



BRITISH TUNNELLING SOCIETY

Annual Report and Accounts for the Year Ended 31 December 2015

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BRITISH TUNNELLING SOCIETY ANNUAL REPORT 2015

COMMITTEE:

Chairman

Roger Bridge
Balfour Beatty plc

Vice Chairman

Mark Leggett
Mott MacDonald Ltd

Immediate Past Chairman

Damian McGirr
Donaldson Associates Ltd

Elected Members and Trustees

NAME	COMPANY	TERM	RESPONSIBILITY
David Terry (until 21 May)	London Bridge Associates	Retires 2015	Papers and Meetings
Steven Cowell	Murphy Group Ltd	Retires 2016	Awards
Nicholas Tucker	Mott MacDonald Group	Retires 2016	Technical
Andrew Stenning	Atkins	Retires 2016	Training & Courses
David McCann	CH2MHill	Retires 2016	
Ivor Thomas	BAM Nuttall	Retires 2017	
Paul Perry	CH2M Hill	Retires 2017	
Andreas Raedle	Hochtief	Retires 2017	
Jamie Standing	Imperial College	Retires 2017	
Kurt Zeidler (from 21 May)	GZ Consultants	Retires 2018	
Mark Round (from 21 May)	AECOM	Retires 2018	
Ralph Freeston (from 21 May)	Transport for London	Retires 2018	

Co-opted Members:

NAME	COMPANY	RESPONSIBILITY
Rod Young	Barhale Construction	Training & Courses
Ken Spiby	London Bridge Associates	Website
Eddie Woods	Consultant	T&TI Editorial Advisory Board
Donald Lamont	Hyperbaric & Tunnel Safety Ltd	Health and Safety
John Scholey	CH2MHill	Annual Dinner
Mateusz Wojtasik (from 10 Nov)	Donaldson Associates Ltd	Young Members Chair (current)
Eoin O'Murchu (until 10 Nov)	CH2M Hill	Young Members Chair (now past)
Kate Cooksey	Morgan Sindall (UnPS)	MSc
Shani Wallis	Freelance Tunnelling Journalist	Media Relations & Publishing

Members invited to report to the Committee:

Martin Knights	CH2M Hill	ITA
Andy Flowerday	Barhale	Pipe Jacking Association

Institutional Representatives:

Bill Grose	Independent & Past BTS Chairman	Institution of Civil Engineers
Alan Bozeat	Hunter Personnel	Institute of Materials, Minerals and Mining

The British Tunnelling Society was formed as an unincorporated association by the Constitution adopted on 23 September 1971 and as amended on 21 January 1993, 16 May 2002 and 17 May 2012. 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 Strand Branch PO Box 414 38 Strand London WC2H 5JB	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.

Examiner: Jonathan Healey FCA
Lindeyer Francis Ferguson Ltd
North House
198 High Street
Tonbridge
Kent
TN9 1BE

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

CHAIRMAN'S ANNUAL REPORT 2015

INTRODUCTION AND INDUSTRY

It has been another busy year for the society. Membership numbers continue to increase and we are increasingly having greater engagement with Government Bodies, Clients and other stakeholders. The capability and strength that the growing membership offers is becoming a sought after resource although we remain mindful that we should not detract from the normal process of industry and become a free resource to the detriment of our member companies. We aim to act as a conduit and initial point of contact for all interested parties and a hub where those seeking assistance can be helped to find what they need.

We have also continued with our aims to provide information and guidance with our publications, evening meetings and courses. The increasing interest and engagement we are experience is most welcome and an indicator of the growing awareness by all parties of the resources accessible through the BTS.

As expected, it has been a relatively quiet year on sites with tunnelling activity on Crossrail, Bond Street Station, Victoria Station and Tottenham Court Road drawing to completion. There has, however been significant activity in project preparation, bidding and planning with Thames Tideway Contracts Awarded, HS2 development and pre-qualification occurring, planning progressing for York Potash, mobilisation of Northern Line Extension and Bank Station as well as Shieldhall. Many other schemes are in development with Silvertown, Lower Thames Crossing, Morecambe Bay Power Tunnel and the Trans Pennine Tunnels some examples of these.

It is satisfying to see projects progressing outside of London and hopefully we will even see progress made at Hinkley Point. A number of projects should start to see site activity as 2016 progresses and 2017 will see a several starting to undertake tunnelling activities.

All of this industry activity creates associated activity within the society and this heightened level of activity although satisfying does require support from the committee and active members of the society and I would like to take the opportunity to thank Dave Terry for his hard work on the committee and to welcome Ralph Freeston, Mark Round and Kurt Zeidler to the committee and hope that they enjoy the three years that they serve.

The intention is that at the next election we will offer four places and retain a committee of ten elected members in light of the high amounts of work that everyone in dealing with not only for the BTS but in their normal jobs. We appreciate all of the efforts made by the committee members and the time their companies allow them to conduct their duties.

The wide and varied selection of evening presentations was testament to the range of projects and work on-going in the industry here in the UK and around the world culminating in the lively and enjoyable Christmas debate which once again entertained all present and prompted much audience participation through to its close.

I would like to thank all of those presenters that gave their time to come and present to us and share their knowledge and experience. I would also like to thank those who further contributed by subsidising the bar afterwards further encouraging debate and the opportunity to network for all.

AWARDS / TRAINING AND COURSES / REGISTRATION

The 2015 James Clarke medal was awarded to Doug Allenby for his long service to the tunnelling industry. Unfortunately Doug was not able to attend the 2015 AGM and collect his award. We hope that this will be rectified early in 2016.

After recent years where the Howard Harding Prize was awarded every other year due to the low number of applicants, the recent increase in interest has led the committee to agree to reinstate this award every year. Once again in 2015 we had a strong and impressive set of papers submitted and after great deliberating from the shortlisted papers presented at the March meeting a worthy winner was selected in Ryan McCarron with his paper on the works at the Victoria Station Upgrade Scheme.

Following the trend of recent years the Design & Construction and Health & Safety Courses were both well attended with both enjoying their largest number for a long time. They proved to be lively events with enjoyable interaction between presenters and delegates hopefully to the benefit of all.

The development of the underground survey course should add another new dimension to the courses delivered by the BTS and fill a gap that has been present in the skill straining for the tunnelling industry to date.

TunnelSkills continue with their good works and have started a new materials technician trailblazer apprenticeship run at TUCA with development in progress for a trailblazer apprenticeship for tunnelling operatives which will be of great importance as we go forward. The reach of TunnelSkills steadily grows with ever greater engagement with TUCA, BIS and CITB to support and assist with the development of training associated with tunnelling to ensure that the bespoke needs of the industry are identified and met

TUCA remains under the patronage of Crossrail but it has been announced that TfL will be taking over as the owners of the facility and we look forward to progression in the good work that is being made there with the assistance of TunnelSkills and hopefully a new owner will bring a fresh perspective and energy that will drive the site forward and with encouragement for those requiring training.

Registration continues to be a topic of conversation at the committee meetings and beyond. Discussions have been held with RoGEP to explore the viability of that scheme being suitable for BTS members but the present feeling is that it does not permit all of our members to join. There is a possibility that this may change and hopefully there will be positive progress to report in the next annual report.

YOUNG MEMBERS

The Young Members within the society continue to grow in numbers and activity with a very informative and successful one day conference being held with the kind assistance of Pinsent Masons as hosts for the day.

