

THE BRITISH TUNNELLING SOCIETY
Annual Report and Accounts for Annual General Meeting on
Thursday, 17 May 2007

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British Tunnelling Society

Minutes of the Annual General Meeting of the British Tunneling Society which was held in the Institution of Civil Engineers, Gt. George St., London on Thursday 18th May 2006.

Minutes of the Annual General Meeting of the British Tunnelling Society on Thursday 18th May 2006 to be sent separately.

BRITISH TUNNELLING SOCIETY ANNUAL REPORT 2006

COMMITTEE:

Chairman:

Bill Grose
Arup

Vice Chairman

Paul Hoyland
Balfour Beatty

Immediate Past Chairman

David Court
Edmund Nuttall

Elected Members:

Mike King	Halcrow	Retires 2007
Bob Ibell	London Bridge Associates	Retires 2007
Paul Hoyland	Balfour Beatty	Retires 2007
Chris Bambridge	MottMcDonald	Retires 2008
Mike Francis	Kellogg Brown & Root	Retires 2008
Ian Williams	BAA	Retires 2008
Geoff Bateman	Scott Wilson	Retires 2009
Colin Eddie	Morgan Est.	Retires 2009
Damian McGirr	Donaldson Associates	Retires 2009

Co-opted Members:

Myles O'Reilly	Consultant	T&TI
Helen Nattrass	Sir Robert McAlpine	Lobby Group
Donald Lamont	Health and Safety Executive	Safety
Jack Knight	Charles Haswell & Partners	HAVS
John Scholey	Kellogg Brown & Root	Annual Dinner

Members invited to report to the Committee:

Martin Knights	Jacob Babbie	ITA
Rodney Craig	Rodney Craig Associates	Newsletter
Dr Terry Mellors	Mellors & Associates	Insurance
Shani Wallis	Freelance Tunnelling Journalist	International

Institutional Representatives:

David Donaldson	Institution of Civil Engineers
Alan Bozeat	Institute of Materials, Minerals and Mining

The British Tunnelling Society was formed as an unincorporated association by the Constitution adopted 23 September 1971 as amended 21 January 1993 and 16 May 2002. The Society became a registered charity in March 1993. The Charity number is 1017887.

LEGAL AND ADMINISTRATIVE INFORMATION

The principal and registered office of the charity is:

One Great George Street
Westminster
London SW1P 3AA

Names and addresses of other relevant organisations or persons

Bankers	National Westminster Bank Charing Cross Branch PO Box 113, Cavell House 2a Charing Cross Road London WC2H 0NN	CCLA Investment Management Limited St. Alphage House 2 Fore Street London EC2Y 5AQ
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Solicitors: Solicitors are appointed from time to time as the need arises.

Auditors: Grant Thornton
Grant Thornton House
Melton Street
Euston Square
London NW1 2EP

Investment Advisers: Investment advisers are appointed from time to time as the need arises.

CHAIRMANS REPORT 2006

This last year has been a busy one for the BTS, and for the committee of the Society. The industry has seen the go-ahead of design work for Crossrail, the award of contracts to improve the resilience of the water supply in London, and the start of construction on the A3 Hindhead Improvement Scheme, the extension of the Docklands Light Railway to Woolwich Arsenal, Glendoe Hydro-electric Scheme, Kings Cross Northern Ticket Hall, Croydon Cable Tunnel, and the completion of the majority of the tunnelling on the cable tunnels for the 2012 Olympics.

One of the Society's big success stories of the year has been the renewed enthusiasm for the All Party Group for Underground Space, under the chairmanship of Rt Hon Nick Raynesford MP. This is spearheaded for us by Helen Natrass, who has worked tirelessly to organize site visits, presentations and meetings, where BTS members have engaged with an increasing number of interested parliamentarians.

