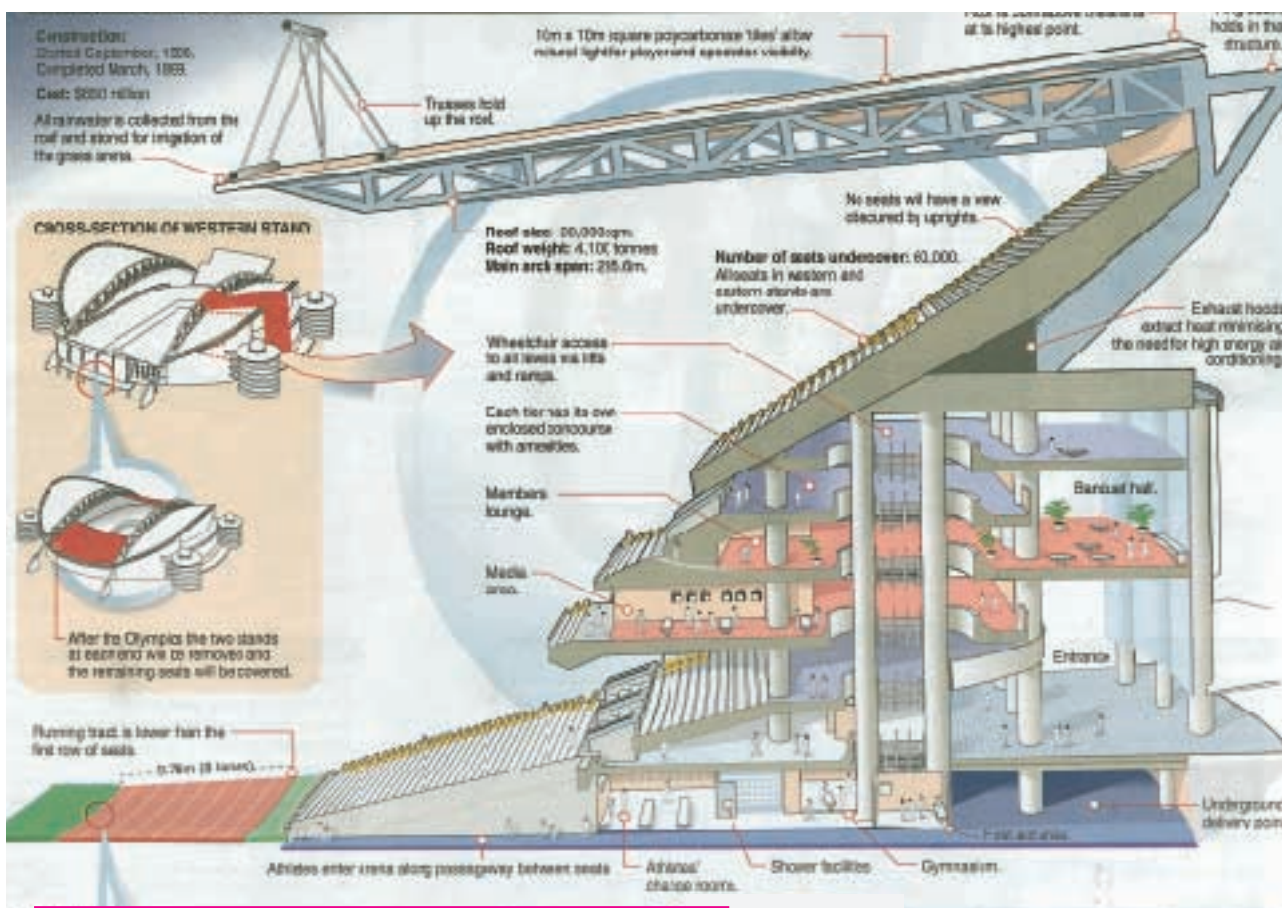
Mapei products have also been used inside the competition stadium, on the track surfaces – the athletics track, the high-jump apron and the warm-up track. The material is Mondo Sportflex Super X rubber, comprising 80% synthetic and 20% natural rubbers in two 6mm layers. The harder surface layer enhances the athletes' performance, giving a greater return of energy. The under-layer is less dense and slightly softer, so as to lessen muscle fatigue, absorbing shock at the moment of impact. Although only a few millimetres thick, this lends solidity to the track. It is no longer poured, but rather glued directly to the soil surface with Mapei's ADESILEX G19, the two-component polyurethane adhesive characterised by its elasticity and resistance to humidity, heat and atmospheric aggression. Recent studies have shown that the adhesive plays a vital role in the performance of sports surfacing systems.