The development of a teachers pack is an excellent step towards encouraging more young people into the industry at a stage in their life where they can be enthused with the opportunities the tunnelling industry offers.

The work they have been undertaking in the development of social media reach is also pleasing to see and taking the society in a direction perhaps unfamiliar to many but warranted in the modern world and its means of communication.

Congratulations to all of the Young Members for their hard work and we look forward to the future and greater opportunity for the Young Members to engage with those members of the society more Senior in their years.

FINANCE AND MEMBERSHIP

Membership continues to grow for both individual and corporate areas and we have been working to improve our invoicing process to ensure that existing corporate members receive reminder invoices automatically to permit their commercial teams to trigger the payment process rather than a reminder letter which so often has no impact or desired response. The increasing membership has permitted us to keep membership fees frozen once again and we have still managed to achieve a modest profit largely due to the increasing popularity of the courses delivered by the society.

We are predicting that the costs associated with bidding to host the ITA WTC event in London in 2019 will cost the society in 2016 so we hope that we have funds to undertake this process with the aim of being successful in our bid. The event has the potential to bring significant funding to the society as well as raising the profile of the BTS and the UK tunnelling market in general on the word stage.

TECHNICAL

The technical committee and many of the general committee members have been heavily involved in the steady on-going development of the SCL good practice guide which is steadily progressing towards completion and publication.

In addition the BTS have become involved in the development of the BSi PAS for the design of fibre reinforced segmental linings which we have supported as sponsors jointly with HS2 is an attempt to improve efficiency and understanding of the process and contributing factors in this process. The document will be published in the first half of 2016.

Publications completed through the collective knowledge of Crossrail and London Underground that share good practice in a number of tunnel specific subjects have been made available to all through the BTS website and it is hoped that this will become a more common process with more areas of subject matter having guides produced.

The technical sub-committee also worked to identify and create a virtual bookshelf of documents and publications thought to be of use to anyone involved in the tunnelling industry as a help to those looking for suitable documents to aid their development or general guidance.

WEBSITE / TUNNELS & TUNNELLING / NEWSLETTER

I would like to thank Ken Spiby and the web site management team for their work in keeping the site as current and fresh as possible. This thanks extends to the Editorial Committee for Tunnels and Tunnelling who are working closely with the editor to constantly look to improve the offering of the magazine. In particular the lack of reports from BTS evening meetings has been targeted with a significant improvement in the numbers that are finding their way into the publication.

The committee are presently in the process of reviewing the whole communications strategy of the society and the requirements of our membership and how we best spend the funds available for the communication to membership

and third parties through publications, web-site and social media and over the next couple of years we are likely to see the development of social media as a route to communicate to a wider audience.

FINALLY

My tenure as Chairman of the BTS draws to a close at the next AGM in May and Mark Leggett will replace me, the process of selection his Vice Chairman is underway and I hope that we will find a willing candidate to continue the work that makes the BTS the vibrant and successful society that it is. I wish Mark as much pleasure in the role as I have experienced.

I will also take this opportunity to thank Damian McGirr, Mark Leggett and the committee for all of their support, advice and effort during my time as BTS Chairman and I hope that I have acquitted myself adequately to the roll and represented the society to the satisfaction of all of our members. I am proud to have been given the opportunity to undertake the role and look forward to watching and contributing to the society's continued success.

We have a potential future workload that is unlike anything we have seen for a very long time and I hope that the society and its members have a safe and successful time with the challenges that lie ahead of us.

TRUSTEES REPORT

The Trustees present their report together with the financial statements of the British Tunnelling Society (the 'Society') for the year ending 31st December 2015. The financial statements have been prepared on the accounting policies set out on page 17 of the financial statements and comply with the current statutory requirements, applicable law and the Statement of Recommended Practice 'Accounting and Reporting by Charities' issued in April 2005.

Organisational structure

The Trustees of the British Tunnelling Society are the ex officio and elected members of its Committee, with the Committee consisting of elected members, nominated members, co-opted members and ex-officio members. Nine members of the Committee are elected by postal ballot, the result of which is announced at the Annual General Meeting. Members elected to the Committee serve for a term of three years and then retire from the Committee, unless they are elected Chairman or Vice-Chairman. A retiring member is ineligible for re-election to membership of the Committee for a period of one year after they retire.

Two members, one nominated by each of the Institutions of Civil Engineers and Mining and Metallurgy, serve for a three-year term of office and then retire from the Committee unless they are elected Chairman or Vice-Chairman.

The Committee elects from amongst its members a Chairman to hold office for two years immediately following the Annual General Meeting. Such election is held at the last Committee meeting of the previous Chairman's term of office. On expiration of a Chairman's term of office, he may serve on the Committee in an ex officio capacity for a period of two years as immediate past Chairman.

The Committee elects from amongst its members a Vice-Chairman to hold office for two years immediately following the Annual General Meeting. Such elections are held at the last meeting of the Committee of the previous Vice-Chairman's term of office.

The Committee may co-opt a member of the Society to the Committee at any time and for whatever purpose the Committee so decides. A co-opted member to the Committee will hold office until the following Annual General Meeting.

Any casual vacancy, whether in the offices of Chairman or Vice-Chairman or amongst the elected or nominated members of the Committee, may be filled by the Committee, with the approval of the appropriate Institution in the case of a nominated member. A person appointed to fill a casual vacancy will hold office until the following Annual General Meeting, they will then retire. The casual vacancy will then be filled either by an election, by postal ballot, or by a nominated person from an Institution, as appropriate.

A term of office in a co-opted capacity or as the result of an appointment to fill a casual vacancy will not be counted for purposes of eligibility for subsequent re-election to the Committee.

Any individual member of the Society or nominated representative of a corporate subscriber of the Society or a nominated individual from an Institution will be eligible, except as otherwise provided, for election or appointment or co-option to the Committee.

Objects and policies & public benefit

The Society's objective is summarised as the advancement of the education of the public in and the promotion of the art and science of tunnelling, including the creation and use of underground space, by fostering learning, understanding, experience, interest and research therein.

In furtherance of this the Society:-

- Provides a forum for the discussion of the problems and techniques of tunnelling by holding monthly meetings which are free and open to all interested parties in addition to Society members
- Encourages tunnelling research and development so as to improve health and safety of the workforce, reducing both risk to the public and the cost of provision of infrastructure
- Provides training courses on a non-profit-making basis to train young tunnellers in tunnelling best practice
- Supports a Young Members division that embraces the objectives of the Society but focuses towards graduates, school leavers, and students still at school
- Supports the development of skills through support to courses such as the MSc in Tunnelling and Underground Space at Warwick University.
- Supports the development of apprenticeships and QCF NVQ qualifications via its work with the National Working Group, TunnelSkills and the Tunnelling and Underground Construction Academy (TUCA).

- Produces and arranges for the publication of papers and reports to disseminate information on tunnelling and to provide points of reference
- Co-operates with other associations in holding meetings and conferences locally, nationally and internationally
- Is the national representative body to the General Assembly of the International Tunnelling and Underground Space Association (ITA) for the UK
- Pays its annual membership fees to the ITA for the maintenance and on-going management of the Association. ITA fees for the year 2015 totalled £934.
- Maintains liaison with similar associations and individuals in other countries and co-operates and participates in the formation, continuance and furtherance of an international society devoted to the interests of tunnelling and of other international, national or local associations whose objects are allied to those of the Society
- Offers specialist assistance and advice to H.M. Government, statutory authorities, boards, institutions and similar bodies and to make representations to such bodies
- Does all such other things as are incidental or conducive to the attainment of any or all of the above aims.

