

# The Code of Practice for Risk Management of Tunnel Works

## Future Tunnelling Insurance from the Insurers' Point of View

ITA Conference Seoul, April 25, 2006



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*“No construction project is risk free.*

*Risk can be managed, minimised,  
shared, transferred or accepted.*

*It cannot be ignored.”*

**Sir Michael Latham, 1994**



# Agenda

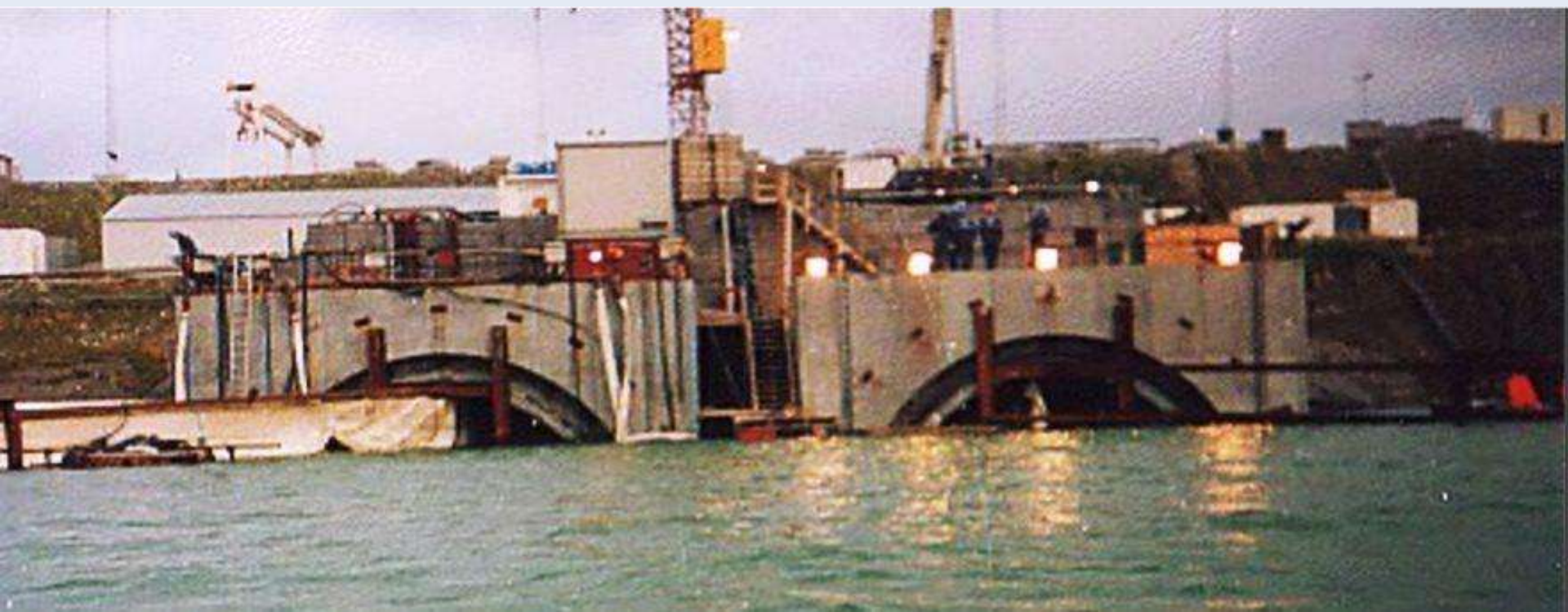
- Experience with Tunnelling Insurance in the last Decade
- Insurers' Perception of the Tunnel Construction Industry
- The Tunnel Code of Practice – Content and Objectives
- Practical Implementation and current Reference Projects





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# Experience with Tunnelling Insurance in the Last Decade



# General Trends in the Tunnelling Industry

- High risk type construction methods
- Trend towards design + build contracts
- One-sided contract conditions
- Tight construction schedules
- Low financial budgets
- Fierce competition in construction industries