Our Annual Dinner was held once again at the popular Whitbread Brewery, our Guest of Honour being Doug Oakervee, Chairman of Crossrail and ex-President of the ICE. The Crossrail Bill is currently in Parliament and will be presented to the House of Lords in due course. The BTS's Crossrail sub-committee continues to liaise with the project team to offer help where possible, and to collaborate in ventures of mutual interest: for example the training of sprayed concrete operatives and supervisors, large numbers of whom would be needed to meet the demands of the Crossrail construction programme.

This year we have published a guide on Hand Arm Vibration Syndrome, a very important piece of work on a condition affecting the health of tunnel workers: the guide has been made available on the BTS website at no cost.

New initiatives this year include starting on two new guides, one dealing with ground and tunnel monitoring the other dealing with timbering. In addition our NO subcommittee, formed by representatives from a number of areas of industry, is continuing to write a best practice guide to control occupational exposure to Nitrogen Monoxide. An Interim guide has been published on the website with the full document expected to be available by the end of 2007.

The annual BTS 5-day course was successful again last year, but this year we have decided to give the course content a major overhaul, and the course in June 2007 will be significantly different to last year's.

We are also engaging more positively with the ICE and have a new ICE representative on our committee. We are developing our thinking on sustainability in tunnelling, in conjunction with ICE, and will be saying more about that in the future.

The mainstay of the Society's activities is the varied programme of discussions and presentations, covering projects of interest, latest developments in tunnelling, and other issues for our industry. We strive to build upon that programme each year, to fulfill our learned society function of knowledge-sharing, and to provide thought leadership in tunnelling.

We are pleased to see that membership has risen slightly of the last three years, and now total membership is just over 750.

Our finances remain in good order, reflecting income principally from the sale of publications and from the BTS Course. The year to 31 December 2006 shows a surplus over 2005. A considerable discount from Wilmington continues to allow us to provide Tunnels & Tunnelling magazine to all members, whilst keeping the subscription rates at a reasonable level. As part of a 3-year plan we have raised subscriptions, this year by around 5%.

The Society continues to publish a Newsletter, for which we are indebted to the hard work of Rodney Craig. Contributions from any members are always gratefully received. The Newsletter is circulated by email and is on our website.

In closing, I would like to thank all the members of the committee for their continued support, commitment and hard work. The fact that this Society is so successful, well-respected, well-attended, and sociable is due in no small measure to the tremendous enthusiasm of the committee, who give their time so generously, and the support of their employers. The Society remains committed to the

furtherance of the construction and use of underground space, and together we can look forward to a positive and prosperous year ahead.

A handwritten signature in black ink, appearing to read 'Bill Grose', with a long horizontal stroke extending from the end of the name.

Bill Grose
BTS Chairman

March 2007

ADMINISTRATION OF THE SOCIETY

The business affairs of the society are administered by a committee consisting of nine elected members, several co-opted and ex officio members together with a representative from the Institution of Civil Engineers and the Institute of Materials, Minerals and Mining.

Three vacancies arise in the Committee, due to retirement of elected members, as previously advised to the BTS membership. There were three nominations, all of whom are duly elected to serve from the 2007 AGM for 3 years. They are:

- Lawrence Halls
- Chris Dulake
- Nathan Wilmot

In addition the Committee has requested Bob Ibell to continue as a co-opted member of the Committee, which he has agreed to do.

The British Tunnelling Society is one of the largest and most active of the Associated Societies of the Institution of Civil Engineers. The Committee deals with its substantial workload by allocating it to subcommittees as follows:

1. PAPERS AND MEETINGS

Michael Francis (Chair), Ian Williams, Geoff Bateman, Shani Wallis, Alan Bozeat.

This year a series of interesting papers on a variety of UK and international tunnelling topics have been presented, highlighting the latest developments in tunnelling and the issues that are affecting our industry.

Offers of suitable presentations are always welcome and the society is grateful for the support of the speakers, especially the international speakers who travel to the UK to give their presentations.