The Structure of the Stadium

As well as playing a role in surfacing the Olympic tracks, Mapei was also involved in the stadium structures. Here, products developed specifically for smoothing reinforced concrete were used over an area of 3,300 m². These products were PLANO 3, the self-levelling and rapid-hardening smoothing compound, NIVORAPID, the ultra-rapid drying

thixotropic levelling cement screed also used for vertical applications, PIANODUR R, an ultra-rapid setting, self-levelling compound for substrates, ULTRAPLAN, the self-levelling ultra-rapid setting compound for thicknesses of 1 to 10 mm per coat, and PRIMER G, the synthetic resin-based primer in water dispersion.



Sidney International Center

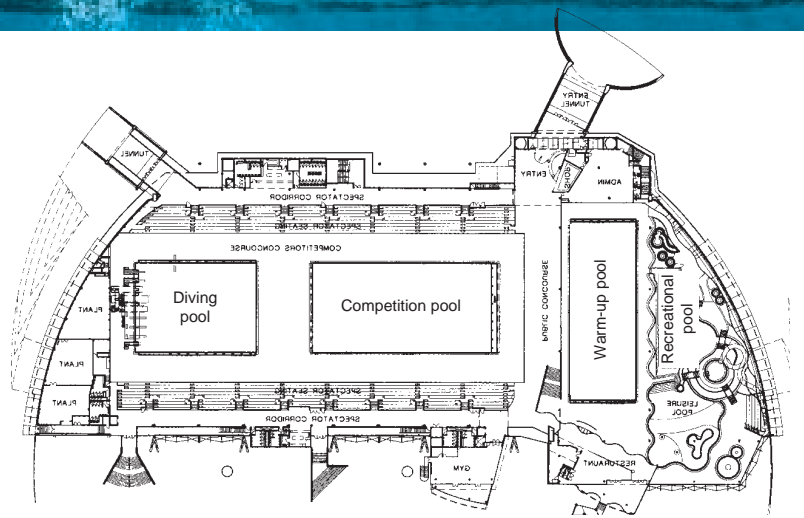
The same track-surfacing system was used in the Sydney International Centre, the training stadium. Here, too, the surface was installed using ADESILEX G19.



The Olympic Aquatic Centre

The construction of the gleaming white Olympic Aquatic

Centre was begun after an invitation to tender in 1991. This was won by a consortium made up of the Civil&Civic company, Cox Architects, Peddle Thorp Architects and the engineers of Ove Arup. This facility is situated in the centre of the Olympic area, and was designed with the main aim of having a minimum environmental impact. Its shape, with the steel arch of the main structure partially underground, allows the building to blend in with the surrounding countryside. The south east side was completely covered with ballast, so as to reduce its visual impact. This will also reduce wind load on the main structure, which forms the base for the temporary stands. During the Games these stands will take the number of spectators from

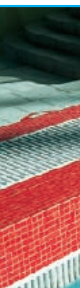


the current level of 4,400 to just under 18,000.

The Olympic Aquatic Centre has already been in full operation for several years – in fact, so far it has already allowed 7 million people to practice their sport. It comprises four separate pools under one roof. These are:

Competition pool – occupying a central position, with an area of 2,500 m², ten lanes and a depth varying between 2 and 3 metres. The pool edge has been designed to regulate the water level, reducing wave effects and making the pool “fast” in competitions.

Diving pool – next to the competition pool. Fully equipped with springboards and platforms, and with a surface area of 33x25





m, this pool is suitable for international diving events. It can also be divided into ten lanes of 25 metres for use as a training pool.