## Loss Examples: Munich Metro (Germany) - 1994



## Loss Examples: Heathrow Express Link (UK) - 1994





## Loss Examples: Taegu Metro (South Korea) - 2000





## Loss Examples: SOCATOP Tunnel A86 (France) - 2002



## Loss Examples: Shanghai Metro (P.R. of China) - 2003



## Loss Examples: Singapore MRT – Spring 2004





## Loss Examples: Singapore MRT – April 30, 2004, 3:15 pm



## Major Tunnel Losses since 1994

PROJECT	CAUSE	LOSS
1994 Great Belt Link, Denmark	Fire	US\$ 33 mio
1994 Munich Metro, Germany	Collapse	US\$ 4 mio
1994 Heathrow Express Link, GB	Collapse	US\$ 141 mio
1994 Metro Taipei, Taiwan	Collapse	US\$ 12 mio
1995 Metro Los Angeles, USA	Collapse	US\$ 9 mio
1995 Metro Taipei, Taiwan	Collapse	US\$ 29 mio
1999 Hull Yorkshire Tunnel, UK	Collapse	US\$ 55 mio
1999 TAV Bologna - Florence, Italy	Collapse	US\$ 9 mio
1999 Anatolia Motorway, Turkey	Earthquake	US\$ 115 mio
2000 Metro Taegu, Korea	Collapse	US\$ 24 mio



## Major Tunnel Losses since 1994

PROJECT	CAUSE	LOSS
2000 TAV Bologna - Florence, Italy	Collapse	US\$ 12 mio
2002 Taiwan High Speed Railway	Collapse	US\$ 30 mio
2002 SOCATOP Paris, France	Fire	US\$ 8 mio
2003 Shanghai Metro, PRC	Collapse	US\$ 80 mio
2004 Singapore Metro, S'pore	Collapse	t.b.a.
2005 Barcelona Metro, Spain	Collapse	t.b.a.
2005 Lausanne Metro, Switzerland	Collapse	t.b.a.
2005 Lane Cove Tunnel, Sydney	Collapse	t.b.a.
2005 Kaohsiung Metro, Taiwan	Collapse	t.b.a.

19 Major Losses

Total Amount: ~ US\$ 600 mio



## Consequences for the Insurance Industry

- High frequency of major tunnel losses
- Insufficient premium income to pay for all the losses
- Wide scope of cover indemnifies far beyond repair costs
- Repair costs exceeding original construction costs
- Insurance was “cheapest risk management tool”
- Tunnelling insurance notoriously unprofitable business

# Consequences for the International Insurance Industry

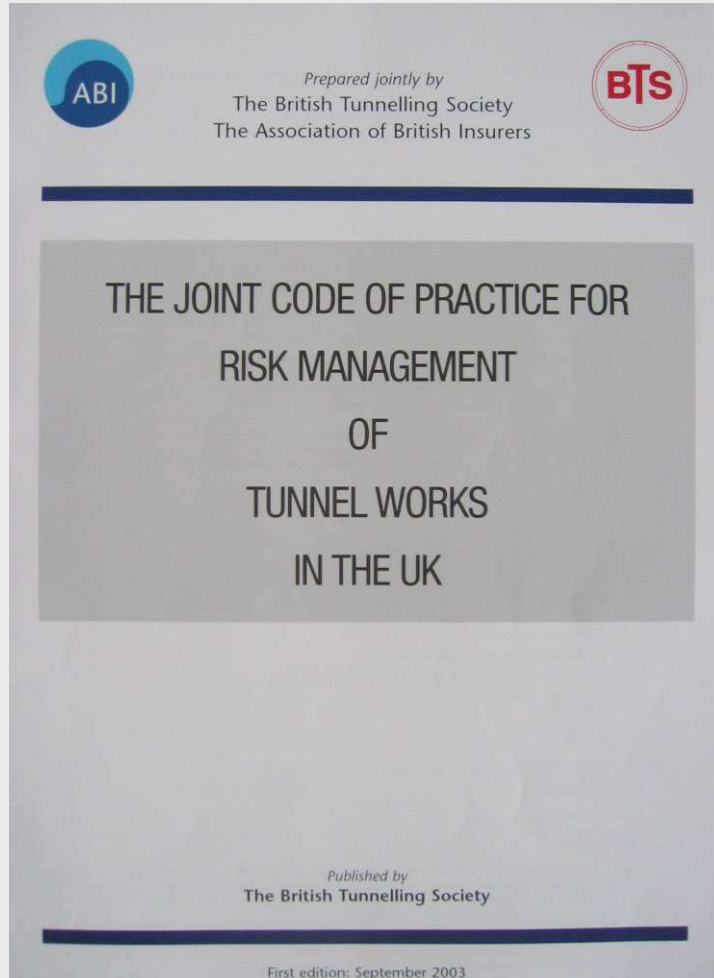
## Option for Insurers/Reinsurers

- Stop offering insurance and Reinsurance for tunnelling projects
- Increase rates, deductibles, restrict cover
- Tackle the problems with a professional approach, sustainable for all parties