Papers presented during 2006 were:

Date	Title	Speakers
19 January 06	Steel Fibre Reinforced Concrete tunnel linings	Hadyn Davies – Union Railways Eddie Woods - RLE Peter Shuttleworth - RLE
16 February 06	Tunnelling the Porto Metro – Under Pressure in Porto Granite. Joint Meeting with MinSouth/IMMM	Peter C.Raleigh – Babendererde Engineers Llc
16 March 06	Tunnelling on the Kárahnjúkar Power Project	Jon Parry, VIJV Joe Kaelin, KEJV
20 April 06	Harding Memorial lecture	Colin Eddie – Morgan Est
18 May 06	BTS AGM & Delhi Metro	Derek Winsor - Mott MacDonald; Chris Meier - Dywidag
22 June 06	Tunnelling Research Showcase Investigating the ground movements developed around closely spaced multiple tunnel constructions in clay - Soil conditioning for pipe jacking and earth pressure balance machines Characterisation and numerical modelling of fractured rock masses in underground spaces HAVS Guidelines	University of Birmingham University of Cambridge Cambourne School of Mines Jack Knight / Donald Lamont, HSE
21 September 06	The Tunnel Operators' Association and the Issues which are Important to Tunnel Operators	John Gillard – Mersey Tunnels

19 October 06	Dublin Port Tunnel	Tim Brick – Dublin City Council Stephen Thomson – LBA (Nishimatsu) Simon Morgan – LBA
16 November 06	Nichol Highway Collapse – Singapore	Richard Davies - Benaim Group
07 December 06	Tunnelling fifty years ago	Oliver Bevan and Douglas Parkes

The November meeting was jointly held with the BGA.

All meetings were held at One Great George Street.

2. TRAINING AND EDUCATION

Bob Ibell (Chair), Chris Bambridge, Colin Eddie

The training and education subcommittee has over the last year two streams of actions, the BTS course, and the achievement of a competent and qualified workforce.

The BTS course was again held at Surrey University and was attended by 35 delegates. It followed the format used previously of two modules, Design and Construction with an overlapping day in the middle on Health and Safety. The course maintained its usual high standard of presenters and was well received. The sub committee set out to try and get the best feedback this year and following some very useful comments the course format for the coming year is being reviewed and re drafted to address these comments and also focus on the skills needed for up and coming major projects.

The Sub-Committee also provides input into the Working Group for National Occupational Standards for Tunnelling Operations and works with Construction skills (CITB) to develop and promote the qualifications, which relate to these standards.

3. FINANCE AND MEMBERSHIP

Paul Hoyland (Chair), Bill Grose

Finance

To meet the financial demands on the society's funds, including inflation, the Committee decided to increase the subscriptions. The rises are in the region of 5%.

The rates for 2007 are as follows:

	<i>UK</i>	Overseas
	£	£
Corporate Member Small (Up to 50 Employees)	345.00	4100.00
Corporate Member Medium (50 to 500 Employees)	545.00	725.00
Corporate Member Large (Over 500 Employees)	880.00	1230.00
Individual	68.00	105.00
Retired	27.00	33.00
Student	23.00	33.00

The new committee will seek to set a budget for the forthcoming year that returns a modest surplus.

Membership: The details of the current membership as at end 2006 is set out below:

		2006	
UK	Corporate Members	25	Increase of 2
	Individual Members	543	Increase of 12
	Student and Retired	49	Increase of 2
	UK Total	617	Increase of 16
Overseas	Corporate Members	2	Increase of 1
	Individual Members	150	Increase of 10
	Student and Retired	10	Decrease of 1

Overseas Total 170 Increase of 10

The histogram attached shows the membership figures for the last five years. There are signs that the slight upturn in membership figures for 2005 has continued throughout 2006. It is hoped that this trend continues and strengthens.

Please refer to Appendix 1 for further details of membership figures.

4. HEALTH & SAFETY and STANDARDS

CEN Standards – draft amendments to EN 12110 (Airlocks), EN 12111 (Roadheaders) and EN 12336 (Shield machines) are under discussion. Progress is slow as only one meeting of CEN/TC151/WG4 was held during the year. At present WG4 has participants from UK, Switzerland and Germany only. Efforts are being made to secure French participation.