Warm-up pool – a 50 m pool for warming up and training. It has an unusual feature – two thirds of the pool's floor is moveable, so the depth of the water can be varied between 2.5 metres and zero. As a result the pool can be adapted to a variety of activities, from children's swimming to use by disabled people.

Recreational pool – this 1,500 m² irregularly-shaped pool is part of the recreational zone, with a restaurant, bar, gym and an area reserved exclusively for children. There are also several other attractions, from a slide to hydromassage. Very little chlorine is added to the water, which is cleaned using special filters.

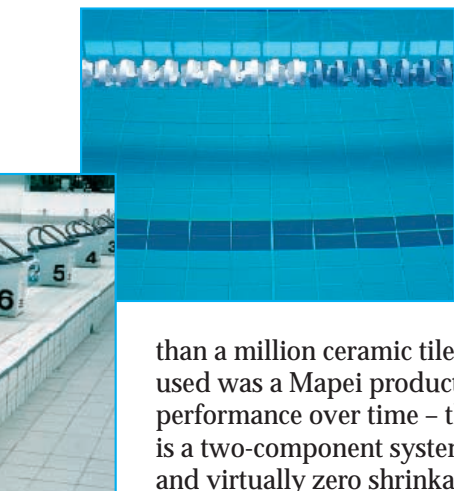
The pool was surfaced with more than a million ceramic tiles – 1,060,000, to be exact! The adhesive used was a Mapei product that guarantees a high, stable performance over time – the name GRANIRAPID says it all. This is a two-component system with rapid adhesion and hydration, and virtually zero shrinkage. It has high levels of adhesion qualities on all types of support (including those classified as difficult), and high resistance to knocks, vibration, temperature swings and chemical agents.

KERACOLOR, with the addition of FUGOLASTIC, was used for the tile grouting. KERACOLOR is a prepackaged cement mortar,

available in fine and coarse versions according to the dimensions of the grouting, developed for use in external environments with all types of tile, either ceramic or natural stone.

Resistance, compactness and adherence properties were enhanced by the addition of FUGOLASTIC – that is, a latex consisting of synthetic polymers in an water dispersion. Mapei products have also been used elsewhere for the interior surfaces of the Olympic Aquatic Centre – KERABOND, a powdered, cement base adhesive for ceramic tiles for thickness of up to 5 mm, mixed with the elasticised latex ISOLASTIC, to enhance performance. The floors of the changing rooms and commercial and restaurant areas were fixed using KERAFLEX, the powder, elastic medium strength adhesive, and grouted with KERACOLOR + FUGOLASTIC. MAPESIL AC was also used. This is an acetic single-component silicon sealant, particularly suitable for joints subject to a service stretching of no more than 20%.

The quality and resistance of the coverings after several years of use and the constant maintenance of the pools confirms the excellence of the system used in their application.





The Sydney SuperDome

The Sydney SuperDome in the Olympic park, covering an area of 3,600 m², is a multifunctional structure with 21,000 ergonomic seats. It is intended mainly for basketball and volleyball matches, but can also be used for meetings, conferences and conventions. Opened in 1999 with a concert by Luciano Pavarotti, the SuperDome was also used for a banquet in honour of Queen Elizabeth. Mapei products were used in this magnificent structure – NIVORAPID, PLANO 3 and PRIMER G.



The Olympic Village

A new residential quarter has sprung up next to the sports

facilities, comprising elegant condos – which have already been sold – and small villas that were used by athletes during the games but are now on the market as homes. And here, too, Mapei has made its presence felt, with the products used for installing the ceramic or wood flooring. In the first case, KERAFLEX adhesive and ULTRACOLOR, the rapid setting and drying cement grout for 2 to 20 mm joints, were used. The wood floors were installed using the adhesive LIGNOBOND, a two-component polyurethane product specifically designed for parquet after smoothing and sealing the base with ULTRAPLAN, BIBLOCK, a two-component epoxy primer in water emulsion, and PRIMER G.