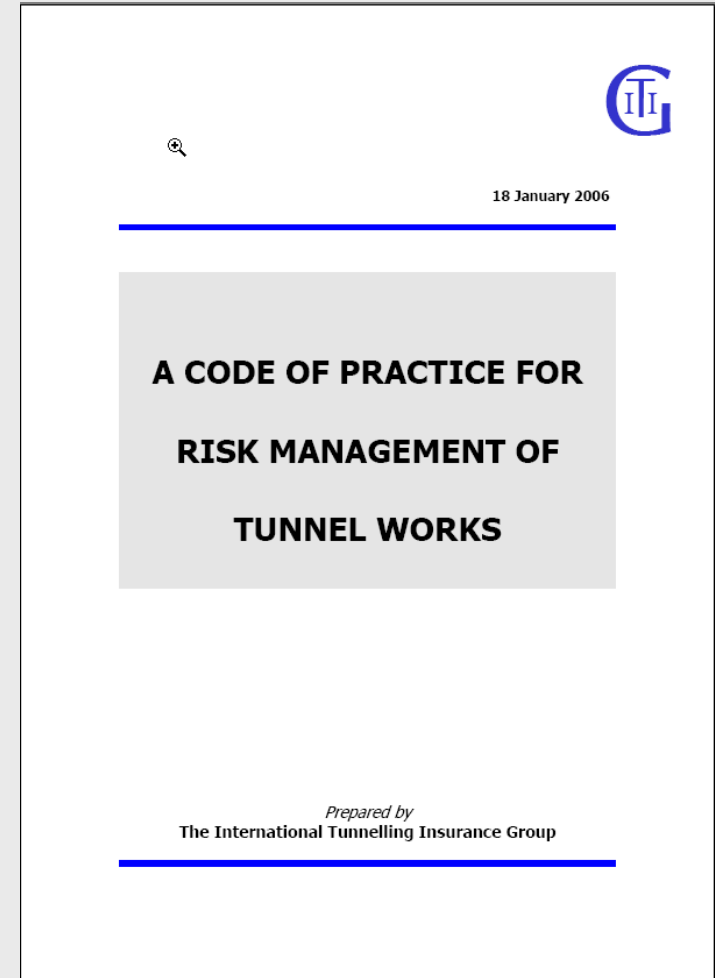
## Consequence

- Still an option for many market players
- Is insurance cover still affordable and worthwhile to buy for the customer?
- Risk Management:  
Joint Code of Practice

# The Code of Practice for Risk Management of Tunnel Works



[www.britishtunnelling.org](http://www.britishtunnelling.org)



[www.imia.com](http://www.imia.com)



# Key Objectives of the TCoP

## Objectives

- Set minimum standards for risk assessment and on-going risk management procedures for tunnelling projects
- Define clear responsibilities to all parties involved in tunnel projects

## Results

- Reduce the probability of losses happening
- Reduce the size of claims when they happen
- Reinstatement of insurers' confidence to continue underwriting tunnelling projects
- Export 'best practice' to worldwide tunnelling markets