BS 6164 – a review of this standard was carried out by BSI and a number of potential amendments identified. A draft text for discussion by the BSI committee is expected in early 2007. The BTS committee has been kept aware of developments.

HAVS Guidance – this was completed and the document is available on the BTS website.

Nitrogen Monoxide Guidance – an interim guidance note was published on the BTS website during the year and work is underway on drafting the final text.

Compressed Air Working Group – CAWG met twice during the year however no compressed air work was undertaken during the period. The group is working on the digitisation of the Radiographic Atlas first used to classify dysbaric osteonecrosis in the 1960s. This valuable reference document will be copied to medical schools as a teaching aid when available. The group has also been asked to comment on the outcome of a major research project commissioned by HSE on the use of Doppler as a real time monitoring tool in compressed air work.

5. TECHNICAL

Mike King (Chair), Michael Francis, Colin Eddie, Damian McGirr

The Society is currently working on 3 main documents and guides – Best Practice Guide for Monitoring (see separate statement), Best Practice Guide for Timbering, and the Tunnelling Specification.

The Best Practice Guide for Timbering is in its early stages of development and will continue to be developed under the chairmanship of David Court.

The Tunnelling Specification has had several sections updated, and contributions from the industry have been reviewed and included where they are considered to improve or clarify the original. Suggestions and comments have continued to be received up until very recently and the latest comments will be reviewed and included very shortly. The revised document will be published in the coming year.

6. TUNNELLING LOBBY

Helen Natrass (Chair), Alan Bozeat, David Court, Bill Grose, Anthony Umney

The Lobby Group has had a much more active year than the 2005-2006 season. The All Party Parliamentary Group for Underground Space (APGUS) was re-constituted on 18th April 2006, with the Rt. Hon. Nick Raynsford MP as Chairman. The Parliamentarians' re-constitution meeting was followed by a reception in Portcullis House hosted by Nick Raynsford MP and the BTS. A number of informative exhibits about tunnelling were in the reception room. In all thirteen Parliamentarians visited our reception, several staying for most of the two-hour session. Formerly I would have called this a poor show, but I now know this is extremely good. We have a small but strong core of support from both Houses and across the political parties. Larger numbers of Parliamentarians are beginning to respond to invitations, even though tunnelling definitely remains a minority interest at present.

We have held three meetings in 2006-2007:

- Visit to Abbey Mills Pumping Station and the Northern Interceptor Sewer
- Presentation on Underground Nuclear Waste Disposal

- Site visit to the DLR Thames Tunnels at North Woolwich

We will be planning for three APGUS meetings in the 2007-2008 season; again a mixture of site visits for Parliamentarians and presentations where Parliamentarians and BTS guests can be present together.

We have also continued our membership of the Associate Parliamentary Engineering Group and attended their meetings.

The Annual General Meeting of APGUS will take place late in March 2007. In the near future we hope to write to Ministers about the procedural and practical difficulties associated with their wishes for the use of water transport for construction materials and muck in the London area. We hope this may lead to a meeting where the issues can be discussed by the BTS and the Ministers concerned.

We will keep up the impetus of our information work in the Palace of Westminster and also present the concerns of BTS Members in an effective way for the attention of Politicians.

7. WEBSITE

Chris Bambridge (Chair)

The BTS web site has suffered during 2006/7 due to poor performance of the BTS web hosting company. Regretfully this has resulted in much of the information being out of date and changes to the site not being implemented in a timely manner.

In January 2007 the committee decided to investigate a change of web site host and the procedure is now in place to select the new supplier. This will establish a contractual basis between BTS and the supplier to ensure web updates are uploaded within a 72hr period of notification. Following the engagement of a new supplier and making the changes that are outstanding improvements in the functionality of the site will be made together with minor visual changes to increase the functionality of the site.