800 apartments were also built away from the Olympic village. Mapei products also played a part in these, with 25,000 m² of ceramic wall covering and 15,000 m² of bathroom and balcony flooring, using KERAFLEX, KERAFLOOR, ULTRAPLAN and ULTRACOLOR. However, for the kitchen areas (around 1,500 m²), the MAPEFONIC SYSTEM was used, a rapid, low thickness soundproofing system to eliminate the sound of footsteps.





during the Olympiad is the **Sydney International Airport**, (pictured below). Several Mapei products have been used here over a total area of 4,000 m²: they are PLANICRETE, a synthetic rubber latex for cementitious mortars, to enhance their adhesion and mechanical strength, MAPEGUM WP, a liquid elastic membrane to proof the interior, and KERABOND+ISOLASTIC and



State Hockey Centre

Hockey is a very popular sport in Australia, and the striking new State Hockey Centre, built in just over a year from March 1997 to August 1998 at a total cost of 15.5 million dollars, is a cutting-edge example of structures designed for this kind of activity. The roof, 25 metres above the track, resembles a glider hanging in mid-air. The complex was designed by the architects Ancher Mortlock Woolley, and can seat 1,575 people on two levels. The athletes' changing rooms, physiotherapy and first aid rooms are situated on the first floor, toilets, offices and a VIP lounge on the second. And Mapei's ADESILEX G19 was used in the changing rooms, to glue the resilient flooring.

Other Buildings in Sydney

Sydney has changed a great deal over the last few years. The prestigious American magazine, National Geographic, wrote that "the frenzy of construction and refurbishment has affected every square centimetre of the city." There's, rebuilding, renovation and cleaning work everywhere you look. The cost of accommodating the Games has exceeded 4,000 billion Italian lire, while the sums invested in new buildings, including around twenty hotels, office and apartment blocks, have exceeded 7,200 billion lire. In fact, Sydney is now outstripping Melbourne, and its stock exchange is second only in importance in the Asian region to those of Tokyo and Hong Kong. Let's take a look at some of the new construction work.

Among the infrastructural facilities that have been enlarged and improved in order to handle the enormous influx of visitors



ULTRACOLOR, to glue and grout the flooring.

The **Lidcombe Railway Station** has also been enlarged, with the "Olympics" exit (pictured bottom left). The **New Southern Railway** has been built to be resistant, aesthetically pleasing and practical, according to the principles that underpin all the new construction work. They were designed by the Caldis Cook Group,

architects specialising in transport. Five new lifts surfaced with tiles have been built in the Lidcombe Station, each one capable of carrying forty passengers, together with new pedestrian walkways and platforms able to handle the immense flows of tourists and the consequent heavy





TECHNICAL DATA

SYDNEY OLYMPIC PARK - Sydney, New South Wales, Australia

• Stadium Australia

Designers: Hok+Lobb Sports Architects, in association with Bligh Voller Nield
Work completed: 1999

- Athletics track: Mondo Sportflex Super X rubber, using ADESILEX G19 adhesive, 5,500 m²
- High-jump apron and lateral paths: Mondo rubber bond with ADESILEX G19, 2,500 m²
- Area within track: Mondo rubber bond with ADESILEX G19, 4,000 m²
- Warm-up track: Mondo rubber bond with ADESILEX G19, 9,000 m²
- Reinforced concrete finishing: PLANO 3, NIVORAPID, PIANODUR R, ULTRAPLAN and PRIMER G, 3,300 m²

• Olympic Aquatic Centre

Designers: Cox Richardson Taylor, Peddle Thorp Joint Venture

Consultants: Ove Arup & Partners

Period of construction: 1991-1994

- Competition pool: clinker tiles bond with GRANIRAPID, 2,500 m²
- Training pool: clinker tiles bond with GRANIRAPID, 1,300 m²
- Diving pool: clinker tiles bond with GRANIRAPID, 1,800 m²
- Recreation pool: Bisazza glass mosaic bond with GRANIRAPID, 1,500 m²
- Interior surfaces: Cercom ceramic tiles bond with KERABOND+ISOLASTIC
- Recreation areas and changing rooms: Cercom (walls) and Cesi (floors) tiles bond with KERAFLEX