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, the Institute of Materials, Minerals and Mining and the Pipe Jacking Association.

The 2015 AGM saw vacancies arise in the Committee, due to retirement of elected members. This year 3 BTS members were duly elected to serve from the 2015 AGM for a period of three years. They are:

- Ralph Freeston
- Kurt Zeidler
- Mark Round

In addition, the Committee requested that Eddie Woods, Donald Lamont, Shani Wallis, Ken Spiby, Joanne Sui, Kate Cooksey and John Scholey continue their roles as co-opted members of the Committee, which they agreed to do. Mateusz Wojtasik was asked to take on the responsibility of Young Members' Chair in November 2015.

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 sub-committees as detailed in their individual reports (see pages 9 to 21).

1. PAPERS AND MEETINGS

Paul Perry (Chair), Alan Bozeat, Nick Tucker, Jamie Standing Eoin OMurchu

The year has been well supported with a full calendar of high quality presentations covering a wide range of topics. The Committee's and members' thanks go to all the presenters.

To detail the talks given in the year:

Thursday 15th Jan: "Propless" cross passage construction at Victoria Station Upgrade

Speakers: Ian Heath, BAM; Anmol Bedi, Mott Macdonald

This popular presentation ensured that the calendar year started well. The Victoria Station Upgrade team presented the station upgrade works which have been undertaken in and around a major transport interchange. The talk focussed on how the works had made use of sprayed concrete linings and ground treatment to minimise the impact of the works on the operational station.

The completion of tunnelling right to the back of linings still in operational use in a safe and controlled manner was explained to the audience.



Thursday 12th Feb: Deep shafts in Canada

Speaker: John Elliot, Alan Auld Engineering; Alun Price-Jones, Cementation Mining

This year's joint MinSouth/BTS meeting was a fascinating presentation which focussed on the design and construction of new shafts to facilitate a brand new potash mine in New Brunswick, eastern Canada. The talk covered the design of the deep shaft which had to accommodate a variety of rock conditions, including 'creeping' Halite. It also provided information on the construction techniques for the shaft excavation and support and also for the establishment of the mine hoisting equipment.



Thursday 19th March: UXO – the practical application of the CIRIA guide

Speakers: Simon Cooke, 6-Alpha Associates

The CIRIA guide to Unexploded Ordnance was published in 2009 and this presentation provided a practical guide to the application of the guide. The various sources of UXO risk and how the associated hazards can affect construction projects were detailed. Guidance on how these risks could be managed and mitigated was provided in an informative manner.



Thursday 16th April: Harding Prize Competition

Speakers: Matthew Wilcock, ch2m; Ryan McCarron, BAM; Ester Karl, Hochtief

5 exceptional papers were submitted for this year's Harding Prize. Following some heated discussion, 3 of these were selected for presentation. All 3 finalists gave presentations of the highest standard and it fell to the judges to select Ryan McCarron as the winner of this year's competition.

For a full report of the Harding Prize competition please refer to the report from the Prizes and Awards Subcommittee.

Thursday 15th May: East Side Access Project, Soft Ground Challenges in Manhattan

Speakers: Andy Thompson, Metropolitan Transport Authority

The evening started with the Annual General Meeting, and the announcement of the well – deserved award of the James Clarke Medal to Doug Allenby. Unfortunately Doug was unable to attend to receive his medal AND THE Chairman and committee sincerely hope he will be able to collect his award in the near future.



The evening presentation gave a very good insight into the typical problems faced by transport upgrade projects using tunnelling through soft ground in urban environments. Major interfaces with existing transport systems were detailed and how the tunnelling works, using both SEM and TBM, influenced them. The innovative use of ground treatment techniques was employed to mitigate some of the risks to these existing assets.



Thursday 18th June: *Tunnelling in the Lambeth Group, how we can make it go right.*

Speaker: Jackie Skipper

The June evening meeting saw a lively and well attended presentation on the pitfalls of tunnelling in the Lambeth Group. The talk made good use of geological information combined with case histories, with the aim of describing how the various technical difficulties of tunnelling in this horizon can be avoided.



Thursday 17th September: *Innovations and technological advances in the design of segmental tunnel lining*

Speakers: Mike King, ch2m, Anthony Harding, ch2m and Malcolm Chappell, Ozengi Associates

The September evening meeting was well attended presentation to here an extensive presentation that covered the changes in segmental lining and TBM tunnelling technologies adopted over the last 40 years. It stimulated discussion at the meeting on where the industry is and where it is heading.

Thursday 15th October: *Canning Town Flyover.*

Speakers: David Holland, Mabey and Kim West, Arup

The October meeting described an interesting case history of tunnelling under the Canning Town Flyover structure and the arising assessment and monitoring regime. The presentation described the requirements with regard to settlement mitigation, the design and structural form of the viaduct, the instrumentation measurement and hydraulic control. The well attended presentation went on to cover the real time information and alerts that were available to engineers with how the movement was managed when the TBMs passed under the structure. The popularity of this type of meeting where the aspects of structural interaction with tunnelling was obvious and worth consideration for future meetings.



Thursday 19th November: *The Abu Dhabi Strategic Tunnel Enhancement Project.*
Speaker: Shahzad Oraki, ADSSC, Richard Graham, Salini- Impregilo JV and Carola Edvardsen, COWI

This meeting covered the Strategic Tunnel Enhancement Project (STEP) in Abu Dhabi city and the tunnel to a new treatment plant. The challenges of designing and constructing this deep gravity sewer, which started at a depth of 24 m in the City and ended at 80 m depth with a diameter of 6m at the new treatment works were presented to a receptive audience.

Thursday 10th December: *Christmas Debate; This house believes further development of SCL for complex urban tunnels is the best way forward for our industry.*
Speaker: *Keith Bowers, London Underground and Ross Dimmock, Normet*



The meeting in December was all of passionate, informative and entertaining at times as each speaker laid out their position on SCL in comparison with segmental linings to an audience that, from the questions at the end, had their own experiences and opinions to offer.

Regional Meeting – Glasgow, 7th July

With a nod to events held by the society in the past, a co-badged event was organised with the Concrete Society in Glasgow. This allowed attendees from the region to hear about the Shieldhall project from the Client, Designer and Contractors involved in the scheme and permitted those that would not normally have the opportunity to travel to London for the evening meetings to meet and hear of a scheme of greater geographical relevance to them. The second half of the event heard from members of the BTS and BTSYM who discussed the society and its activities as well as the potential workload for the industry in the coming years.

The event was deemed a great success by all who attended. The society has discussed the desire to hold more regional events at other locations around the country in the future and to use these as a way of working with other societies to benefit all involved.

2. TRAINING and EDUCATION and YOUNG PERSON'S COMMITTEE

Andrew Stenning (Chair); Roger Bridge, Steve Cowell, Rod Young, Ivor Thomas, J Standing, Joanne Sui

BTS Tunnel Design and Construction Course

The seventh Tunnel Design and Construction course to be held at Warwick University took place from 29th June to 3rd July 2015. The course programme was changed in some areas following the feedback from the 2014 course, and welcomed a number of new speakers. The main workshops were Sprayed Concrete Lining, Risk Management and TBM Choice and Sustainability.