# Contents of the Code

*Section 1 - Objective of Code*

*Section 2 - Compliance*

*Section 3 - Introduction*

*Section 4 - Risk Management*

*Section 5 - Client Role & Responsibilities*

*Section 6 - Project Development Stage*

*Section 7 - Contract Procurement Stage*

*Section 8 - Design Stage*

*Section 9 – Construction Stage*

# Cooperation between ITA, ITIG and IMIA



**The International Tunnelling Insurance Group**



**The International Association of Engineering Insurers**

# Reference Projects





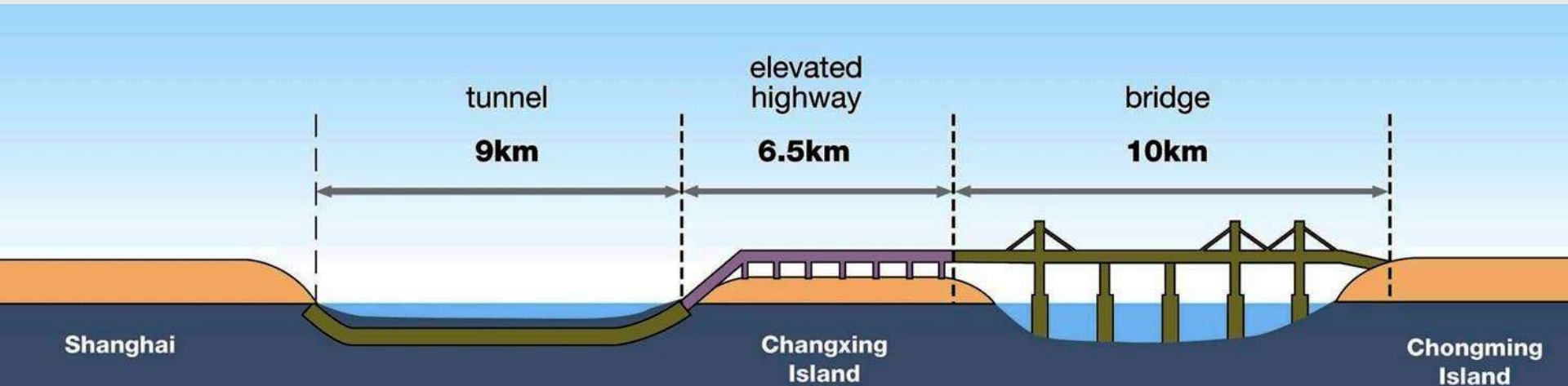
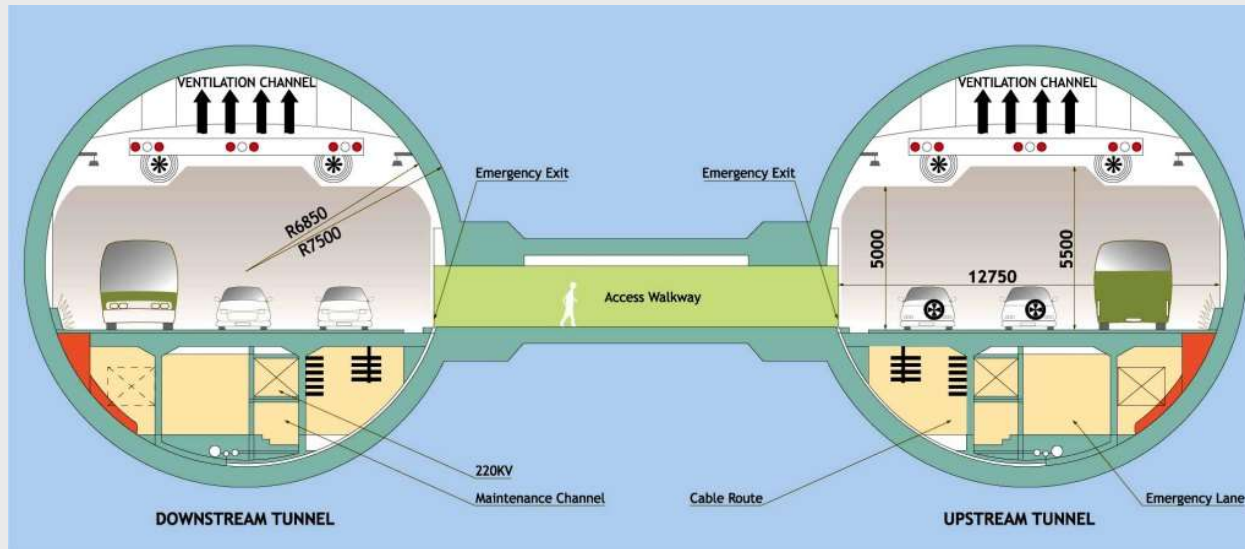
# Kowloon Canton Railway, Hong Kong



# Marmaray Project, Turkey



# Shanghai Chongming Crossing, P.R. of China



## Conclusions

- Risk exposure in tunnel projects is extremely high due to various factors
- Loss experience in tunnelling projects deteriorated to an unsustainable level in the last decade
- “Joint Code of Practice for Risk Management of Tunnelling Works” was developed as a professional risk management tool
- Application of the Code has to become compulsory to obtain cover for future tunnel projects



# Thank you for your attention!

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