For all these areas:

- KERACOLOR+FUGOLASTIC grouting
- MAPESIL AC joints

• Olympic Village

Designers: Ancher Nortlock Woolley Architects

Period of construction: 1997-1998

- Products used: KERAFLEX, ULTRACOLOR, LIGNOBOND, ULTRAPLAN, BIBLOCK, PRIMER G

• Olympic Apartments

Designers: HpA Architects

Completion: 2000

- For bathrooms and balconies: ceramics bond with KERAFLEX, KERAFLOOR, smoothing with ULTRAPLAN and grouting with ULTRACOLOR
- Kitchen area: ceramic floor soundproofed with MAPEFONIC SYSTEM

• State Hockey Centre

Designers: Ancher Nortlock Woolley Architects

Completed: 1998

- Changing rooms: ADESILEX G19

• Sydney SuperDome

Designers: Cox Richardson Architects – Devine De Flon Yaeger

Completed: 1999

Products used: NIVORAPID, PLANO 3, PRIMER G

Sydney International Airport

Designers: Woodhead International

Completed: 2000

Products for installing ceramics: PLANICRETE, MAPEGUM WP, KERABOND+ISOLASTIC, ULTRACOLOR for 4,000 m²

Lidcombe Railway Station

Designers: Caldis Cook Group Architects

Completed: 2000

Products for installing ceramics: PLANICRETE, KERABOND+ISOLASTIC, KERAFLEX and ULTRACOLOR for 12,000 m²

MacQuarie Apartments

Designers: Gazzard Sheldon Architects

External façade design: Renzo Piano

Completed: 2000-11-22 MAPEFONIC SYSTEM for over 2,500 m², and products for fixing Carrara marble for over 6,000 m²: MAPELASTIC, PLANICRETE, MAPEGUM WP, KERABOND+ISOLASTIC

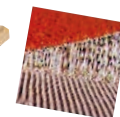
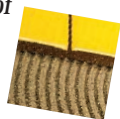
rail traffic. The station's façade is finished with bright red and black vitrified tiles highly resistant to bad weather and graffiti. In this case, too, Mapei products were used, namely PLANICRETE, KERABOND+ISOLASTIC, KERAFLEX and ULTRACOLOR over a total area of around 12,000 m².

The **MacQuarie Apartments** (photo at top of page) is one of the most important examples of modernisation and change in Sydney. It is a luxurious 16-storey complex, covered in glass and terracotta tiles designed by Renzo Piano. The building enjoys some of the best panoramas Sydney has to offer, including views of the Opera House. The MAPEFONIC SYSTEM was used over an area of more than 2,500 m² in Piano's building. This sound reduction system, developed by Mapei, is meeting with great success in Australia. 6,000 m² were also covered with Carrara marble, using Mapei products – MAPELASTIC, PLANICRETE, MAPEGUM WP and KERABOND+ISOLASTIC.



**Les Taylor is Managing Director of Mapei Australia*

Technical Data Sheets for the products mentioned can be found in the following Mapei binders: no.1 Ceramics Line, no.2 Resilients Line and no.3 Building Line





Some of the most prestigious buildings in Australia where Mapei products have been used.

PORTFOLIO



▲ Palazzo Versace Hotel, Gold Coast, Queensland.

Here under construction, set to open on 7th December 2000. LIGNOBOND adhesive has been used for the wood floors.



▲ Aquatic Centre, Melbourne, Victoria.

Covering for 1,100 m² with clinker and vitreous mosaic, fixed with GRANIRAPID and grouted with KERACOLOR and ULTRACOLOR. Jointed with MAPESIL AC. Water proofing of reinforced cement was carried out using PLANICRETE SP with IDROSOLEX PRONTO



◀ Brisbane Airport, Queensland.

Porcelain tiles fixed with KERABOND+ISOLASTIC, grouted with KERACOLOR