The course maintained a high level of interest with the number being increased to eighty eight delegates, representing a mix of Clients, Designers, Contractors, and the Insurance industry. This number included five University students chosen from a limited number of applicants, whose fees were sponsored by the BTS.

A full timetable of lectures and workshops was accompanied by social events - on the first evening BBQ with rounders & later in the week an evening of indoor volley ball, and the traditional Course dinner was held on Thursday evening. The Course dinner was also attended by course speakers & BTS committee members to provide networking with delegates. Feedback was sought from delegates during and following the course, showing the course was extremely well received.

Thanks are extended to all the Speakers, Day Chairman, and assistants without whom this could not have taken place. That thanks also extends to our hosts at Warwick University for their excellent support and facilities that go towards make the course the event that it has become.

The 2016 course will be held from 4th July to 8th July, and will once again be held at Warwick University.

BTS Underground Health & Safety Course

The eighth annual BTS Underground Health and Safety Course was held at the ICE on 23rd and 24th November 2015. The course was well attended with eighty delegates, representing a wide mix of Clients, Designers, and Contractors. This number included five University students chosen from more than ten applicants, whose fees were sponsored by the BTS.

The feedback was by paper evaluation forms handed out on the last day, and the correlated information will be used to further improve the 2016 course. The overall consensus from discussions was generally positive with some suggestions made to further improve the 2016 course. Overall the Course was once again considered to be a great success.

The 2016 Course will be held at the ICE in November.

BTS Survey Course – Development

In conjunction with TunnelSkills & 3rd party survey organisations/experts, several meetings have occurred to develop 2 courses.

- a. A practical course (with a minor amount of theory and maths) aimed at new-entrants to the sector.
- b. A theoretical course (with some practical) aimed at tunnelling engineers.

The following key areas to be developed have been drawn up:-

1. Course Content aspirations
2. Suitable locations
3. Equipment
4. Lecturers
5. Funding
6. Frequency
7. Numbers attending
8. Agree development committee(s)
9. Accreditation by which body
10. Facilities

The team tasked with developing the courses has begun the process of populating these topics and developing the course as well as starting the process of developing the practical requirements at TUCA to ensure the delivery of practical sections for the courses.

An application has been made to CITB for funding to permit the courses to be developed and written by a suitable person with assistance from industry professionals ensuring that the course is developed in a suitable manner. Accreditation for the courses will be considered.

TUCA (Roger Bridge Reporting)

The BTS remains a contributing and supporting member of the Tunnelling and Underground Construction Academy (TUCA) as a member of the Industry Advisory Panel (IAP). Plans are under development to transfer Stewardship of the academy from Crossrail to TfL and the BTS are involved in assisting with the development of plans for the future operation of the establishment in Ilford and further afield.

Through the IAP the BTS has continued to advise on the requirements of our members to give guidance on the future needs of the industry and opportunities where the curriculum can be expanded.

TunnelSkills (Rod Young reporting)

Led by Chairman, Tom Lane, membership stands at 31 companies.

2015 has been a success for TunnelSkills having worked on numerous initiatives during the year, some detailed below:-

- Introduction of the CPCS A64 Gantry Crane Assessment, along with the Specialist Upskilling Programme now available for all Sprayed Concrete operatives.
- Work has continued in the recruitment and training of specialist tunnelling Assessors.
- The TSTS Site Safety Plus Course funded by the Major Projects division of CITB is now live and has attracted endorsement by Tideway, HS2 and all major UK tunnelling contractors and employers.
- The Tunnel Survey Course that's development has also been funded by the Major Projects team is now at Lesson Plan writing stage.
- The review to the National Occupational Standards (NOS) for Tunnelling Operations that were mentioned in the review of 2014 have now taken place and the revised version has been approved by the regulators and will be posted on the NOS database in due course.
- The EOS Project has been running throughout the year and due to changes within the SFA and its stream of Funding the Project has now been shortened with an end date of March 2016.
- A development bid was submitted to BIS toward the end of November for a Trailblazer Apprenticeship in Tunnelling Operations this is a great opportunity to develop a fit-for-purpose programme, wholly designed by industry for industry. It's a chance to capture new technologies and define the content to benchmark safety and quality and the aspirational behaviour required to work in the modern tunnelling environment. It is also an opportunity to incorporate transferrable skills that will allow candidates to benefit the broader construction and civil engineering industries.

TunnelSkills Plans for 2016

- Focus on the development of the Trailblazer Apprenticeship in Tunnelling Operations,
- Discussions to be held for developing further Trailblazer Apprenticeships for the higher skilled supervisory roles on site.
- TunnelSkills will continue to offer guidance, advice and time to develop further assessments and training within the Industry, there has also been recent discussions of developing a suite of behavioural safety courses.
- Our aspiration is for the UK tunnelling and underground industry to have thorough and rigorous training and assessments in place to prove the competence of our workforce today, whilst also continuing to work with CITB to promote the training needs of the tunnelling industry.

British Tunnelling Society Young Members Committee (BTSYM)

Eoin O'Murchu (Chair); Mateusz Wojtasik (Incoming Chair); Petr Salak (ITAYM representative); Matthew Lane; Peter Copenhall; Emyr James.

As the British Tunnelling Society Young Members moves into its eighth year, it is clear that the drive and enthusiasm of those involved has yet to wane. The society is growing from strength to strength, with the number of members and active participants growing each year. In the last 12 months, the BTSYM has added approximately 150 paid up members to its ranks – a significant improvement on years gone by. Regular tunnelling lectures, workshops and events are organised throughout the UK and the desire to network with tunnelling colleagues across the client-consultant-contractor spectrum is great to see; something that will only improve the tunnelling industry in the UK in the long term.

The BTSYM's regular lecture series continues to grow in content and attendance each year and 2015/2016 was no different. The 2015-year kicked off in earnest in February with two successful and greatly received lectures in both London and Birmingham (a BTSYM first). The London lecture – 'SCL Liverpool Street and Whitechapel Station' – discussed the design and project management step utilised in the application of SCL on London's Crossrail project, with particular reference to the Laser-Shell technology used to improve health and safety and efficiency on site. Meanwhile in Birmingham, Matt Sykes (Arup) came to the Arup office in Solihull to discuss their continuing work with CERN nuclear physics laboratory, which is located on the Franco-Swiss border near Geneva. This inaugural midlands talk was greatly received by all and will hopefully offer a greater opportunity the BTSYM working outside of the capital network.

In April 2015, the BTSYM gave a joint lecture with the 'London Excellence Society' on 'Developing and maintaining collaborative relationships in business' – a key the society aims to facilitate its members in achieving. Further lectures were also held in Derby and Birmingham in early May, with the aim of growing the membership base and becoming a truly national society. The expansion of the lecture series outside of London has also spurred ad-hoc networking and social events throughout the country, which is really great to see. Indeed, members of the BTSYM are taking the initiative and organising events around key projects such as the Shieldhall Tunnelling project in Glasgow – growing the membership base and the reach of the society even more.

The lecture series continued throughout the year with many great and interesting topics discussed, such as; Severn Trent Water, Large Diameter TBMs, Groundwater Control Techniques and Gaining Development Consent – which was a fascinating insight into the behind the scenes work done to ensure governmental consent for major capital projects.

