

Sika at Work



Brisbane Airport Link – Waterproofing with Sikaplan®

Waterproofing: **Sikaplan®**, **Sika® Waterbar**,
SikaFuko®, **Sikadur®**





Project Description

The Thiess John Holland Joint Venture has been appointed as the principal contractor to deliver the \$4.8 billion Airport Link, Northern Busway (Windsor to Kedron) and Airport Roundabout Upgrade – Australia's largest road infrastructure project, which is scheduled for completion in 2012. The project is contracted as a PPP project (Private Public Partnership) including design, built, operation and maintenance service, under a fixed-price contract for an initial five-year period following the tunnel opening.

The Airport Link and busway project involves total 15 km of tunnelling including the toll road (5.7 km of twin tunnels), busway tunnels and connecting ramps, as well as 25 bridges and result in over 7 km of new road. The Airport Link is a mined motorway grade road which is under construction in the northern suburbs of Brisbane, Queensland, Australia. It will connect the Brisbane central business district (Inner City Bypass) and the Clem Jones Tunnel to the East-West Arterial Road leading to the Brisbane Airport. It is being built in conjunction with the Windsor to Kedron section of the Northern Busway in approximately the same corridor.

Project Requirements

The technical specifications set out the requirements for waterproofing and drainage measures to be installed for drained and undrained tunnels. The lining in the undrained part is designed to withstand the expected hydrostatic pressure and ensure that any watertable drawdown and subsequent effects on the groundwater regime has no impact on property, adjacent infrastructure, the Project Works and the Environment. This also includes effects such as settlements, contamination migration and impacts on available water for ground water dependent ecosystems and existing groundwater users.



The key characteristics of the waterproofing membrane are:

- Homogenous, unreinforced sheet waterproofing membrane, based on plasticized polyvinylchloride (PVC-P) without DEHP (DOP), with a signal layer ≤ 0.2 mm
- Total thickness of 2 mm and 3 mm including signal layer
- Module of elasticity (flexibility/ workability): lower than 20 N/mm^2 acc. EN ISO 527
- Impact resistance (500 g) / Dynamic perforation test: no leak at 900 mm (for 2 mm) acc. EN 12691 and no leak at 1250 mm (for 3 mm).
- Burst strength (bi-axial behaviour) acc. EN 14151 ($\varnothing 1.0$ m): $\geq 50\%$
- Long term compression strength acc. SIA V 280-14: $\geq 7 \text{ N/mm}^2$ (48 h)
- Reaction to fire acc. to EN 13501-1, class E.





Sika Solutions

Sika products in summary:

Sikaplan® WP 1100-20 HL2

Sikaplan® WP 1100-30 HL2

Sikaplan® WP Protection Sheet 20 HE

Sika® Waterbar AR 25

Sika® Waterbar AR-40/6 PVC Inject

Sika® Anchor 300 and

Sika® Anchor 500

Sikaplan® WP Disc

SikaSwell®

SikaFuko®

Sika® Viscocrete® PC HRF 2

SikaGrout®-212 HP

Sika® Rugasol®

Sikaflex® PRO

Sikaflex®-11 FC

Sikafast®-5221

Sikafast®-252

Project Participants

Client: Queensland Government, BrisConnections

Project Engineering: Thiess John Holland, Bluey Technologies (waterproofing technology and project management service provider)

Design: Parsons Brinckerhoff Arup Joint Venture on behalf of Thiess John Holland

Construction Company: Thiess John Holland

Membrane Applicator: Thiess John Holland under the management of Bluey Technologies

Construction period waterproofing: 2007 – 2011

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