8. TUNNELS AND TUNNELLING INTERNATIONAL EDITORIAL ADVISORY BOARD

Myles O'Reilly (Chair), Geoff Bateman, Keith Bowers, David Court, Paul Hoyland, Tom King, Richard Lewis, Barry New, Andrew Smith, Ivor Thomas and Eddie Woods.

The BTS membership all receive Tunnels and Tunnelling International monthly. This Journal contains up to the minute news of the tunnelling industry worldwide and a wide range of technical articles as well as reports of the BTS meetings at the Institution of Civil Engineers, Great George Street, London. Notice of meetings, circulars etc. from the Society are also enclosed with the journal.

The Advisory Board met on four occasions in 2006-07. At these meetings the editorial and technical content of T&TI was reviewed with the journal's Editorial Staff and its Publisher and suggestions on topics and schemes in progress or preparation were put forward for inclusion in forthcoming issues.

9. INTERNATIONAL TUNNELLING ASSOCIATION (ITA)

Donald Lamont, Member Nation Representative, Martin Knights, Vice President of ITA

The 2006 World Tunnel Congress and ITA General Assembly was held in Seoul. Martin Knights is a vice-president of ITA and Donald Lamont was the UK member nation representative at the General Assembly.

Martin Knights organised and chaired a lively ITA Open Session at the World Tunnel Congress. The session was based around risk management in tunnelling and Donald Lamont presented paper on managing health and safety risk. A number of BTS members also presented papers and acted as session chairs during the Congress.

The BTS is well represented on ITA Working Groups with at least 15 members serving as Animateur, vice-Animateur or WG member. Information on ITA WGs and their publications can be accessed via the ITA web site www.ita-aites.org.

Martin Knights, ably supported by his wife and once more preceded by his personal piper, presented another bid on behalf of the BTS to hold the ITA GA and WTC in Edinburgh, this time in 2009.

Unfortunately the bid was unsuccessful and there are no plans to bid again in the foreseeable future. The 2007 GA and WTC will be held in Prague, in India in 2008 and in Budapest in 2009.

In October 2006 BTS co-sponsored a well attended ITA conference on "Fire Protection Engineering for New and Existing Tunnels".

10. ANNUAL DINNER

John Scholey (Chair).

On 5th May 2006, the eighteenth BTS annual dinner was held at The Brewery banqueting centre. Notionally there were 460 members, partners and guests, based on the closing figure given which has to be given to The Brewery three days in advance of the event. However, we know there were some 'no shows' on the night. This is a significant increase over last year's 387 diners, and supplemented BTS funds by some £5,500.

We experimented with a free bar reception in place of the champagne reception. It was preceded by an advance cash bar from 7.00pm. A straw poll on the night revealed a preference for the champagne reception, which will be reinstated in 2007, with sponsorship.

The chairman's guests included Mr & Mrs Oakervee. The dinner was followed by an address by Chairman Dave Court and a speech from David Gunson, both of which were well received. Music from Rockin' Flames then accompanied the inevitable reconstruction of a wide range of tunnel projects from years past.

Please note that the 2007 dinner **is a week later** than its usual Friday, and is on 18th May 2007. This is due to a long-standing booking of The Brewery by A N Other. In 2008, we have a provisional booking for our 'usual Friday', i.e. the one following the early May Bank Holiday.

11. CROSSRAIL WORKING GROUP

Bob Ibell (Chair), David Court, Geoff Bateman

The Crossrail project has gone through changes and overcome a number of obstacles this year and the personnel contributing to the Crossrail working group have changed. The Sub-Committee now consists of Bob Ibell, David Court and Geoff Bateman, on the Crossrail side the principal input come from Eddie Woods.

The challenges of the project to BTS remain as they have for some while;

- To advise on the availability of competent workforce and to determine what can be done to improve the availability of competent workforce.
- To assist in delivering SCL skilled engineers and supervisors to manage the Crossrail construction which is heavily dependant on SCL.
- To develop a *Guide to the Management of SCL operations in Urban Areas* to form a basis for training and specification.

BTS has addressed the first two challenges; the third action exists only in outline.