In tandem with regular lectures, the BTSYM also offers workshops on a variety of tunnelling issues from waterproofing, settlement assessment and finite element modelling. In recent months, the ever-popular "Construction Contracts and Dispute Resolution" workshop was held in association with Pinsent Masons – meeting the demand from our members for a wider range of topics. Non-Linear Concrete Design and Fastenings in Tunnels also proved to be very popular workshops with demand for both over-subscribed each time.

In addition to workshops and lectures, the BTSYM also organised a number of very successful site visits and socials. Members visited the Victoria Station Upgrade, TCR Upgrade and the Marlaegis Mine in East Leeks. The ever popular BTSYM socials were also a great hit this year again, with over 40 people in attendance in the London Underground theme bar 'Cahoots' in central London in late 2015.

This year the BTSYM has already delivered lectures at Stephenson College Coalville, Brunel University and have been very active in supporting university events through the Institution of Civil Engineers. The BTSYM has also developed a teacher's pack that is in the final stages of review – with the aim of rolling out to schools in the wider London area before the start of the 2016/17 academic year. The pack has been developed with the students in mind and aims to expand their horizons and interest in all things engineering and tunnelling.

An important part of what the BTSYM does is to seek recognition for our members, for the stellar work they do. The BTSYM media team has been hard at work progressing our marketing capabilities and continuing to grow our social media presence. This year also saw the continuation of our quarterly news publication 'Digging Deep' interview series.

Thursday the 3rd December 2015 is a day that will be remembered by the British Tunnelling Society Young Members for a long time to come. The inaugural #TunnelDayUK was a huge success on all fronts. On the day nearly 1,000 tweets were sent from across the industry, with a potential reach of 1.5 million people - which is just staggering. Nearly every tunnelling consultant, contractor and client was involved on the day which was brilliant to see.

Conceived and organised by the BTSYM, the initiative received huge interest from all parts of the industry, with TfL and the NCE Tunnelling Awards in particular showing us great support - the latter invited Eoin to present on the day at their awards dinner. Needless to say the Twitter cardboard cut-out supplied went down very well with the tunnelling heads and leaders in the room.

A special thanks to all who contributed and to those in the BTSYM who worked tirelessly to make the day a success. An inside cover mention in this week's NCE magazine was the icing on the cake. The excitement and interest generated by the day goes to show the impact our industry can have on the wider world. We should do more of it! **#TunnelDayUK 2016** is already in the works.

3. EDUCATION incl. MSc

Mark Leggett (Chair); Damian McGirr; Robert Ibell, Kate Cooksey, Ross Dimmock, David McCann, Mark Round, Daniel Garbutt.

The 2015/2016 MSc started at the end of September 2015. The course continues to be well received by all of the students and continues to spark quite a bit of interest although the course still needs to grow in student numbers, remaining stubbornly below the 25 student mark.

The MSc in Tunnelling at Warwick University continues to build an international reputation and its unique approach of 20% of the course content delivered by industry is getting the attention of the other Warwick courses and other universities.

The MSc modules can also be purchased as individual CPD courses, including:

- Underground Construction Methods (part 1)
- Underground Construction Methods (part 2)
- Tunnel Design
- Communication & Leadership
- Health, Safety and Environmental Considerations
- Geological Investigation & Ground Characterisation
- Finite Element Methods for Tunnelling
- Construction Management
- Rock Mechanics

Material for the project is also supplied by the tunnelling industry which allows the students to undertake an intensive and detailed study using real project data. The BTS is committed to build on the success of the course to date and have a greater number of students. The course is available as a 1 year MSc on a full time basis or part time over 2 years. The modules are undertaken in week-long blocks thus making it easier for part time students to attend, or for companies to purchase a module as training for staff not enrolled on the MSc.

Thanks are due to the many BTS members who have supported the MSc this year. More than 20% of the teaching this year has been delivered by guest lecturers from the tunnelling industry, which has really given the course a practical flavour that is much appreciated by the students. This input requires a huge commitment from the industry members for which the BTS and Warwick University are extremely grateful.

MSc Course – Final Project Presentations

The Final Project in 2015 was based around a small diameter project tunnel in London. The presentations were given on the 2nd September 2015 to an appreciative audience and the teams tackled the questions well. We all agreed that their work was of a very high standard. The evening was rounded off with a dinner to celebrate the end of the course.

This part of the course is incredibly valuable and the BTS need to gather data on more project examples to give to Warwick to use; ideally a straightforward single tunnel route from A to B, with constraint identified, design criteria, objectives, geotechnical data etc. for the students to base their work on. Anyone with any interest in supporting this aspect of the Tunnelling MSc please contact Mark Leggett.

MSc Course – New Intake Reception/Welcome

The new intake reception took place in Mott MacDonald's London office on 8th October 2015, attended by the BTS Chairman, Vice-Chairman and members of the sub-committee along with some of the industry contributors. Once again the enthusiasm of the new students was obvious to all.

MSc Course – BTS Bursary

The BTS awarded a bursary of £8000 for 2015. We would also like to encourage our corporate members to support the MSc by offering financial support to students or placing staff onto the course.

4. REGISTRATION

Damian McGirr (Chair); Roger Bridge; Mark Leggett; Ivor Thomas & Joanne Sui.

The subject of registration of tunnellers had been something that the committee continues to believe is a requirement for the future and an area that we should be leading on the development of a solution for. Initial discussions with RoGEP identified that the scheme was not sufficiently inclusive for all tunnellers in line with the broad membership of the BTS and this option had been discounted.

More recently there have been numerous discussions and meetings with RoGEP on this matter. Previously the RoGEP scheme made no allowance for individuals other than Chartered Engineers. They have recognized that the range of underground experts and professionals extends beyond their original scope and have agreed that a change is required. They are now developing grades for EngTech qualified persons (aligned with non-degree holders) which would allow a greater opportunity for the full range of BTS members to join and register.

We are hopeful that later in 2016 we will be able to report that there will be a suitable path that we will subscribe to and recommend that all BTS members register for. The benefit of adopting the RoGEP scheme is that it will be one scheme covering all underground personnel and will be a cost effective solution.

5. AWARDS

Steve Cowell (Chair); Mark Leggett; Nick Tucker; Mark Round; Joanne Sui

Harding Prize 2015 - Judging was completed on the evening of the 16th of April 2015 and the winner of the competition was announced as Ryan McCarron with his paper "Victoria Station Upgrade PAL 10: The Challenges of Mining an Escalator Barrel within an Operational Station". A total of five papers were submitted encompassing a wide range of topics from tunnelling excavation delay analysis to mix shield TBM operating parameters. The quality of the submissions was excellent and it was a difficult task for the judges to select a winner.

James Clarke Medal 2015 - The 2015 medal was presented to Doug Allenby prior to the start of the evening meeting held on the 17th of September 2015. The award was made in recognition of his long service to the tunnelling industry. Unfortunately Doug has not been well and was not able to attend the May meeting. It is hoped that he will be able to receive his medal in the very near future from Roger Bridge, BTS Chairman.

James Clarke Medal Winners Luncheon 2015 - The 34th anniversary meal was held on Thursday the 17th of September 2015 to coincide with the BTS evening meeting. It was a pleasure to welcome many previous James Clarke Medal Winners together with members of the current BTS Committee. The meal was hosted by Roger Bridge, BTS Chairman, and took place in the Council Room at One Great George Street.

6. FINANCE AND MEMBERSHIP

Mark Leggett (Chair); Roger Bridge

Finance

In line with the logic adopted last year we have made no changes to the annual membership rates for 2016 but are reviewing the society finances to determine whether an increase will be necessary for the 2017 membership. These rates can be seen in the table below. The previously agreed rates for the on-going provision of Tunnels & Tunnelling remain in operation for the next two years enabling a certain amount of stability.

The rates for 2016 are as follows:

	UK	Overseas
	£	£
Corporate Member Small (Up to 50 employees)	405.00	510.00
Corporate Member Medium (50 to 500 employees)	645.00	880.00
Corporate Member Large (More than 500 employees)	1045.00	1510.00
Individual	80.00	130.00
Retired	31.00	42.00
Student	27.00	42.00
Young Member	40.00	50.00

The membership fee for 2016 will again include for provision of a digital version of Tunnels & Tunnelling.

Membership: The detail of the current membership (at the end of December 2015) is set out below:

	Member Classification	2015	2014	2013	2012	Change 2014/15
UK	Corporate members	64	66	62	61	- 2
	Individual members	484	495	482	481	-11
	Students & Retired	87	85	80	67	+2
	Young Members	90	10			+80
	Total	725	646	624	609	+79
Overseas	Corporate members	5	8	7	4	-3
	Individual members	124	134	142	157	-10
	Students & Retired	8	10	6	7	-2
	Young Members	4				+4
	Total	141	152	155	168	-9
	Overall Total	866	798	779	777	+68

The change in membership from 2015 has been a net increase with a reduction in overseas membership balanced by an increase in UK members indicative of the increased activity in the UK market. Of particular note is the increase in young members hopefully an indication of the growing influence and success of the Young Members committee. There remains interest from a number of potential new Corporate members but these have yet to apply formally.

We have made a small loss during the 2015 period, with the reserve decreasing from £97,591 at the end of 2014 to £88,511 by the end of 2015. There remains some outstanding debts from the 2015 dinner and course currently amounting to £21,310; we are pursuing these and expect to improve the 2015 financial position once this has been achieved.

The budget for 2016 indicates a reduction in reserves with expenditure going towards the BTS bid for WTC 2019. There is intention to continue with the activities aimed at young members and supporting this activity with necessary funding as well as looking to develop new courses that have been identified during the year. The training theme continues with on-going funding to TunnelSkills, and the Society will also fund one bursary for the Warwick MSc with up to £8,000 available if the successful applicant performs suitably.

7. HEALTH & SAFETY and STANDARDS

Donald Lamont (Chair)

Safety, Standards and Codes

2015 was a quiet year for standards activity.

The 5-year review/revision process for BS 6164 began somewhat ahead of schedule with a meeting of interested parties in Autumn 2015. There was general agreement between interested parties that a revision of BS 6164 should go ahead. BSI prepared the internal business case for the revision which was accepted by BSI in December 2015.

Work will start in early 2016. Having completed the revision of the CEN standards for tunnel machinery safety (EN 16191 (TBMs), EN 12110 (Airlocks) and EN 12111 (Roadheaders)) in 2014 and with their publication as harmonised European standards, there was no CEN standards work on tunnelling machinery in 2015. However, there was some activity in Europe over what is being called "dual use" machinery and "specialised" machinery. "Dual use" machines are conventional construction machines used underground. "Specialised" machines include concrete spray robots, emulsion explosive mixing machines etc which are purpose-built for underground use.

Towards the end of 2015 discussions began between CEN/TC151 (construction machinery), CEN/TC196 (mining machinery), ISO/TC195 (construction machinery), ISO/TC82 (mining machinery) and ISO/TC127 (earthmoving machinery) over future responsibility for tunnelling machinery, dual use machinery and specialised machinery.

Compressed Air Working Group

The Group met twice during 2015. CAWG was particularly pleased to learn at the May meeting of the publication of the revised ITA/BTS CAWG Report No 10 on high pressure compressed air work and of the ongoing use of that report by the Hong Kong Labour Dept. as the reference document for HPCA work on the Tuen Mun – Chek Lap Kok Link tunnel.

At the November meeting CAWG was updated on progress with HPCA work in Hong Kong. The main discussion of the meeting was over “acceptance criteria” – the criteria against which mathematical modelling and Doppler monitoring should be assessed to demonstrate the safety of a proposed decompression regime. In December the ITA/CAWG Report on HPCA work won the “Health and Safety Initiative of 2015” award at the NCE Tunnelling Awards.

8. TECHNICAL

Nick Tucker (NT) (chair); Steve Cowell (SC); Andrew Stenning (AS); Paul Perry (PP); Jamie Standing (JS); Mark Round (MR); Andrew Flowerday (AF) (co-opted); Alan Bozeat (AB) (co-opted); Will Howlett (WH) (BTSYM).

The Technical Sub-committee is working on the following main topics which are briefly detailed below:

SCL Best Practice Guide

The SCL sub-committee continued to work on the SCL Best Practice Guideline throughout 2015. The design section was around 80% complete when work on it was stalled whilst the BTS considered how best to incorporate the BTS document into a future Publicly Available Specification (PAS) for the design of Sprayed Concrete Linings. Discussions are ongoing with the BS PAS committee. It is likely that the procurement and construction related issues for SCL will still be included in the BTS SCL Best Practice Guideline whilst the design elements will be transferred to the PAS.

BTS Tunnel Lining Design Guide

A BTS review of the Tunnel Lining Guide determined that a complete re-write or major revision was necessary. The committee agreed that an update would be put on hold until SCL best practice guides are completed.

BTS Specification 3rd Edition

The committee considered that a BTS Specification 3rd Edition was not required at present. The BTS committee agreed to create a number of guides across subjects thus avoiding any revisions to the BTS Specification. Guidance notes will typically be 2-3 pages with a BTS header and be downloadable from the BTS site. These could be subsequently incorporated into a revised BTS Specification.

BTS Case Studies Working Group

The BTS intends to set up a new working group to look at case studies. The objectives of the working group would be; to provide coordination between parties; to encourage the publication of case studies and to give assistance to those involved in the publication of case studies. This will be developed further in 2016.

Publicly Available Specification (PAS) 8810 Design of Concrete Segmental Tunnel Linings

The BTS committee joined High Speed 2 and BSi in the sponsorship of the new PAS for fibre-reinforced tunnel linings to create a document that simplifies and clarifies the design process in line with HS2's commitment to improving project efficiency. The BTS committee was involved in reviews of the document as it developed over 2015 and into 2016. PAS 8810 covers: characterization of ground; materials design and specification; material characterization and testing; limit state design; concrete segmental lining design;

The document should be completed and ready for publication in the first half of 2016.

BTS Best Practice Recommended Reading List

A committee has been set up to prepare a Tunnelling Best Practice recommended reading / reference list for current and on-going specifications, guides, standards and reports. This is ongoing and is to be developed further.

Other Guides

Crossrail and LU good practice guides were reviewed and uploaded to BTS website. They include from Crossrail - Construction Railway Operation; Pressure Systems; SCL Exclusion Zone Management and from LU - Implementing safe working practices during shaft construction.