12. MONITORING GUIDE

Mike King (Chair), Michael Francis, Colin Eddie, Damian McGirr

Monitoring systems form a crucial, and expensive, part of the many underground construction projects, particularly within urban areas. The successful undertaking of this monitoring is commonly a key element in the management of major risks associated with these works. It is therefore important that such monitoring systems should perform to the optimum possible level. There is currently no generally

recognised standard or best practice guidance on monitoring principles and systems for underground works.

The committee has therefore decided to undertake the production of a Best Practice guide for monitoring in underground construction. A sub-committee has been set up under the chairmanship of Damian McGirr. Other members of the sub-committee are Dr Keith Bowers, Rand Selman, David Cook, Frank Mimmagh and Bob Allen.

The main objectives of the guide are:

1. To review the state of the art for monitoring underground construction and to develop best practice guidance for clients and project managers who need to procure monitoring systems as parts of their underground construction projects.
2. This guidance will focus on the principles which must be adopted to ensure that such systems are safe, effective and efficient. The guidance will not be prescriptive in terms of detail design, which it is recognised changes relatively rapidly with changes in technology. The guidance document will aim to provide a high level checklist of the features which should be present in a "best practice" system.

The scope of the project is to include:

1. Geotechnical and structural monitoring relevant to underground construction.
2. Focusing particularly on the purpose of such monitoring and how the monitoring system should be designed and managed to best achieved the client's objectives.
3. Monitoring of geomechanical parameters (such as displacement, stress and strain). The project will not seek to address issues specific to environmental monitoring (such as contamination, noise and vibration). Nonetheless, it is recognised that some principles of good practice may be common to both types of monitoring.
4. Both the monitoring of new underground works (for construction verification and control) and the monitoring of existing infrastructure affected by underground construction (for infrastructure protection). It will also consider the need to integrate monitoring information with works progress data to facilitate interpretation.
5. Consideration of infrastructure protection requirements and the range of existing infrastructure types which may require monitoring and the particular asset specific issues which may arise. This part of the scope will also include specific consideration of the monitoring of existing tunnel assets at risk from new excavations as these can give rise to particular monitoring concerns.
6. The need for effective management of, and timely response to, all types of monitoring data. The report will specifically address the issues which arise due to the quantity and complexity of data on generated by some modern construction activities, and specifically in tunnelling control systems.

It is proposed to produce a clear, concise, peer reviewed report and best practice guide suitable for publication by the British Tunnelling Society. The report is currently in its infancy however it is hoped that publication will be achieved by the end of 2008.

13. NEWSLETTER

Rodney Craig (Chair)

The Society publishes on the website (www.britishtunnelling.org) every two months a Newsletter updating the membership of the Societies activities. The Secretary sends copies of the Newsletter to members who are on the database. If you would like a copy of the Newsletter regularly, please contact the Secretary Jade Donovan at the BTS.

All comments and news and gossip are always welcome to rodneycraig@compuserve.com

14. RELATIONSHIP WITH ICE AND OTHER BODIES

As an Associated Society of the Institution of Civil Engineers, the Society continues actively to pursue this relationship with its joint meetings with other associated societies and its representation on other committees.

The use of the ICE facilities is invaluable to the Society, and is regularly used by the various subcommittee meetings and for general meetings with industry representatives.

The Society's role is to advance knowledge in and encourage the art and science of tunneling by fostering understanding, experience, interest and research therein, which is not something that can exist in isolation and there are many important links with other engineering disciplines and sciences. Although totally separate from other organizations', the Society seeks to co-operate in areas of common ground with other bodies.

15. AUDITORS

Grant Thornton, having offered themselves for reappointment as auditors shall, subject to the approval of the membership, be reappointed for the next financial year

The Annual Report on pages 3 – 13 was approved by the Committee and was signed on its behalf by:

A handwritten signature in black ink, appearing to read 'Bill Grose', is centered on the page. The signature is fluid and cursive, with a long horizontal stroke at the end.

Bill Grose – Chairman of the Society