9. PARLIAMENTARY LIAISON GROUP

Bill Grose (chair); Roger Bridge; Mark Leggett; Damian McGirr; David McCann; Ivor Thomas

The BTS, alongside the ICE, takes an active role in promoting the tunnelling industry and sustainable infrastructure to Government and Parliamentarians. This is achieved through the All Party Parliamentary Group on Infrastructure (APPGI), and communications with Whitehall, including HM Treasury, the Department for Business, Innovation and Skills and Cabinet Office.

The principal activities of the Parliamentary Liaison Group (PLG) are via the All Party Parliamentary Group for Infrastructure (APPGI), which is co-hosted by BTS and ICE. BTS's position as an equal member in this relationship is now recognised, through the active participation of the members of the PLG and in particular in the visits to

tunnelling sites that we arrange for Parliamentarians. However, the General Election in 2015 inevitably resulted in parliamentary activities being focussed more on campaigning and less on the activities of All Party groups.

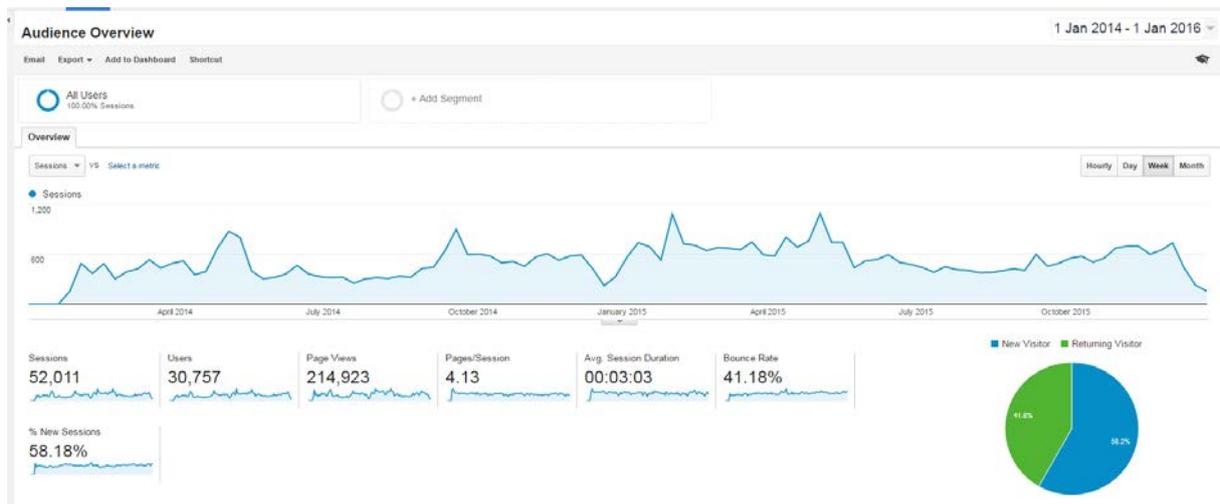
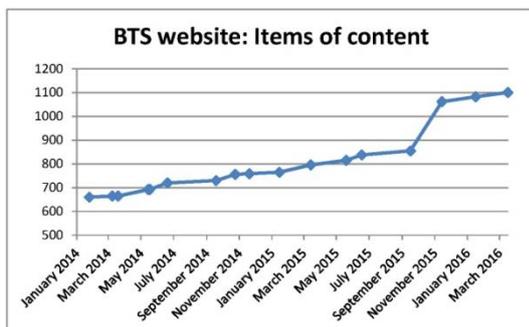
After the election, at the APPGI's AGM in July 2015 Stephen Hammond MP took over as Chairman of the Group, with a further seven Officers elected from both the Commons and the Lords. On 14th July over 100 parliamentarians and members of industry attended the Summer Reception at the ICE in London, which included a speech on the robust health of the tunnelling industry by the BTS Chairman, Roger Bridge.

For further details see <https://www.ice.org.uk/news/all-party-parliamentary-group>.

10. WEBSITE

Ken Spiby (Chair)

The BTS website (www.britishtunnelling.org.uk) has been in its current format since late January 2014. The website continues to perform well with good traffic figures. Regular updates have been made throughout the year. The website was launched with 660 items of content (pages or list items), and at the end of 2015 contained over 1000. Site usage continues to grow steadily:



Additional content included in 2015 includes:

- A 'reading list'
- Obituaries
- Further developments that are planned include:
 - The inclusion of further information on tunnelling and careers in tunnelling
 - A 'members only' area, restricting access to certain sections and information to members only
 - A secure file storage and transfer site for the committee, sub-committees, and working groups

11. TUNNELS & TUNNELLING INTERNATIONAL EDITORIAL ADVISORY BOARD

Eddie Woods (chairman), Keith Bowers, Roger Bridge, Mark Leggett, Roger Margerison, Barry New, Andrew Smith, Ken Spiby, Ivor Thomas, Eoin O'Murchu (BTSYM), Mateusz Wojtasik (BTSYM).

Myles O'Reilly retired after 34 years serving as Chairman of the Editorial advisory board. All members of the British Tunnelling Society (BTS) receive a monthly copy of Tunnels & Tunnelling International (T&TI). This journal contains a wide range of technical articles and is accompanied by notices of meetings, circulars and other information for members. The Advisory Board met four times in 2015 to review the content of the magazine and discuss topics for inclusion in forthcoming issues.

T&TI and the EB will be sending a questionnaire to canvas members what they would like to see in the magazine. The views of BTS members on matters relating to T&TI are much appreciated and invariably there are some members of the Advisory Board attending the BTS meetings at One Great George Street. The circulation and readership of T&TI is wider than many conferences and BTS members are encouraged to submit articles, news items and letters to T&TI.

12. INTERNATIONAL TUNNELLING ASSOCIATION (ITA)

Damian McGirr (Member Nation Representative); Donald Lamont; Roger Bridge & Mark Leggett.

The International Tunnelling and Underground Space Association held its forty-second meeting in San Francisco, California, from 22 to 28 April 2016, in conjunction with the World Tunnel Congress 2016, organized by ITA and the Underground Construction Association of SME. More than 1550 persons participated in the Congress. 57 of the 73 Member Nations participated or were represented in the General Assembly. There was a good turnout from the UK with many papers being presented. It was great to see that many Young members were presenting papers.

There are 13 active Working Groups in ITA and the BTS was well represented across these. Donald Lamont continued to be Animateur of ITA WG5 while Jon Baber is Animateur of ITA WG 11 "Immersed and floating tunnels". Damian McGirr was elected Vice Animateur of Working Group 20 "Urban Problems – Underground Solutions". BTS was also represented at a number of the other Working Groups.

8 reports were published, three from ITA Working Groups (2,5 and 11), four from ITAtech Activity Groups and one from ITA COSUF Committee:

- Strategy for Site Investigation on tunnelling projects
- Guidelines for Good Working Practice In High Pressure Compressed
- An Owners Guide to Immersed Tunnels
- Rebuilt Equipment – Guidelines on Rebuilds of Machinery for mechanized Tunnel Excavation
- Guideline for Good Practice of Fibre Reinforced Concrete Precast Segments
- Guidelines on Measurement Frequencies.
- Remote measurement
- Survey of existing regulations and recognised recommendations (on operation and safety of road tunnels)

All these documents are available free of charge on ITA website and available for comments.

During the year, ITACUS has continued its work with its global partners notably with the publication in cooperation with ISCARP of the case studies "Think deep: planning, development and use of underground space in cities". It is noted that this is the springboard to the launch of the Think Deep UK initiative in the UK in 2015. This is a cross discipline group committed to the development and use of underground space.

The ITAYM development continued in Dubrovnik (and indeed throughout the year) and Petr Salak remained as the Vice Chairman for another year. ITA YM also created a new magazine "Breakthrough" which featured a number of UK young engineers.

Dubai was elected as the host city for the WTC and GA in 2018.

The UK declared its intention to be a candidate to host the WTC in 2019.

13. ANNUAL DINNER

John Scholey (Chair)

The Society's 27th annual dinner was held at The Brewery banqueting centre in London on Friday 8th May 2015. We again had a full house, with a record 848 attendees seated at 82 tables. For the 2016 dinner at the same venue, the committee decided to limit the number of tables to 75.

The dinner was followed by a short address from BTS Chairman Roger Bridge followed by a comprehensive talk from Mr Tim Smart, CH2M's International Director for High Speed Rail.

Profits from the dinner go to support the BTS learned society activities, in particular training. We are particularly grateful to our sponsors, who have enabled us to increase this contribution. These are:

- CH2M, who again sponsored the pre-prandial champagne reception,
- Murphy, who again sponsored the dinner, and
- TunnelTalk, who again arranged for the presence of a roving photographer, with photographs available to view and order at www.TunnelTalk.com.

14. SUSTAINABILITY

Andreas Raedle (Chair), Bill Grose, Andrew Stenning, Steve Cowell

Due to changing work commitments, Andreas had to relinquish his role on the BTS committee and no new projects or initiatives have been identified. Proposals have been tabled for subject matter to be progressed by this group and with the new committee structure forming after the 2016 AGM this will be progressed.

15. RELATIONSHIP WITH ICE (Bill Grose reporting)

BTS continues to enjoy a close and positive relationship with ICE.

BTS is one of the largest and most active of the ICE's Associated Societies and as such is a significant user and beneficiary of ICE facilities including meeting rooms, lecture theatres, bar and restaurant, and secretariat support. The arrangement is via a Service Level Agreement which continues to be reviewed annually.

ICE regularly refer tunnel-related media queries to BTS committee members and rely on our advice and expertise in such matters. One such enquiry led to Roger Bridge briefing a Scottish MP on tunnelling in general, and the feasibility of tunnelling from the mainland to the Orkney Islands in particular.

The President of ICE, David Balmforth, attended one of the BTS Committee meetings to discuss matters of mutual interest.

16. RESERVES POLICY

There has been no change in the Trustees policy of maintaining reserve levels equivalent to a year's subscription income with sufficient funds available to meet the needs of the Society. The reserves as of 31st December 2014 are £97,591. This figure is in accordance with the agreed strategy to reduce the reserves from the previous figure of £117,497. This was achieved by the funding of a bursary for the Warwick MSc course and on-going development of a new website and database for the society as well as increasing funding for the growing Young Members Society.

The full reduction in reserves was achieved taking into account profits made on the Annual Design & Construction course and the Health and Safety course. With the 2014 annual subscription received being £102,342 after an increase in membership figures, the Society now has a reserve balance that is much closer than in 2013. We will continue to monitor reserves and avoid a significant change.

17. INDEPENDENT EXAMINERS

The audit requirement for a Charity such as the BTS is for an 'independent examination' of our accounts. This independent examination is undertaken by **Lindeyer Francis Ferguson Ltd**. We have been satisfied with the service provided to date and we propose that this relationship continues for the forthcoming year.

Trustees' responsibilities for the financial statements

The trustees are required to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the charity and the incoming resources and application of resources, including the net income or expenditure, of the Charity for the year. In preparing those financial statements, the Trustees are required to:

- Select suitable accounting policies and then apply them consistently
- Make judgements and estimates that are reasonable and prudent

- State whether applicable accounting standards and statements of recommended practice have been followed, subject to any material departures disclosed and explained in the financial statements.
- Prepare the financial statements on an on-going concern basis unless it is inappropriate to presume that the Charity will continue in business.

The Trustees are responsible for keeping proper accounting records which disclose, with reasonable accuracy, at any time, the financial position of the Charity and which enable them to ensure that the financial statements comply with the Charities Act 2011. They are also responsible for safeguarding the assets of the Charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Trustees' Report on pages 22 was approved by the Committee and was signed on its behalf by:

Roger Bridge
Chairman of the Society

Date of Approval:

**REPORT OF THE INDEPENDENT EXAMINER TO THE TRUSTEES OF
THE BRITISH TUNNELLING SOCIETY**

I report on the accounts for the year ended 31 December 2014, which are set out on pages 24 to 28.

RESPECTIVE RESPONSIBILITIES OF TRUSTEES AND EXAMINER

The Charity's Trustees are responsible for the preparation of the accounts. The Charity's Trustees consider that an audit is not required for this year under section 144(2) of the Charities Act 2011 and that an independent examination is needed.

It is my responsibility to:

- Examine the accounts under section 145 of the 2011 Act;
- To follow the procedures laid down the General Directions given by the Charity Commission under section 145(5)(b) of the 2011 Act; and
- To state whether particular matters have come to my attention.

BASIS OF INDEPENDENT EXAMINER'S REPORT

My examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts, and the seeking of explanations from you as Trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and, consequently, no opinion is given as to whether the accounts represent a 'true and fair' view and the report is limited to those matters set out in the statement below.

INDEPENDENT EXAMINER'S STATEMENT

In connection with my examination, no matter has come to my attention:

- i. that gives me reasonable cause to believe that in any material respect, the requirements:
 - to keep accounting records in accordance with section 130 of the 2011 Act; and
 - to prepare accounts which accord with the accounting records and to comply with the accounting requirements of the 2011 Act;have not been met; or
- ii. to which, in my opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

Jonathan Healey FCA

LINDEYER FRANCIS FERGUSON LTD
Chartered Accountants
Tonbridge, Kent

Date

ACCOUNTING POLICIES

BASIS OF PREPARATION

The financial statements have been prepared under the historical cost convention as in accordance with United Kingdom applicable accounting standards and the Statement of Recommended Practice 'Accounting and Reporting by Charities' (SORP) issued in March 2005 and the Charities Act 2011.

The principal accounting policies remain unchanged and are set out below.

TAXATION

The Charity is exempt from taxation under current legislation.

INCOMING RESOURCES

Income is included when the conditions for receipt have been met and there is a reasonable assurance of receipt.

Income and Donations and Member subscriptions

Income from member subscriptions is included in incoming resources when these are receivable.

Interest receivable

Interest is included when receivable by the Charity.

RESOURCES EXPENDED

Resources expended are included in the SOFA on an accruals basis.

Costs in support of charitable activities

Costs in support of charitable activities are comprised mainly of:

- the costs of organising meetings
- arranging training and education courses specifically in tunnelling
- supporting MSc tunnelling students with bursaries
- Publishing best practice guides and technical documents
- Managing a website that is open and accessible to all
- Including as part of the membership fee a copy (hard copy and/or digital copy) of the monthly magazine T&T

Governance Costs

Comprises the costs of Trustees' expenses and independent examiner's fees.

Fund accounting

Restricted funds are to be used for specified purposes laid down by the donor. Expenditure for those purposes is charged to the fund.

CASH FLOW

The Society has used the exemption under Financial Reporting Standard No 1 (Revised) not to prepare a cash flow statement as it qualifies as a small entity.